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IT R&D Center  
416 Maetan3-Dong,  
Yeongtong-gu, Suwon city,  
Gyeonggi-Do, Korea 443-742

## FCC CFR47 PART 22 & 24 SUBPART CERTIFICATION REPORT

**Model Tested** : **SGH-A227**  
**FCC ID(Requested)** : **A3LSGHA227**  
**Report No** : **FF-022-R1**  
**Job No** : **FF-022**  
**Date issued** : **February 19, 2008**

- Abstract -

All measurement reported herein accordance with FCC Rules, 47CFR Part2,  
Part22, Part24.

**Prepared By**

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JH WOO – Test Engineer

**Authorized By**

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WW JANG - Technical  
Manager

# TABLE OF CONTENT

| <b>MEASUREMENT REPORT</b>                                                 | <b>Page</b> |
|---------------------------------------------------------------------------|-------------|
| <b>1. FCC CERTIFICATION INFORMATION .....</b>                             | <b>3</b>    |
| 1.1. §2.1033 General Information .....                                    | 3           |
| <b>2. INTRODUCTION .....</b>                                              | <b>4</b>    |
| 2.1. General .....                                                        | 4           |
| <b>3. MEASURING INSTRUMENT CALIBRATION .....</b>                          | <b>5</b>    |
| <b>4. TEST EQUIPMENT LIST .....</b>                                       | <b>6</b>    |
| <b>5. DESCRIPTION OF TESTS .....</b>                                      | <b>7</b>    |
| 5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power ..... | 7           |
| 5.2. Radiated Spurious & Harmonic Emission .....                          | 8           |
| 5.3. Occupied Bandwidth .....                                             | 10          |
| 5.4. Spurious and Harmonic Emission at Antenna Terminal .....             | 10          |
| 5.4.1. Occupied Bandwidth Emission Limits .....                           | 10          |
| 5.4.2. Conducted Spurious Emission .....                                  | 12          |
| 5.5. Frequency Stability / Temperature Variation .....                    | 13          |
| <b>6. TEST DATA .....</b>                                                 | <b>14</b>   |
| 6.1. Effective Radiated Power (E.R.P.) .....                              | 14          |
| 6.2. Equivalent Isotropic Radiated Power (E.I.R.P.) .....                 | 15          |
| 6.3. GSM850 Radiated Spurious & Harmonic measurement .....                | 16          |
| 6.4. GSM1900 Radiated Spurious & Harmonic measurement .....               | 17          |
| 6.5. GSM850 Radiated Spurious & Harmonic Conversion Table .....           | 18          |
| 6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table .....          | 19          |
| 6.7. Frequency Stability .....                                            | 20          |
| 6.7.1. GSM850 Frequency Stability Table .....                             | 20          |
| 6.7.2. GSM850 Frequency Stability Graph .....                             | 21          |
| 6.7.3. GSM1900 Frequency Stability Table .....                            | 23          |
| 6.7.4. GSM1900 Frequency Stability Graph .....                            | 24          |
| <b>7. CONCLUSION .....</b>                                                | <b>26</b>   |
| <b>8. TEST PLOTS .....</b>                                                | <b>27</b>   |



# **MEASUREMENT REPORT**

## **1. FCC Certification Information**

The following information is in accordance with FCC Rules, 47CFR Part2, Subpart J, Sections 2.1033 – 2.1055.

### **1.1. §2.1033 General Information**

- Applicant Name : SAMSUNG ELECTRONICS CO., LTD.
- Address : 416 Maetan3-Dong, Yeongtong-gu, Suwon City  
Gyeonggi-Do, Korea 443-742
- Attention : SungJoo KIM, Engineering Manager (QA Lab)
- FCC ID : A3LSGHA227
- Quantity : Quantity production is planned
- Emission Designators : 251KGXW(GSM850), 245KG7W(GSM850 EDGE)  
251KGXW(GSM1900), 246KG7W(GSM1900 EDGE)
- Tx Freq. Range : 824.2 - 848.8MHz (GSM850)  
1850.2MHz - 1909.8MHz (GSM1900)
- Rx Freq. Range : 869.2 - 893.8 MHz (GSM850)  
1930.2MHz - 1989.8MHz (GSM1900)
- Max. Power Rating : 1.667 W ERP GSM850 (32.22dBm)  
0.743 W EIRP GSM1900 (28.71dBm)  
0.733 W ERP GSM850 EDGE(28.65dBm)  
0.207 W EIRP GSM1900 EDGE(23.17dBm)
- FCC Classification(s) : Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : Dual-Band GSM/EDGE 850/1900 Phone
- Frequency Tolerance :  $\pm 0.00025\%$  (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : February 02, 2008
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FF-022-R1

## 2. INTRODUCTION

### 2.1. General

These measurement test were conducted at **SAMSUNG ELECTRONICS CO., LTD(SUWON)**.  
The site address is 416 Maetan3-Dong, Yeongtong-gu, Suwon City, Gyeonggi-Do, Korea 443-742  
The site have 1 Fully-anechoic chamber and measurement facility.



Figure1. Map of the Suwon City area.

### Measurement Procedure

The radiated and spurious measurements were made Fully-anechoic chamber at a 3-meter test range (see Figure2). The equipment under testing was placed on the rotating device at the same height and at a distance of 3-meters from the receive antenna. The rotating device which can rotate horizontal axis was mounted on the turn unit to facilitate rotation around a vertical axis. The measurement was made for each horizontal/vertical position combination with receive antenna horizontally polarized. This measurement was repeated with receive antenna vertically polarized. The substitution antenna will replace the EUT antenna it the same position and in vertical polarization. The frequency of the signal generator shall be set to the frequencies that were measured on the EUT. The signal generator, output level, shall be adjusted until an equal or a known related level to what was measured from the EUT is obtained in the spectrum analyzer. This level was recorded. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

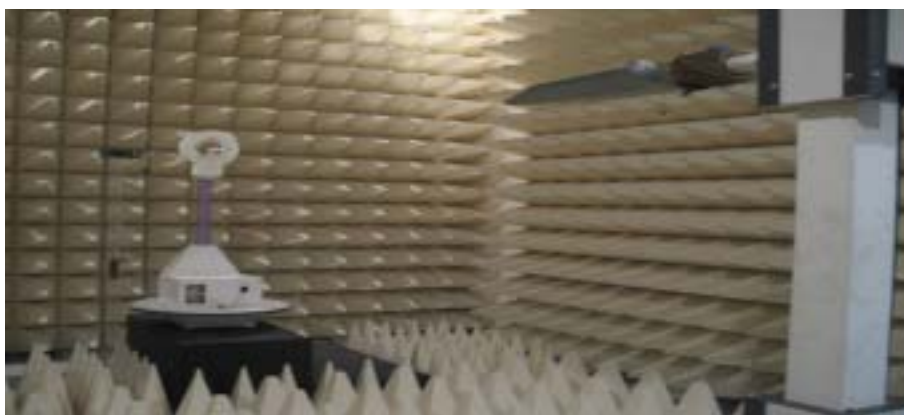


Figure2. Photograph of 3m Fully-Anechoic Chamber

### **3. MEASURING INSTRUMENT CALIBRATION**

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

#### 4. TEST EQUIPMENT LIST

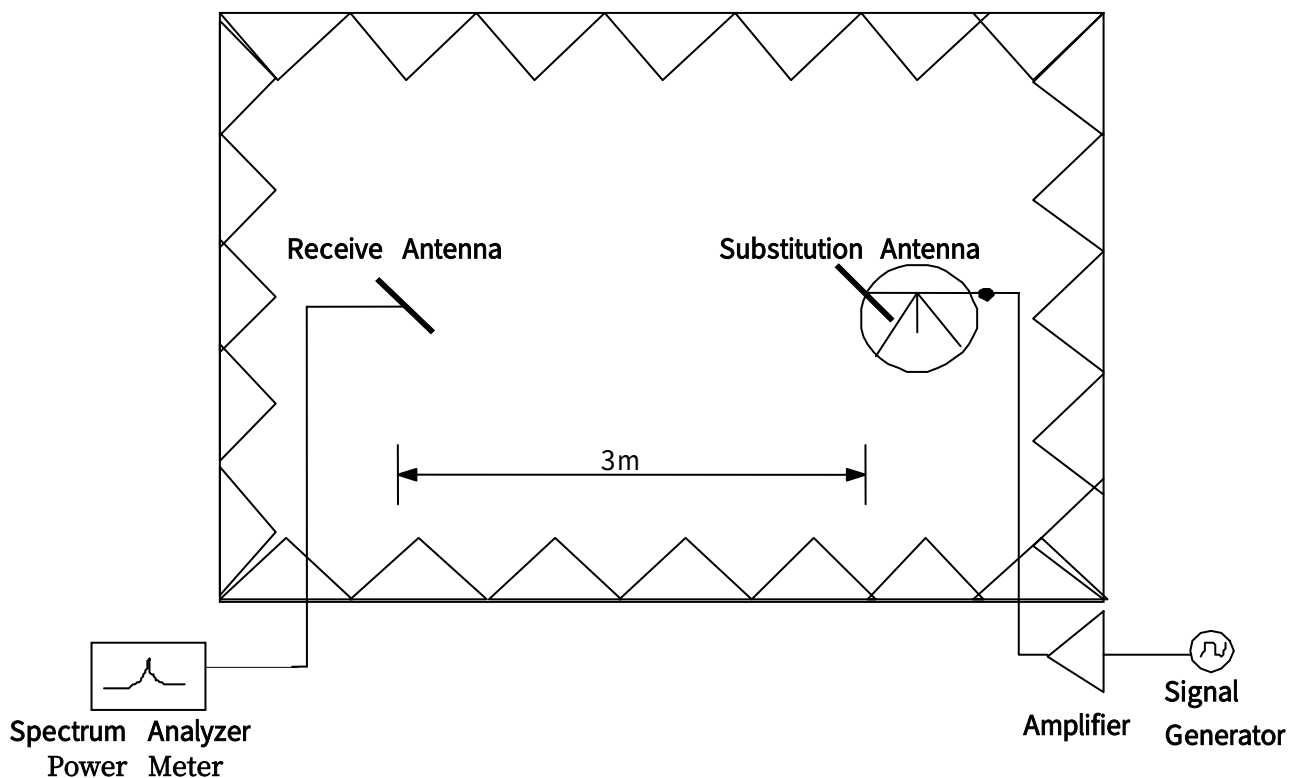
| Name Of Equipment               | Model               | Serial No. | Due Date     |
|---------------------------------|---------------------|------------|--------------|
| Spectrum Analyzer               | ESI26               | 836119/010 | 2008-10-17   |
|                                 | E4440A(3Hz~26.5GHz) | MY41000236 | 2008-04-14   |
|                                 | E4440A(3Hz~26.5GHz) | MY41000233 | 2008-07-23   |
| Network Analyzer                | 8753E               | JP38160590 | 2008-06-26   |
| Power Sensor                    | 8485A               | 3318A19924 | 2008-10-01   |
| Power Meter                     | E4419B              | GB41293846 | 2008-09-06   |
| Pre-Amplifier                   | 8449B               | 3008A00691 | 2008-12-24   |
| Communication test set          | 8960                | GB42230535 | 2009-01-02   |
|                                 | 8960                | GB42360886 | 2008-07-03   |
| Antenna Master                  | MA240               | 240/618    | Not Required |
| Controller                      | HD100               | 100/756    | Not Required |
| Horn Antenna                    | HF906               | 100134     | 2008-05-04   |
| Dipole Antenna                  | 3121C-DB4           | 9007-588   | 2008-05-29   |
| Communication test set          | CMU200              | 109162     | 2008-10-17   |
| Receive Antenna                 | HL040               | 353255/019 | 2008-09-20   |
|                                 | HL040               | 353255/020 | 2008-04-25   |
| Power Supply                    | E3640A              | MY40003594 | 2008-06-25   |
| Divider                         | 11636B              | 51946      | Not Required |
|                                 | 11636B              | 51942      | Not Required |
| High Pass Filter                | WHK1.0/15G-10SS     | 1          | Not Required |
|                                 | WHK/3.5/18G-10SS    | 4          | Not Required |
| Environmental Chamber           | SH-241              | 92000549   | 2008-11-15   |
| Shielded Fully Anechoic Chamber | CHAMBER             | ANT0001    | Not Required |

## 5. DESCRIPTION OF TESTS

### 5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power

#### **Test Set-up for the ERP/EIRP TEST**

Effective Radiated Power Output and Equivalent Isotropic Radiated Power output Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004



**Figure 3. Diagram of ERP/EIRP test Set-up**

The EUT was placed on the rotating device at 3-meters from the receive antenna. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. For GSM signals, an average detector is used, with RBW=VBW=3MHz, SPAN=10MHz. 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 dipole is measured. The ERP and EIRP are 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.

## 5.2. Radiated Spurious & Harmonic Emission

### Test Set-up for the Radiated Emission TEST

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

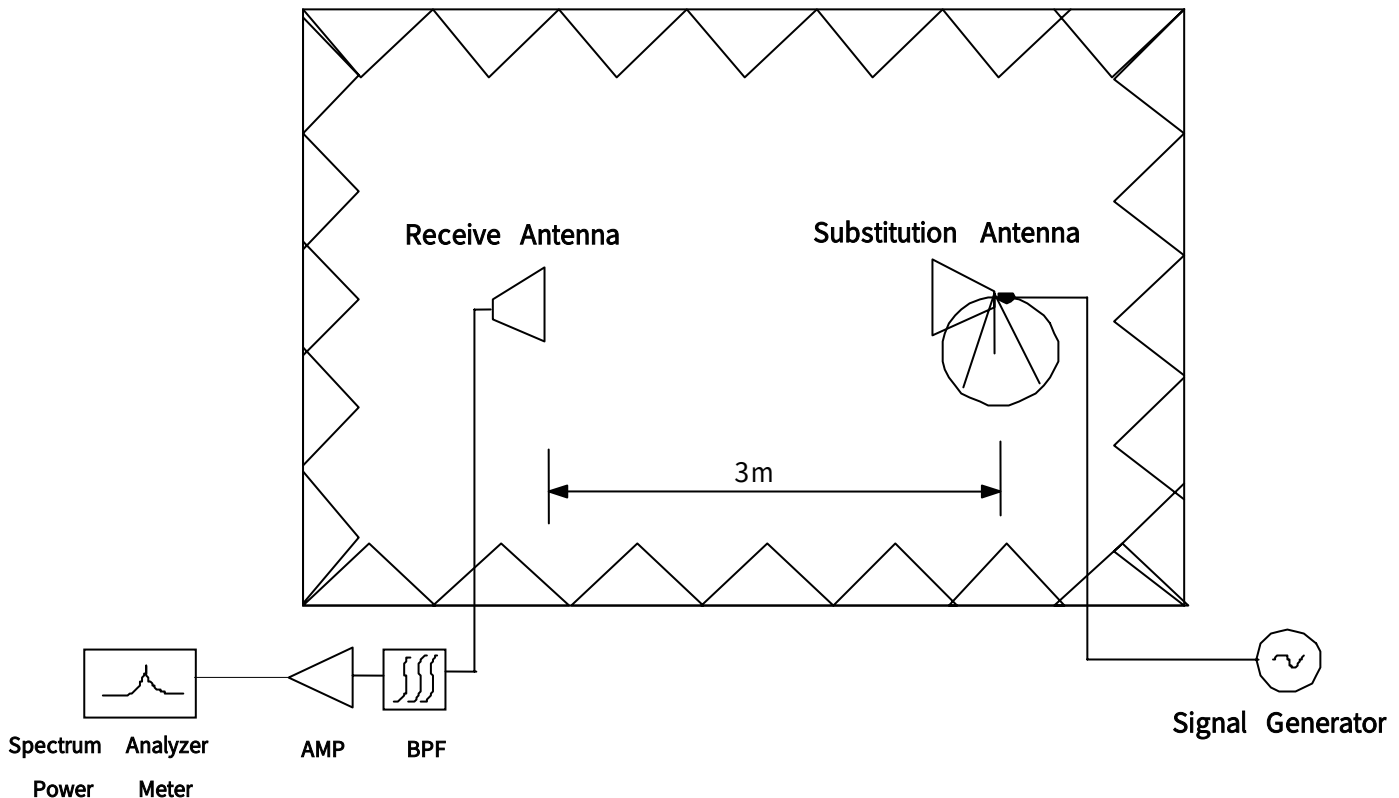


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. The Spectrum was investigated from 30MHz to the 10<sup>th</sup> Harmonic of the fundamental. A peak detector is used, with RBW=VBW=1MHz. The value that we could measure was only reported. 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.

## **SAMPLE CALCULATION**

### **Example: Channel 661 , Second Harmonic(3760.00MHz)**

The receive analyzer reading at 3meters with the EUT on the turntable was  $-81.0\text{dBm}$ . The gain of the substituted antenna is  $8.1\text{dBi}$ . The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of  $-81.0\text{dBm}$  of the receive analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is  $2.0\text{dB}$  at  $3760.00\text{MHz}$ . So  $6.1\text{dB}$  is added to the signal generator reading of  $-30.9\text{dBm}$  yielding  $-24.8\text{dBm}$ . The fundamental EIRP was  $25.5\text{dBm}$  so this harmonic was  $25.5\text{dBm} - (-24.8) = 50.3\text{dBc}$ .

### **5.3. Occupied Bandwidth**

#### **Test Procedure**

The EUT was setup to maximum output power at its lowest channel. The occupied bandwidth was measured using a spectrum analyzer. The measurements are repeated for the highest and a middle channel. The EUT's occupied bandwidth is measured as the width of the signal between two points, one below the carrier center frequency and one above the carrier frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

Plots of the EUT's occupied bandwidth are shown herein.

### **5.4. Spurious and Harmonic Emission at Antenna Terminal**

#### **5.4.1. Occupied Bandwidth Emission Limits**

- (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 MHz or greater. However, in the 1MHz 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 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.
- (d) 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.

| BLOCK | Freq. Range (MHz)<br>Transmitter (Tx) | Freq. Range (MHz)<br>Receiver (Rx) |
|-------|---------------------------------------|------------------------------------|
| A     | 1850 – 1865                           | 1930 – 1945                        |
| B     | 1870 – 1885                           | 1950 – 1965                        |
| C     | 1895 – 1910                           | 1975 – 1990                        |
| D     | 1865 – 1870                           | 1945 – 1950                        |
| E     | 1885 – 1890                           | 1965 – 1970                        |
| F     | 1890 – 1895                           | 1970 – 1975                        |

**Table 1. Broadband PCS Service Frequency Blocks**

| BLOCK      | Freq. Range (MHz)<br>Transmitter (Tx) | Freq. Range (MHz)<br>Receiver (Rx) |
|------------|---------------------------------------|------------------------------------|
| A* Low + A | 824 ~ 835                             | 869 ~ 880                          |
| B          | 835 ~ 845                             | 880 ~ 890                          |
| A* High    | 845 ~ 846.5                           | 890 ~ 891.5                        |
| B*         | 846.5 ~ 849                           | 891.5 ~ 894                        |

**Table 2. Cellular Service Frequency Blocks**

### 5.4.2. Conducted Spurious Emission

#### **Minimum standard:**

On any frequency outside a license frequency block, the power of any emission shall be attenuated below the transmitter power(P) by at least  $43+10\log(P)$ dB. Limit equivalent to -13dBm, calculation shown below.

$$43 + 10\log ( 1.667 \text{ W} ) = 45.22 \text{ dB}$$

$$32.22 \text{ dBm} - 45.22 \text{ dB} = -13 \text{ dBm}$$

Compliance with the out-of-band emissions requirement is based on test being performed with an analyzer resolution bandwidth of 1MHz. However in the 1MHz band immediately outside and adjacent to the frequency block a resolution bandwidth of at least 1% of the fundamental emissions bandwidth may be employed.

In case of GSM :  $0.01 * 273\text{KHz} = 2.73\text{KHz}$   
A Resolution BW of 3KHz was used for measurement at the band edges.

#### **Test Procedure:**

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1% of the emission bandwidth to show compliance with the -13dBm limit, in the 1MHz bands immediately outside and adjacent to the edge of the frequency block. The measurements are repeated for the EUT's highest channel. For the Out-of-Band measurements a 1MHz RBW was used to scan from 10MHz to 10GHz. (GSM1900 Mode : 10MHz to 20GHz). A display line was placed at -13dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

Plots are shown herein.

## 5.5. Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

- a.) Temperature: The temperature is carried from  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$  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 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 ( $25^{\circ}\text{C}$  to  $27^{\circ}\text{C}$  to provide a reference).
2. The equipment is subjected to an overnight "soak" at  $-30^{\circ}\text{C}$  without any power applied.
3. After the overnight "soak" at  $-30^{\circ}\text{C}$  (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 of the transmitter and the individual oscillators is made within a three minute interval after applying to the transmitter.
4. Frequency measurements are made at  $10^{\circ}\text{C}$  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 measurements are at 10 intervals starting at  $-30^{\circ}\text{C}$  up to  $+60^{\circ}\text{C}$  allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

NOTE : The EUT is tested down to the battery endpoint.

## 6. TEST DATA

### 6.1. Effective Radiated Power (E.R.P.)

Supply Voltage : 3.7VDC

Modulation : GSM850

#### ■ Reference level

| Frequency<br>(MHz) | Output<br>(dBm) | Polarization<br>(H/V) | S/A<br>(dBm) | Ant gain<br>(dBi) | Ref level<br>(dBm) |
|--------------------|-----------------|-----------------------|--------------|-------------------|--------------------|
| 824.20             | 29.00           | H                     | -7.35        | -0.67             | -6.68              |
|                    |                 | V                     | -7.61        | -0.67             | -6.94              |
| 836.60             | 31.00           | H                     | -7.55        | -0.67             | -6.82              |
|                    |                 | V                     | -6.24        | -0.67             | -5.51              |
| 848.80             | 32.00           | H                     | -9.93        | -0.67             | -9.14              |
|                    |                 | V                     | -7.05        | -0.67             | -6.26              |

#### ■ Result

| Frequency<br>(MHz) | Tested level<br>(dBm) | Polarization<br>(H/V) | Azimuth<br>(angle) | ERP<br>(dBm) | ERP<br>(W) | Battery  |
|--------------------|-----------------------|-----------------------|--------------------|--------------|------------|----------|
| 824.20             | -6.55                 | H                     | 86                 | 29.13        | 0.818      | Standard |
| 836.60             | -6.56                 | H                     | 76                 | 31.26        | 1.337      | Standard |
| 848.80             | -8.92                 | H                     | 80                 | 32.22        | 1.667      | Standard |

#### ■ EDGE Result

| Frequency<br>(MHz) | Tested level<br>(dBm) | Polarization<br>(H/V) | Azimuth<br>(angle) | ERP<br>(dBm) | ERP<br>(W) | Battery  |
|--------------------|-----------------------|-----------------------|--------------------|--------------|------------|----------|
| 848.80             | -12.57                | H                     | 83                 | 28.65        | 0.733      | Standard |

**NOTE :** Standard batteries are the only battery options for this phone

- All modes of operation were investigated, and the worst-case results are reported.

**Radiated measurements at 3 meters by Substitution Method**

## 6.2. Equivalent Isotropic Radiated Power (E.I.R.P.)

Supply Voltage : 3.7VDC

Modulation : PCS 1900

### ■ Reference level

| Frequency (MHz) | Output (dBm) | Polarization (H/V) | S/A (dBm) | Ant gain (dBi) | Ref level (dBm) |
|-----------------|--------------|--------------------|-----------|----------------|-----------------|
| 1850.20         | 28.00        | H                  | -10.43    | 9.70           | -20.13          |
|                 |              | V                  | -10.45    | 9.70           | -20.13          |
| 1880.00         | 29.00        | H                  | -9.71     | 9.70           | -19.41          |
|                 |              | V                  | -9.43     | 9.70           | -19.13          |
| 1909.80         | 28.00        | H                  | -10.80    | 9.70           | -20.50          |
|                 |              | V                  | -10.42    | 9.70           | -20.12          |

### ■ Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | EIRP (dBm) | EIRP (W) | Battery  |
|-----------------|--------------------|--------------------|-----------------|------------|----------|----------|
| 1850.20         | -20.12             | H                  | 325             | 28.01      | 0.632    | Standard |
| 1880.00         | -19.70             | H                  | 324             | 28.71      | 0.743    | Standard |
| 1909.80         | -20.79             | H                  | 335             | 27.71      | 0.590    | Standard |

### ■ EDGE Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | EIRP (dBm) | EIRP (W) | Battery  |
|-----------------|--------------------|--------------------|-----------------|------------|----------|----------|
| 1880.00         | -25.21             | H                  | 328             | 23.17      | 0.207    | Standard |

**NOTE : Standard batteries are the only battery options for this phone**

- All modes of operation were investigated, and the worst-case results are reported.

**Radiated measurements at 3 meters by Substitution Method**

### 6.3. GSM850 Radiated Spurious & Harmonic measurement

Operating Frequency : 824.20 MHz(Low), 836.60MHz(Middle), 848.80MHz(High)

Measured Output Power : 32.22 dBm = 1.667 W

Modulation Signal : GSM850

Limit :  $43 + 10\log_{10}(P) = 45.22 \text{ dBc}$

#### ■ Result

| Channel | Harmonic | Frequency (MHz) | From EUT Tested level (dBm) | Result (dBc) | POL (H/V) |
|---------|----------|-----------------|-----------------------------|--------------|-----------|
| 128     | 2        | 1648.40         | -44.61                      | 66.19        | H         |
|         | 3        | 2472.60         | -53.77                      | 70.17        | V         |
|         | 4        | 3296.80         | -61.95                      | 74.43        | V         |
|         | 5        | 4121.00         | -68.45                      | 78.65        | V         |
|         | 6        | 4945.20         | -                           | -            | -         |
|         | 7        | 5769.40         | -                           | -            | -         |
| 190     | 2        | 1673.20         | -50.88                      | 71.79        | H         |
|         | 3        | 2509.80         | -54.82                      | 71.28        | H         |
|         | 4        | 3346.40         | -64.33                      | 77.33        | V         |
|         | 5        | 4183.00         | -68.33                      | 78.56        | V         |
|         | 6        | 5019.60         | -                           | -            | -         |
|         | 7        | 5856.20         | -                           | -            | -         |
| 251     | 2        | 1697.60         | -56.35                      | 77.07        | H         |
|         | 3        | 2546.40         | -58.11                      | 75.04        | H         |
|         | 4        | 3395.20         | -65.37                      | 78.48        | H         |
|         | 5        | 4244.00         | -68.43                      | 78.53        | V         |
|         | 6        | 5092.80         | -                           | -            | -         |
|         | 7        | 5941.60         | -                           | -            | -         |

#### NOTE :

1. "-" Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. The spectrum is measured from 30MHz to the 10<sup>th</sup> harmonic and All modes of operation were investigated, and the worst-case results are reported..

#### Radiated Spurious Emission measurements at 3 meters by Substitution Method

#### 6.4. GSM1900 Radiated Spurious & Harmonic measurement

Operating Frequency : 1850.2 MHz(Low), 1880.00 MHz(Middle), 1909.80 MHz(High)

Measured Output Power : 28.71 dBm = 0.743 W

Modulation Signal : GSM1900

Limit :  $43 + 10\log_{10}(P) = 41.71 \text{ dBc}$

##### ■ Result

| Channel | Harmonic | Frequency (MHz) | From EUT Tested level (dBm) | Result (dBc) | POL (H/V) |
|---------|----------|-----------------|-----------------------------|--------------|-----------|
| 512     | 2        | 3700.40         | -62.07                      | 66.48        | V         |
|         | 3        | 5550.60         | -62.28                      | 62.23        | H         |
|         | 4        | 7400.80         | -69.57                      | 65.97        | H         |
|         | 5        | 9251.00         | -61.71                      | 53.93        | V         |
|         | 6        | 11101.20        | -60.68                      | 48.72        | V         |
|         | 7        | 12951.40        | -                           | -            | -         |
| 661     | 2        | 3760.00         | -63.64                      | 67.74        | V         |
|         | 3        | 5640.00         | -62.10                      | 62.33        | H         |
|         | 4        | 7520.00         | -69.38                      | 66.19        | V         |
|         | 5        | 9400.00         | -61.76                      | 53.85        | V         |
|         | 6        | 11280.00        | -63.53                      | 51.11        | V         |
|         | 7        | 13160.00        | -                           | -            | -         |
| 810     | 2        | 3819.60         | -64.86                      | 69.00        | H         |
|         | 3        | 5729.40         | -65.02                      | 64.05        | H         |
|         | 4        | 7639.20         | -69.46                      | 66.06        | V         |
|         | 5        | 9549.00         | -64.98                      | 57.17        | H         |
|         | 6        | 11458.80        | -66.57                      | 53.69        | H         |
|         | 7        | 13368.60        | -                           | -            | -         |

##### NOTE :

1. "-" Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. The spectrum is measured from 30MHz to the 10<sup>th</sup> harmonic and All modes of operation were investigated, and the worst-case results are reported.

#### Radiated Spurious Emission measurements at 3 meters by Substitution Method

## 6.5. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : 2008. 02. 03

Test Engineer : JH WOO

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Tx Level to radiate - 13dBm
- ④ ESI Level received from Tx with - 13dBm
- ⑤ Tested Level from EUT
- ⑥ = ERP+2.14 - (-13 + ⑤ - ④)

| CH  | Har | Frequency (MHz) | ① Tx C/L dB | ②Tx Horn Gain dBi | ③Tx Level dBm | ④ ESI Level : H dBm | ④ ESI Level : V dBm | ⑤Tested EUT Level : H dBm | ⑤Tested EUT Level : H dBm | ⑥ Result EUT : H (dBc) | ⑥ Result EUT : V (dBc) |
|-----|-----|-----------------|-------------|-------------------|---------------|---------------------|---------------------|---------------------------|---------------------------|------------------------|------------------------|
| 128 | 2   | 1648.40         | -7.44       | 9.50              | -15.10        | -25.78              | -25.24              | -44.61                    | -54.11                    | 66.19                  | 76.23                  |
|     | 3   | 2472.60         | -9.40       | 10.70             | -14.30        | -30.65              | -30.96              | -53.99                    | -53.77                    | 70.70                  | 70.17                  |
|     | 4   | 3296.80         | -10.62      | 12.30             | -14.70        | -34.30              | -34.88              | -62.10                    | -61.95                    | 75.16                  | 74.43                  |
|     | 5   | 4121.00         | -12.18      | 12.50             | -13.30        | -37.37              | -37.16              | -68.93                    | -68.45                    | 78.92                  | 78.65                  |
|     | 6   | 4945.20         | -13.25      | 12.70             | -12.50        | -39.95              | -40.17              | -                         | -                         | -                      | -                      |
|     | 7   | 5769.40         | -14.88      | 12.90             | -11.00        | -42.25              | -42.16              | -                         | -                         | -                      | -                      |
| 190 | 2   | 1673.20         | -7.53       | 9.50              | -15.00        | -26.45              | -26.15              | -50.88                    | -57.56                    | 71.79                  | 78.77                  |
|     | 3   | 2509.80         | -9.52       | 10.70             | -14.20        | -30.90              | -30.96              | -54.82                    | -56.71                    | 71.28                  | 73.11                  |
|     | 4   | 3346.40         | -10.72      | 12.30             | -14.60        | -34.28              | -34.36              | -65.17                    | -64.33                    | 78.25                  | 77.33                  |
|     | 5   | 4183.00         | -12.46      | 12.50             | -13.00        | -36.90              | -37.13              | -68.80                    | -68.33                    | 79.26                  | 78.56                  |
|     | 6   | 5019.60         | -13.94      | 12.70             | -11.80        | -40.04              | -40.64              | -                         | -                         | -                      | -                      |
|     | 7   | 5856.20         | -14.92      | 12.90             | -11.00        | -42.75              | -42.94              | -                         | -                         | -                      | -                      |
| 251 | 2   | 1697.60         | -7.61       | 9.50              | -14.90        | -26.64              | -26.78              | -56.35                    | -62.76                    | 77.07                  | 83.34                  |
|     | 3   | 2546.40         | -9.56       | 10.70             | -14.10        | -30.32              | -30.81              | -58.11                    | -58.49                    | 75.15                  | 75.04                  |
|     | 4   | 3395.20         | -10.77      | 12.30             | -14.50        | -34.25              | -34.55              | -65.37                    | -66.23                    | 78.48                  | 79.04                  |
|     | 5   | 4244.00         | -12.36      | 12.50             | -13.10        | -37.07              | -37.26              | -68.79                    | -68.43                    | 79.08                  | 78.53                  |
|     | 6   | 5092.80         | -14.20      | 12.70             | -11.50        | -40.12              | -40.75              | -                         | -                         | -                      | -                      |
|     | 7   | 5941.60         | -15.12      | 12.90             | -10.80        | -43.10              | -42.67              | -                         | -                         | -                      | -                      |

## 6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : 2008. 02. 03

Test Engineer : JH WOO

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Tx Level to radiate - 13dBm
- ④ ESI Level received from Tx with - 13dBm
- ⑤ Tested Level from EUT
- ⑥ = EIRP - (-13 + ⑤ - ④)

| CH  | Har | Frequency (MHz) | ① Tx C/L dB | ②Tx Horn Gain dBi | ③Tx Level dBm | ④ ESI Level : H dBm | ④ ESI Level : V dBm | ⑤Tested EUT Level : H dBm | ⑤Tested EUT Level : H dBm | ⑥ Result EUT : H (dBc) | ⑥ Result EUT : V (dBc) |
|-----|-----|-----------------|-------------|-------------------|---------------|---------------------|---------------------|---------------------------|---------------------------|------------------------|------------------------|
| 512 | 2   | 3700.40         | -11.22      | 12.40             | -14.20        | -37.48              | 12.40               | -64.45                    | -62.07                    | 68.68                  | 66.48                  |
|     | 3   | 5550.60         | -14.53      | 12.90             | -11.40        | -41.76              | 12.90               | -62.28                    | -63.74                    | 62.23                  | 63.73                  |
|     | 4   | 7400.80         | -17.53      | 10.50             | -6.00         | -45.31              | 10.50               | -69.57                    | -69.90                    | 65.97                  | 66.58                  |
|     | 5   | 9251.00         | -20.07      | 11.20             | -4.10         | -49.28              | 11.20               | -63.21                    | -61.71                    | 55.64                  | 53.93                  |
|     | 6   | 11101.20        | -22.36      | 11.60             | -2.20         | -53.59              | 11.60               | -64.09                    | -60.68                    | 52.21                  | 48.72                  |
|     | 7   | 12951.40        | -23.92      | 12.90             | -2.00         | -56.64              | 12.90               | -                         | -                         | -                      | -                      |
| 661 | 2   | 3760.00         | -11.50      | 12.40             | -13.90        | -37.64              | 12.40               | -65.21                    | -63.64                    | 69.28                  | 67.74                  |
|     | 3   | 5640.00         | -14.83      | 12.90             | -11.10        | -41.41              | 12.90               | -62.10                    | -62.38                    | 62.40                  | 62.33                  |
|     | 4   | 7520.00         | -17.89      | 10.60             | -5.70         | -44.71              | 10.60               | -69.61                    | -69.38                    | 66.61                  | 66.19                  |
|     | 5   | 9400.00         | -20.33      | 11.60             | -4.30         | -49.48              | 11.60               | -66.16                    | -61.76                    | 58.39                  | 53.85                  |
|     | 6   | 11280.00        | -22.49      | 12.10             | -2.60         | -54.00              | 12.10               | -64.82                    | -63.53                    | 52.53                  | 51.11                  |
|     | 7   | 13160.00        | -24.50      | 12.80             | -1.30         | -56.48              | 12.80               | -                         | -                         | -                      | -                      |
| 810 | 2   | 3819.60         | -11.73      | 12.40             | -13.70        | -37.23              | 12.40               | -64.86                    | -65.14                    | 69.34                  | 69.00                  |
|     | 3   | 5729.40         | -14.73      | 13.00             | -11.30        | -42.68              | 13.00               | -65.02                    | -66.65                    | 64.05                  | 66.09                  |
|     | 4   | 7639.20         | -18.21      | 11.20             | -6.00         | -45.08              | 11.20               | -69.69                    | -69.46                    | 66.32                  | 66.06                  |
|     | 5   | 9549.00         | -21.01      | 11.70             | -3.70         | -49.52              | 11.70               | -64.98                    | -70.11                    | 57.17                  | 62.54                  |
|     | 6   | 11458.80        | -22.20      | 11.70             | -2.50         | -54.59              | 11.70               | -66.57                    | -69.39                    | 53.69                  | 56.61                  |
|     | 7   | 13368.60        | -24.36      | 12.30             | -0.90         | -58.12              | 12.30               | -                         | -                         | -                      | -                      |

## 6.7. Frequency Stability

### 6.7.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

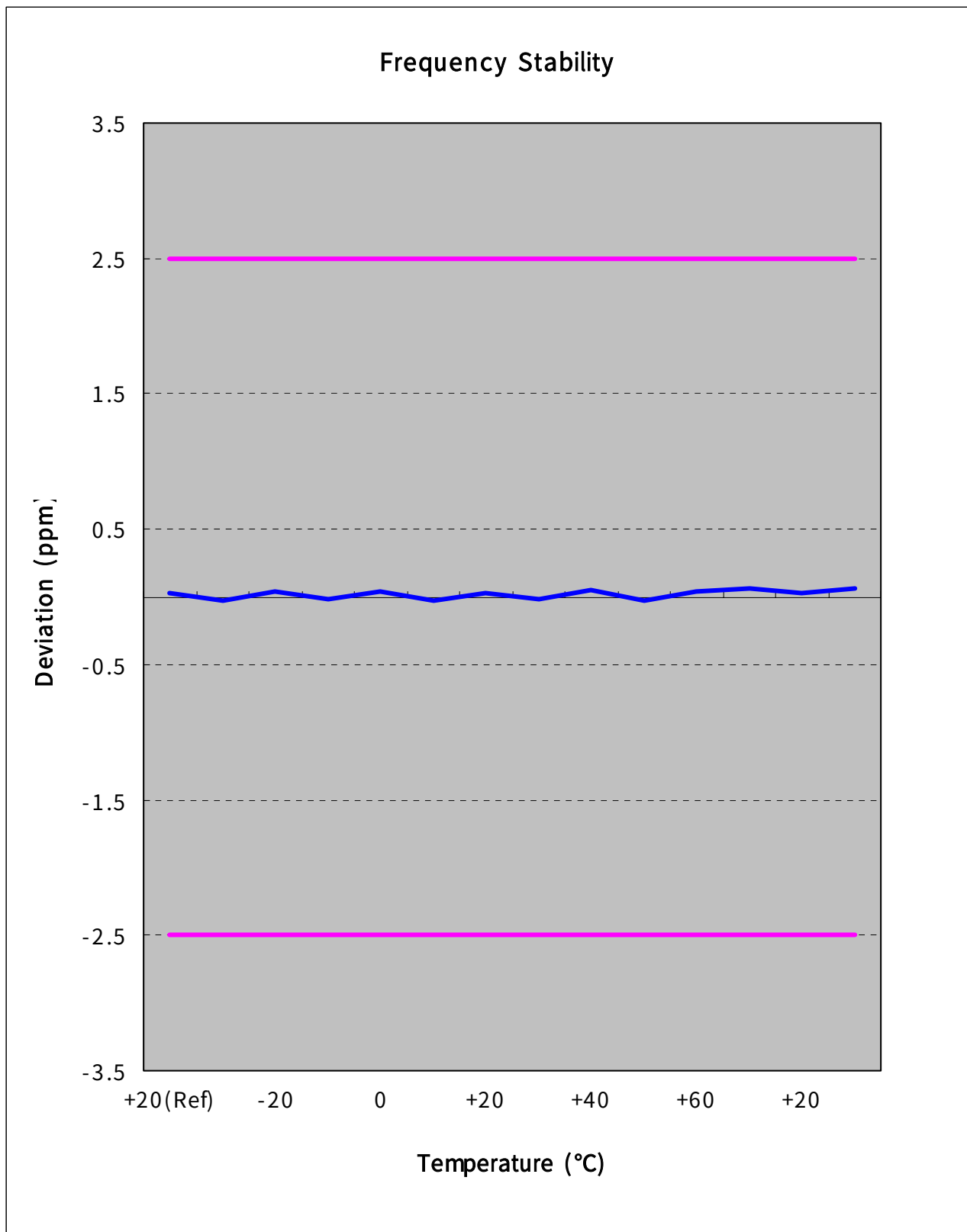
Deviation Limit :  $\pm 0.00025$  % or 2.5ppm

| Voltage (%)   | Power (VDC) | Temp. (°C) | Frequency Error (Hz) | Frequency (Hz) | Deviation (%) | ppm    |
|---------------|-------------|------------|----------------------|----------------|---------------|--------|
| 100%          | 3.70        | +20(Ref)   | 20.92                | 836,600,021    | 0.000003      | 0.025  |
| 100%          |             | -30        | -23.54               | 836,599,976    | -0.000003     | -0.028 |
| 100%          |             | -20        | 29.35                | 836,600,029    | 0.000004      | 0.035  |
| 100%          |             | -10        | -15.35               | 836,599,985    | -0.000002     | -0.018 |
| 100%          |             | 0          | 30.59                | 836,600,031    | 0.000004      | 0.037  |
| 100%          |             | +10        | -20.35               | 836,599,980    | -0.000002     | -0.024 |
| 100%          |             | +20        | 20.92                | 836,600,021    | 0.000003      | 0.025  |
| 100%          |             | +30        | -10.45               | 836,599,990    | -0.000001     | -0.012 |
| 100%          |             | +40        | 40.15                | 836,600,040    | 0.000005      | 0.048  |
| 100%          |             | +50        | -20.56               | 836,599,979    | -0.000002     | -0.025 |
| 100%          |             | +60        | 30.56                | 836,600,031    | 0.000004      | 0.037  |
| 85%           | 3.35        | +20        | 47.84                | 836,600,048    | 0.000006      | 0.057  |
| 115%          | 4.26        | +20        | 23.56                | 836,600,024    | 0.000003      | 0.028  |
| Batt.Endpoint | 3.35        | +20        | 47.84                | 836,600,048    | 0.000006      | 0.057  |

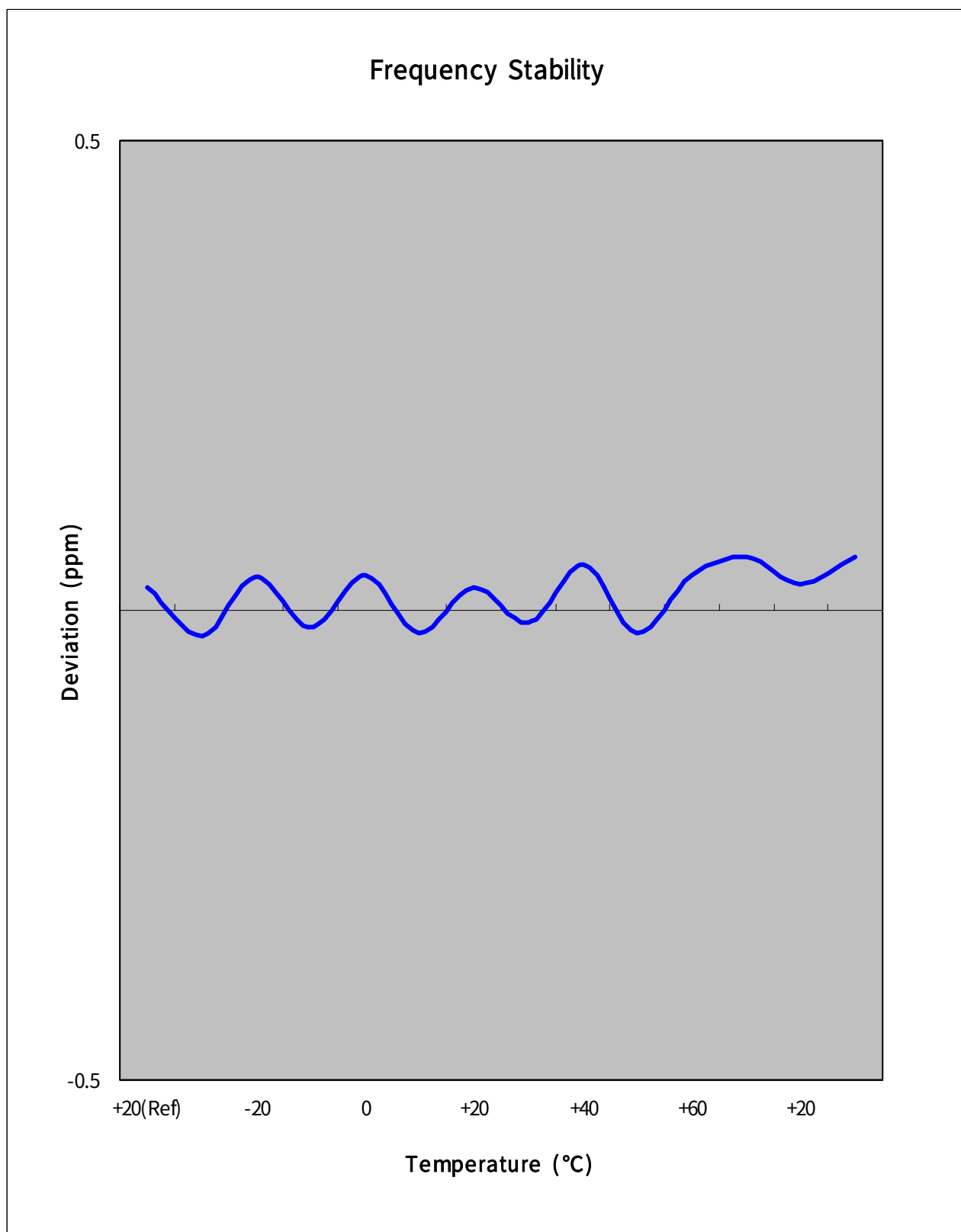
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

### 6.7.2. GSM850 Frequency Stability Graph



## Zoom IN



### 6.7.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

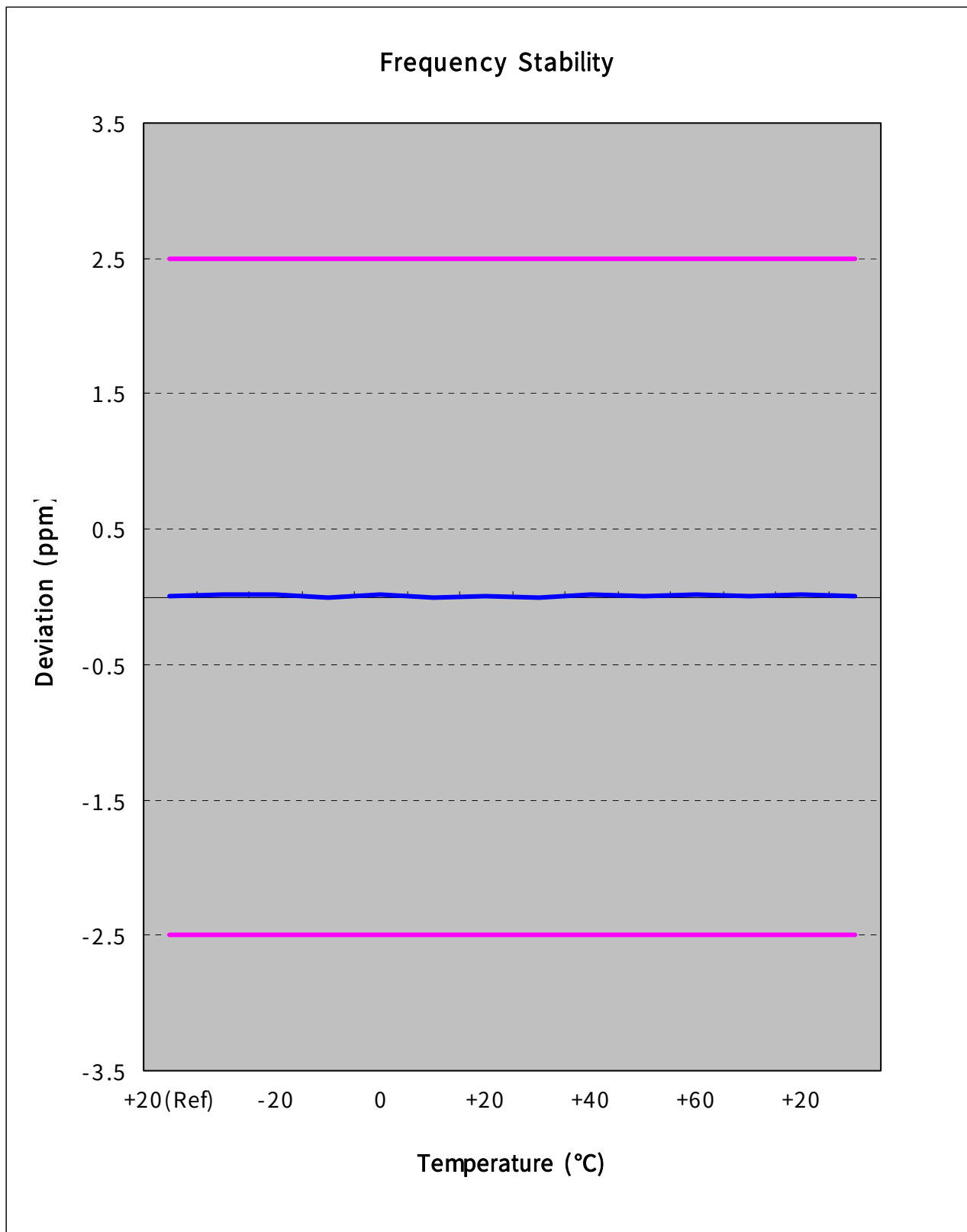
Deviation Limit :  $\pm 0.00025$  % or 2.5ppm

| Voltage (%)   | Power (VDC) | Temp. (°C) | Frequency Error (Hz) | Frequency (Hz) | Deviation (%) | ppm    |
|---------------|-------------|------------|----------------------|----------------|---------------|--------|
| 100%          | 3.70        | +20(Ref)   | 20.92                | 1,880,000,021  | 0.000001      | 0.011  |
| 100%          |             | -30        | 30.56                | 1,880,000,031  | 0.000002      | 0.016  |
| 100%          |             | -20        | 29.35                | 1,880,000,029  | 0.000002      | 0.016  |
| 100%          |             | -10        | -15.35               | 1,879,999,985  | -0.000001     | -0.008 |
| 100%          |             | 0          | 30.59                | 1,880,000,031  | 0.000002      | 0.016  |
| 100%          |             | +10        | -10.54               | 1,879,999,989  | -0.000001     | -0.006 |
| 100%          |             | +20        | 20.92                | 1,880,000,021  | 0.000001      | 0.011  |
| 100%          |             | +30        | -10.45               | 1,879,999,990  | -0.000001     | -0.006 |
| 100%          |             | +40        | 40.15                | 1,880,000,040  | 0.000002      | 0.021  |
| 100%          |             | +50        | 10.45                | 1,880,000,010  | 0.000001      | 0.006  |
| 100%          |             | +60        | 30.56                | 1,880,000,031  | 0.000002      | 0.016  |
| 85%           | 3.35        | +20        | 20.58                | 1,880,000,021  | 0.000001      | 0.011  |
| 115%          | 4.26        | +20        | 23.56                | 1,880,000,024  | 0.000001      | 0.013  |
| Batt.Endpoint | 3.35        | +20        | 20.58                | 1,880,000,021  | 0.000001      | 0.011  |

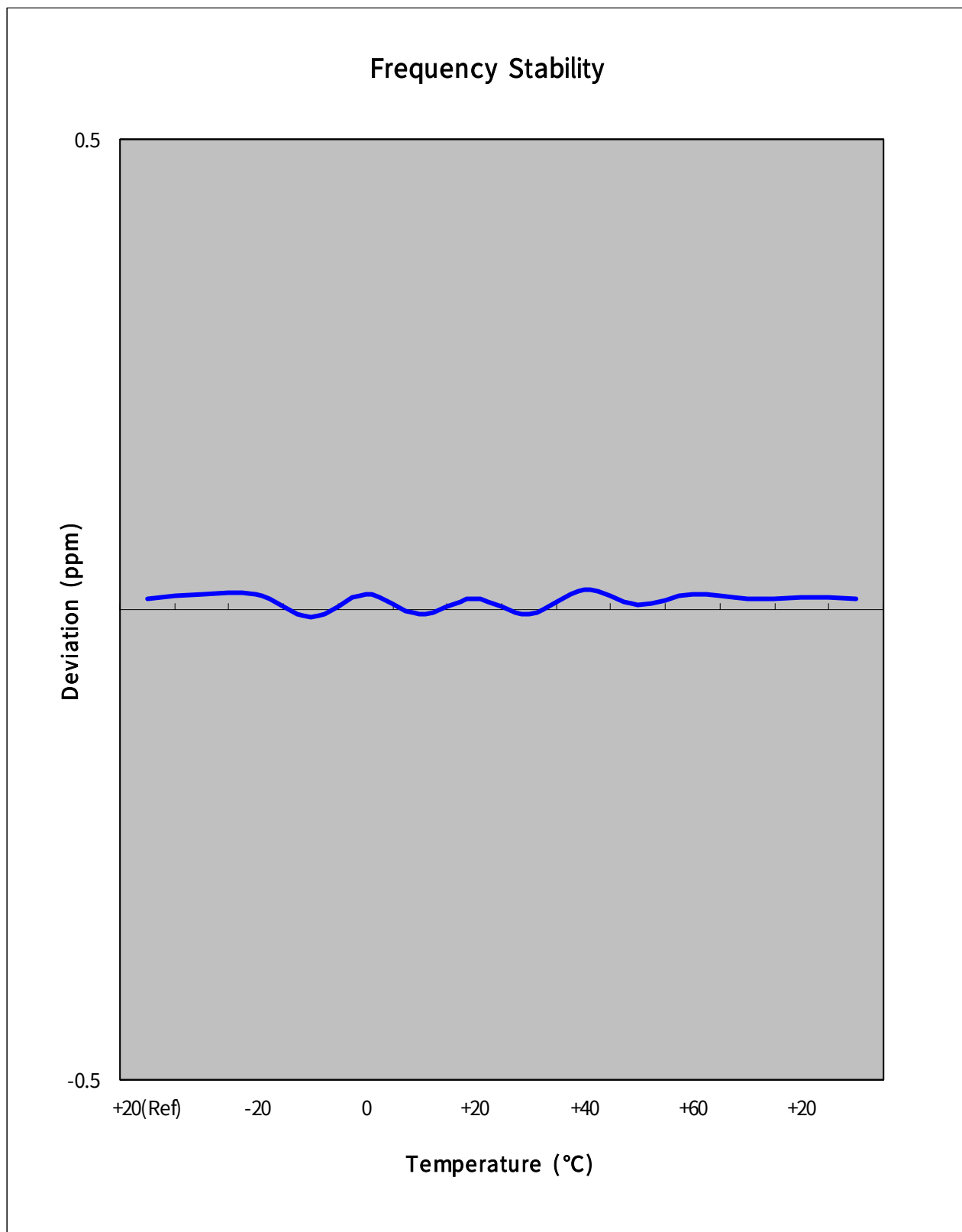
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

#### 6.7.4. GSM1900 Frequency Stability Graph



## Zoom IN





## 7. CONCLUSION

The data collected shows that the SAMSUNG Dual-Band GSM/EDGE 850/1900 Phone.  
FCC ID : A3LSGHA227 complies with all the requirements of Parts 2,22,24 of the FCC Rules.

## 8. TEST PLOTS

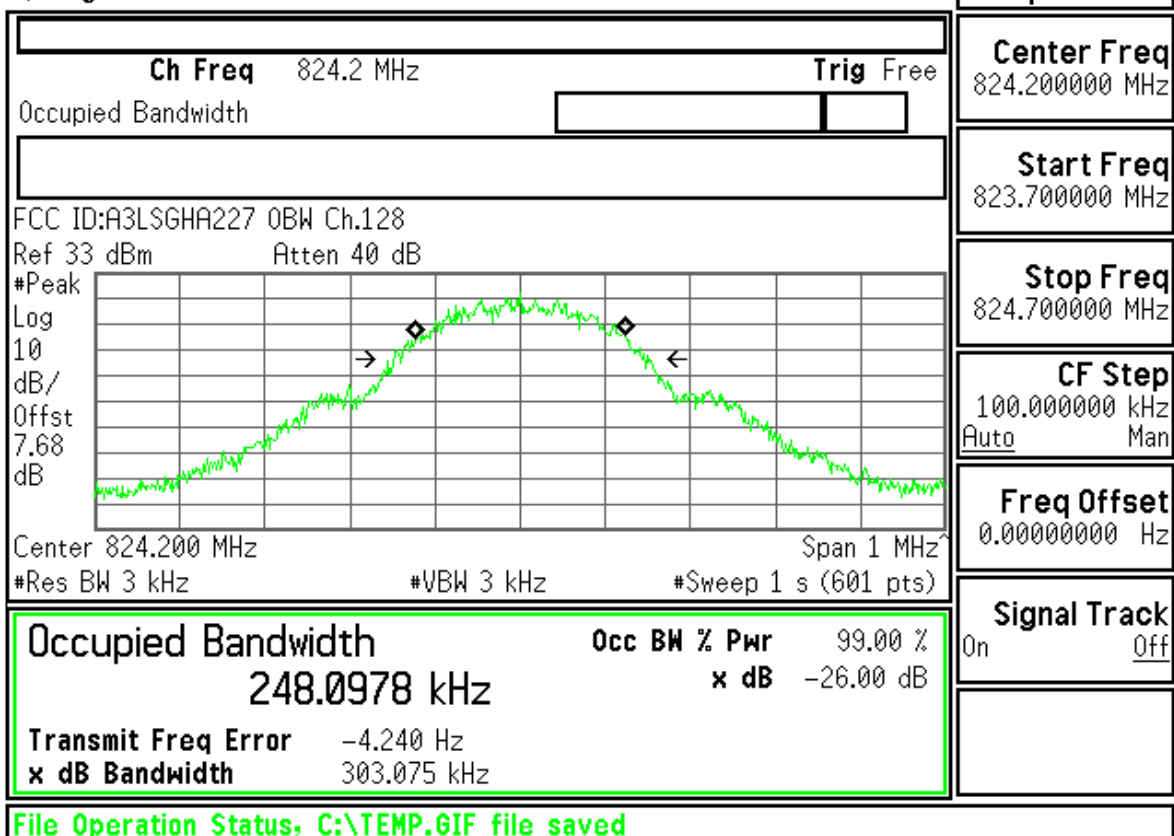
GSM850



Agilent

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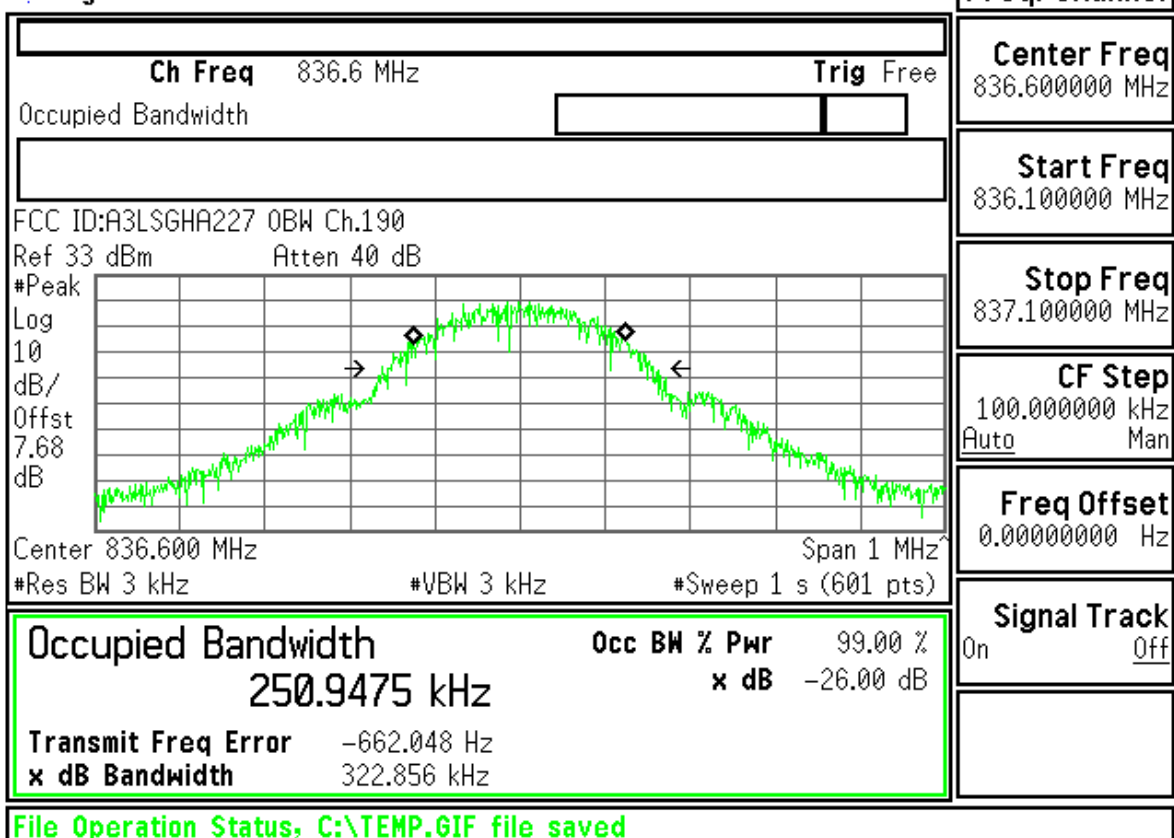
Freq/Channel

Center Freq  
824.200000 MHzStart Freq  
823.700000 MHzStop Freq  
824.700000 MHzCF Step  
100.000000 kHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
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Agilent

R T

Freq/Channel

Center Freq  
836.600000 MHzStart Freq  
836.100000 MHzStop Freq  
837.100000 MHzCF Step  
100.000000 kHz  
Auto ManFreq Offset  
0.00000000 HzSignal Track  
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Agilent

R T

Freq/Channel

Ch Freq 848.8 MHz Trig Free  
Occupied Bandwidth

Center Freq  
848.800000 MHz

Start Freq  
848.300000 MHz

Stop Freq  
849.300000 MHz

CF Step  
100.000000 kHz  
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Freq Offset  
0.00000000 Hz

Signal Track  
On Off

FCC ID:A3LSGHA227 0BW Ch.251

Ref 33 dBm Atten 40 dB

#Peak

Log

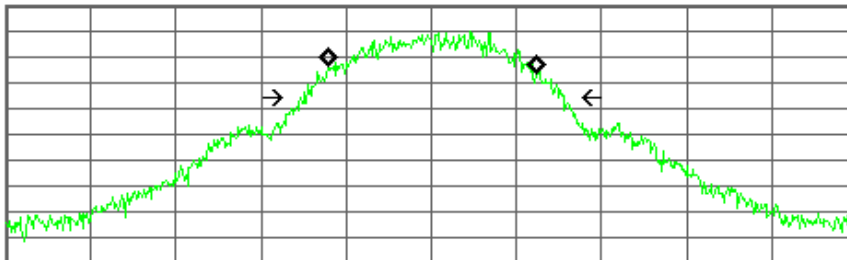
10

dB/

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7.68

dB



Center 848.800 MHz

Span 1 MHz

#Res BW 3 kHz

#VBW 3 kHz

#Sweep 1 s (601 pts)

Occupied Bandwidth  
249.0114 kHz

Occ BW % Pwr 99.00 %  
x dB -26.00 dB

Transmit Freq Error 744.521 Hz  
x dB Bandwidth 313.379 kHz

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Rx Spurious Emission

Mkr1 884.00 MHz

Ref -50 dBm

#Atten 0 dB

-84.57 dBm

#Avg

Log

10

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8.05

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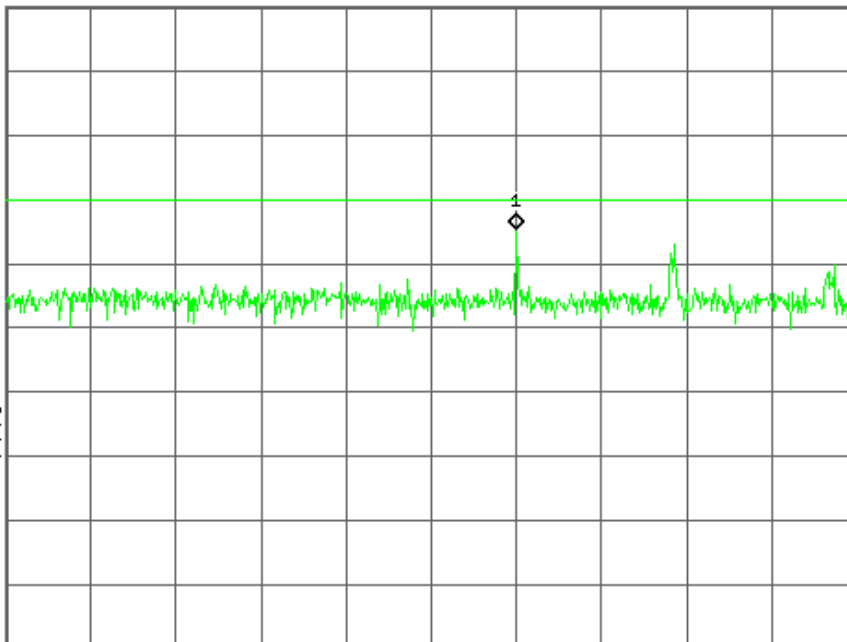
M1 S2

S3 FC

£(f):

FTun

Swp



Start 869.00 MHz

Stop 894.00 MHz

#Res BW 10 kHz

#VBW 10 kHz

#Sweep 1 s (601 pts)

Center Freq  
881.500000 MHz

Start Freq  
869.000000 MHz

Stop Freq  
894.000000 MHz

CF Step  
2.50000000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

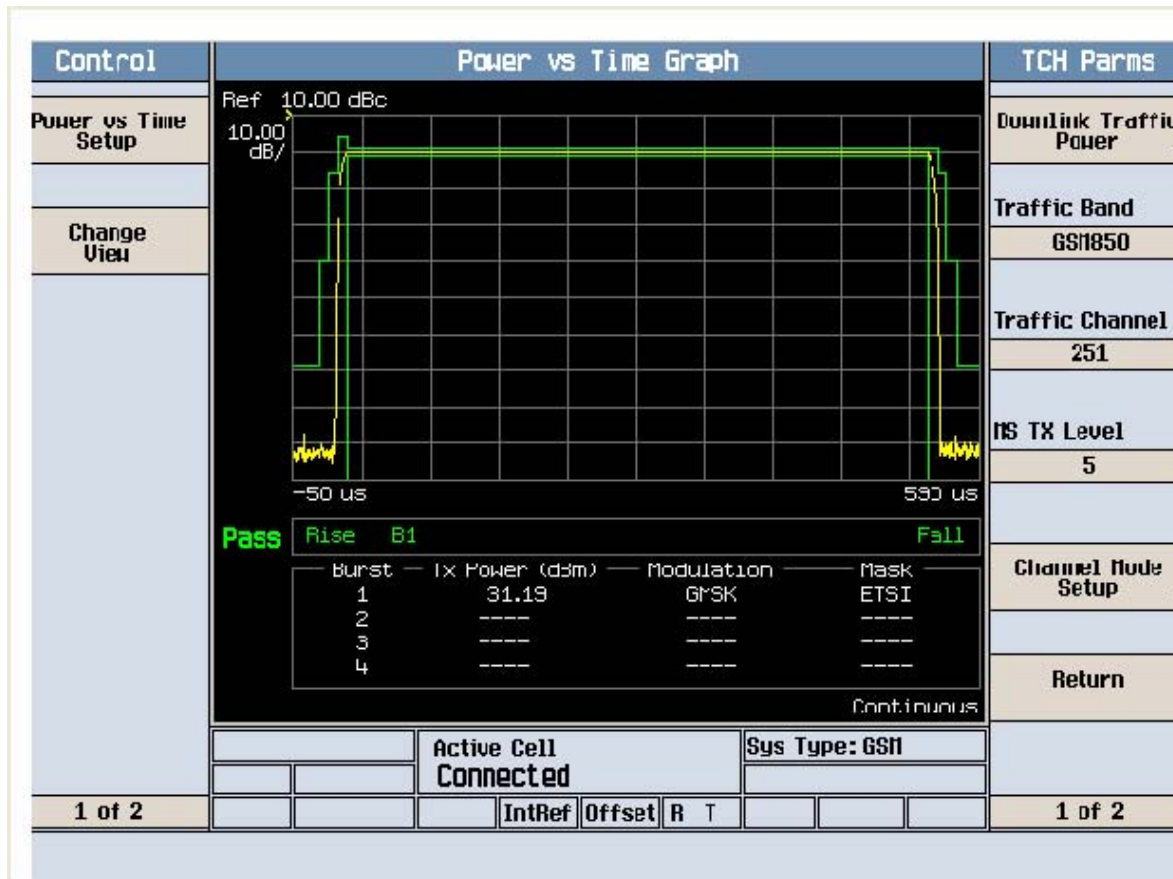
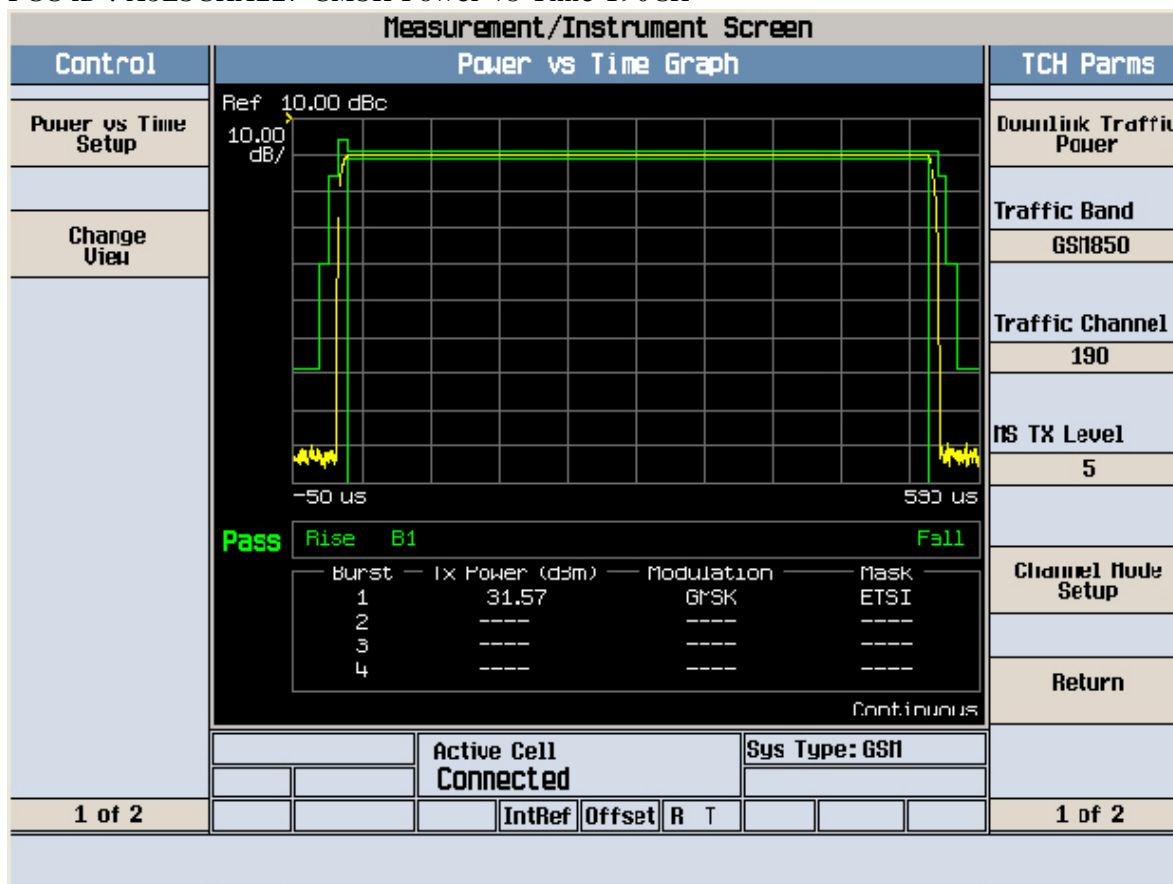
File Operation Status, C:\TEMP.GIF file saved

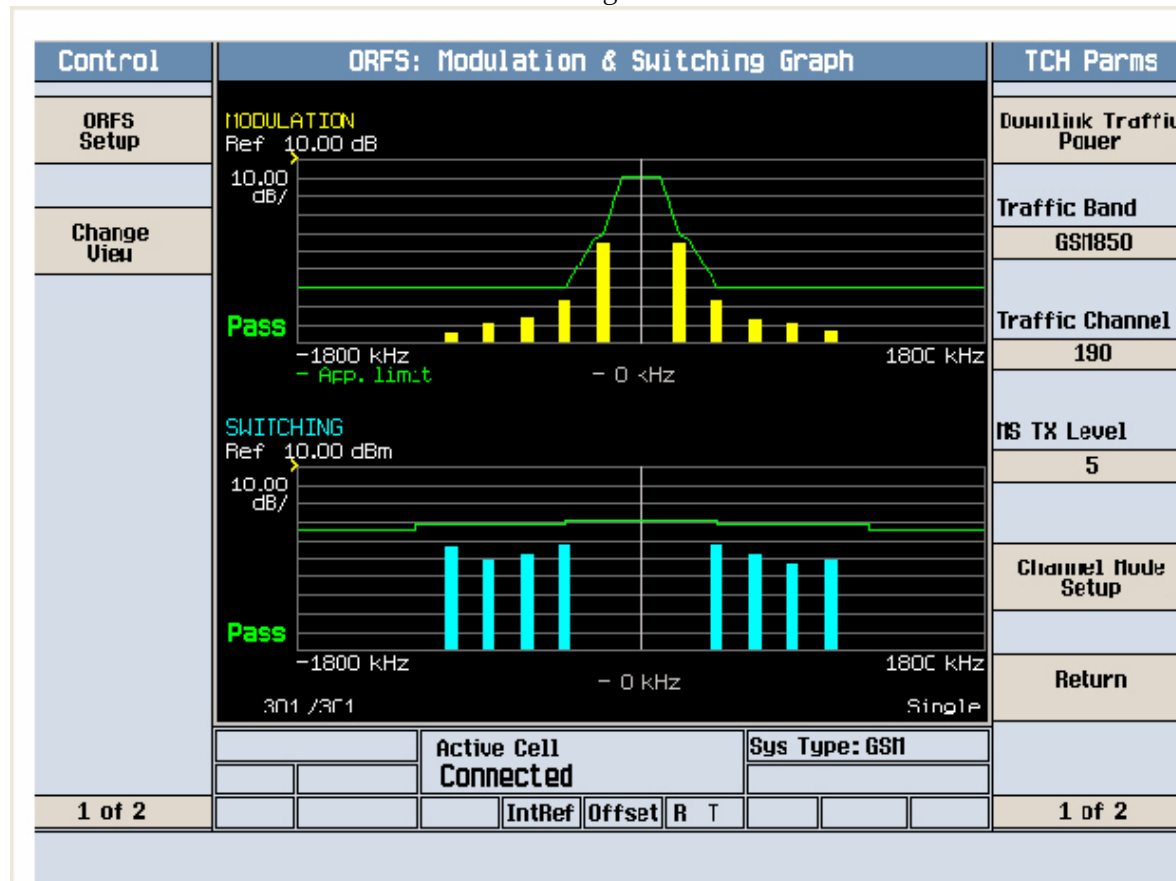
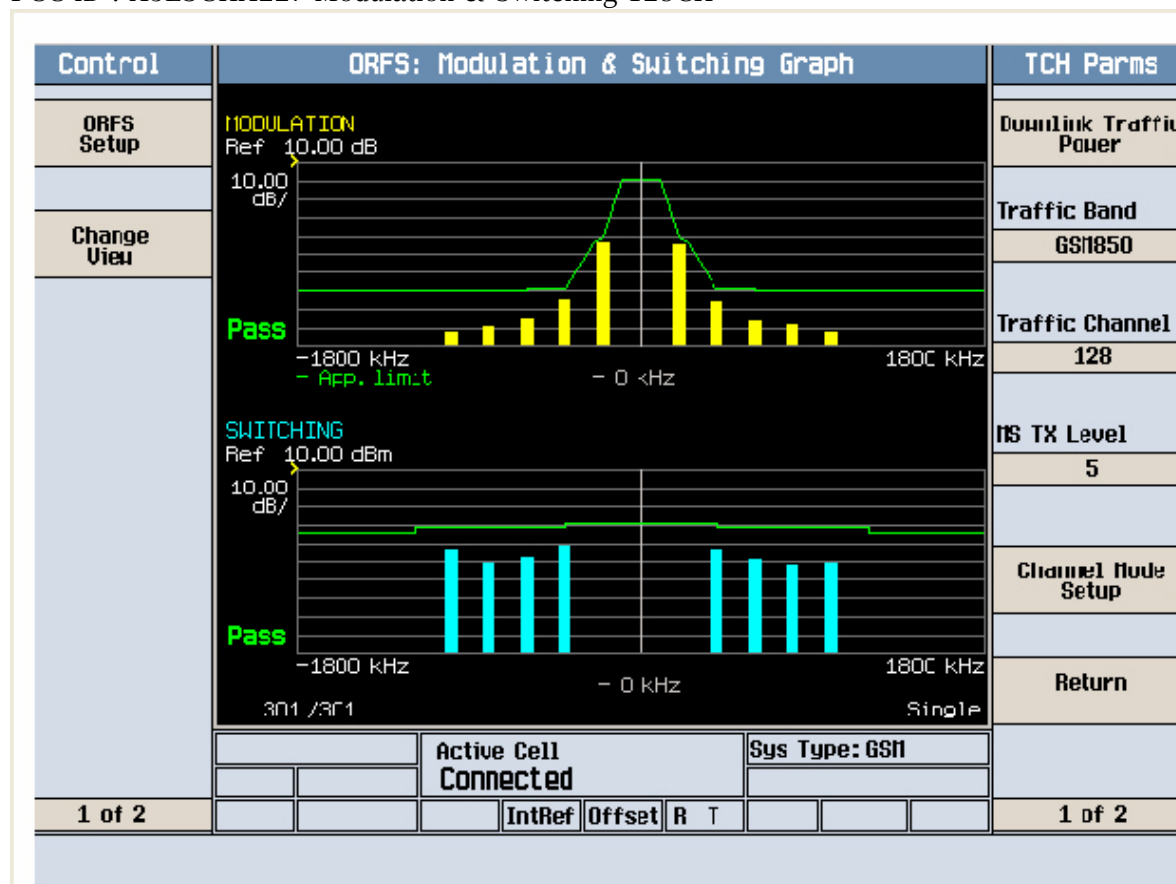
| Control                | Transmit Power |  |  |  |  |  |  |  |  |  | TCH Parms              |  |
|------------------------|----------------|--|--|--|--|--|--|--|--|--|------------------------|--|
| Transmit Power Setup ▾ |                |  |  |  |  |  |  |  |  |  | Downlink Traffic Power |  |
|                        |                |  |  |  |  |  |  |  |  |  | Traffic Band           |  |
|                        |                |  |  |  |  |  |  |  |  |  | GS1850                 |  |
|                        |                |  |  |  |  |  |  |  |  |  | Traffic Channel        |  |
|                        |                |  |  |  |  |  |  |  |  |  | 128                    |  |
| Swap Window Positions  |                |  |  |  |  |  |  |  |  |  | MS TX Level            |  |
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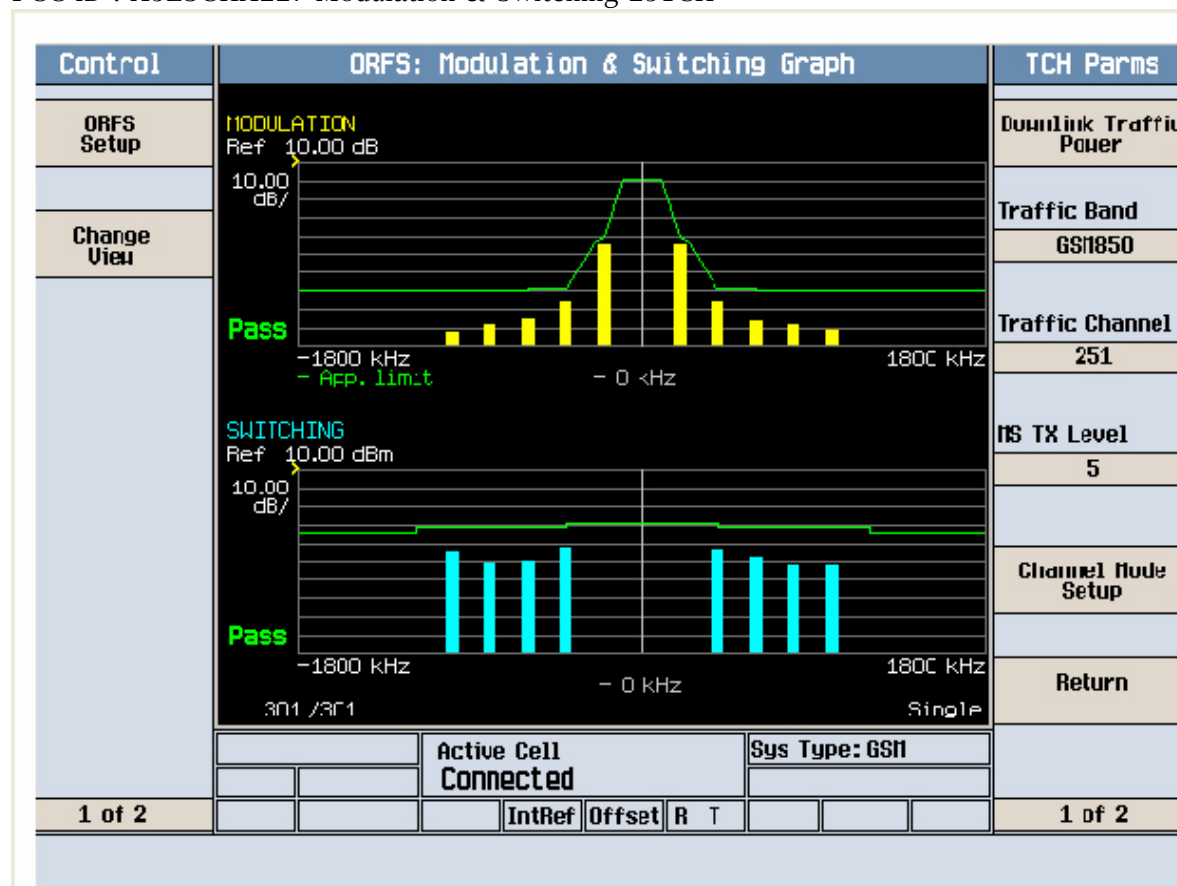
| Control                | Transmit Power                                                                                                                                                                                                                                                                                                                                                       |       |                       |        |      |   |               |                    | TCH Parms    |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
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| Transmit Power Setup ▾ | <table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td></tr><tr><td>Burst Power</td><td>31.59</td><td>----</td><td>----</td><td>----</td></tr><tr><td>Estimated Carrier Power</td><td>31.59</td><td>----</td><td>----</td><td>----</td></tr></table>                                                                                    |       |                       |        |      |   |               |                    |              | Burst 1      | Burst 2     | Burst 3      | Burst 4 | Burst Power | 31.59 | ----   | ----    | ---- | Estimated Carrier Power | 31.59 | ----    | ---- | ---- | Downlink Traffic Power |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               |                    |              | Burst 1      | Burst 2     | Burst 3      | Burst 4 |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               |                    | Burst Power  | 31.59        | ----        | ----         | ----    |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        | Estimated Carrier Power                                                                                                                                                                                                                                                                                                                                              | 31.59 | ----                  | ----   | ---- |   |               |                    |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        | Single                                                                                                                                                                                                                                                                                                                                                               |       |                       |        |      |   |               |                    | Traffic Band |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | GS1850             |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
| Swap Window Positions  | <table><tr><td></td><td>Peak Phase °</td><td>RMS Phase °</td><td>Frequency Hz</td></tr><tr><td>Minimum</td><td>3.39</td><td>1.64</td><td>-13.32</td></tr><tr><td>Maximum</td><td>4.92</td><td>1.94</td><td>2.42</td></tr><tr><td>Average</td><td>4.19</td><td>1.83</td><td>-3.82</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td>Pass</td><td>Pass</td></tr></table> |       |                       |        |      |   |               |                    |              | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 3.39        | 1.64  | -13.32 | Maximum | 4.92 | 1.94                    | 2.42  | Average | 4.19 | 1.83 | -3.82                  | Pass/Fail | Pass | Pass | Pass | Traffic Channel |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               |                    |              | Peak Phase ° | RMS Phase ° | Frequency Hz |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               |                    | Minimum      | 3.39         | 1.64        | -13.32       |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        | Maximum                                                                                                                                                                                                                                                                                                                                                              | 4.92  | 1.94                  | 2.42   |      |   |               |                    |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        | Average                                                                                                                                                                                                                                                                                                                                                              | 4.19  | 1.83                  | -3.82  |      |   |               |                    |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
| Pass/Fail              | Pass                                                                                                                                                                                                                                                                                                                                                                 | Pass  | Pass                  |        |      |   |               |                    |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
| 50 / 50                |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | 190                |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | MS TX Level        |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | 5                  |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | Channel Mode Setup |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       |                       |        |      |   |               | Return             |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
| 1 of 2                 |                                                                                                                                                                                                                                                                                                                                                                      |       | Active Cell Connected |        |      |   | Sys Type: GSM |                    | 1 of 2       |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |
|                        |                                                                                                                                                                                                                                                                                                                                                                      |       | IntRef                | Offset | R    | T |               |                    |              |              |             |              |         |             |       |        |         |      |                         |       |         |      |      |                        |           |      |      |      |                 |  |  |

| Control                 | Transmit Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |       |               |        |   |   |  | TCH Parms               |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|---------------|--------|---|---|--|-------------------------|-------------|--------------|---------|---------------|--------------|-------------|--------------|---------|------|-------------------------|--------|---------|------|------|------------------------|---------|------|------|-------|-----------|------|------|------|--------------------|--|
| Transmit Power Setup    | <table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> </tr> </thead> <tbody> <tr> <td>Burst Power</td> <td>31.22</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>Estimated Carrier Power</td> <td>31.22</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>                                                                                                                                                          |      |       |               |        |   |   |  |                         | Burst 1     | Burst 2      | Burst 3 | Burst 4       | Burst Power  | 31.22       | ----         | ----    | ---- | Estimated Carrier Power | 31.22  | ----    | ---- | ---- | Downlink Traffic Power |         |      |      |       |           |      |      |      |                    |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  | Burst 1                 | Burst 2     | Burst 3      | Burst 4 |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Burst Power             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  | 31.22                   | ----        | ----         | ----    |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Estimated Carrier Power |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  | 31.22                   | ----        | ----         | ----    |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | Traffic Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | GS1850                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | Traffic Channel                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | 251                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | MS TX Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Swap Window Positions   | <table border="1"> <thead> <tr> <th colspan="4">Phase &amp; Frequency Error</th> </tr> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>3.48</td> <td>1.59</td> <td>-16.25</td> </tr> <tr> <td>Maximum</td> <td>5.00</td> <td>1.87</td> <td>-2.70</td> </tr> <tr> <td>Average</td> <td>3.92</td> <td>1.75</td> <td>-8.87</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> |      |       |               |        |   |   |  | Phase & Frequency Error |             |              |         |               | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 3.48 | 1.59                    | -16.25 | Maximum | 5.00 | 1.87 | -2.70                  | Average | 3.92 | 1.75 | -8.87 | Pass/Fail | Pass | Pass | Pass | Channel Mode Setup |  |
| Phase & Frequency Error |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  | Peak Phase °            | RMS Phase ° | Frequency Hz |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Minimum                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  | 3.48                    | 1.59        | -16.25       |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Maximum                 | 5.00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.87 | -2.70 |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Average                 | 3.92                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1.75 | -8.87 |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Pass/Fail               | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Pass | Pass  |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | Return                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | 1 of 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         | <table border="1"> <tr> <td colspan="4">Active Cell Connected</td> <td colspan="4">Sys Type: GSM</td> </tr> <tr> <td colspan="4"></td> <td colspan="4"></td> </tr> </table>                                                                                                                                                                                                                                                                                                                                   |      |       |               |        |   |   |  | Active Cell Connected   |             |              |         | Sys Type: GSM |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| Active Cell Connected   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       | Sys Type: GSM |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       |               |        |   |   |  |                         |             |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |
| 1 of 2                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |      |       | IntRef        | Offset | R | T |  |                         | 1 of 2      |              |         |               |              |             |              |         |      |                         |        |         |      |      |                        |         |      |      |       |           |      |      |      |                    |  |

| Control               | Power vs Time Graph                                                                                                                                                         |  |  |               |        |   |   |  | TCH Parms              |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------|--------|---|---|--|------------------------|--------|--|--|---------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Power vs Time Setup   |                                                                                                                                                                             |  |  |               |        |   |   |  | Downlink Traffic Power |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       |                                                                                                                                                                             |  |  |               |        |   |   |  | Traffic Band           |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       |                                                                                                                                                                             |  |  |               |        |   |   |  | GS1850                 |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Change View           |                                                                                                                                                                             |  |  |               |        |   |   |  | Traffic Channel        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | 128                                                                                                                                                                         |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | MS TX Level                                                                                                                                                                 |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | 5                                                                                                                                                                           |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | Channel Mode Setup                                                                                                                                                          |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | Return                                                                                                                                                                      |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | 1 of 2                                                                                                                                                                      |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       | <table border="1"> <tr> <td colspan="4">Active Cell Connected</td> <td colspan="4">Sys Type: GSM</td> </tr> <tr> <td colspan="4"></td> <td colspan="4"></td> </tr> </table> |  |  |               |        |   |   |  | Active Cell Connected  |        |  |  | Sys Type: GSM |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Active Cell Connected |                                                                                                                                                                             |  |  | Sys Type: GSM |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                       |                                                                                                                                                                             |  |  |               |        |   |   |  |                        |        |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1 of 2                |                                                                                                                                                                             |  |  | IntRef        | Offset | R | T |  |                        | 1 of 2 |  |  |               |  |  |  |  |  |  |  |  |  |  |  |  |  |







Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.128

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

1.25500000 GHz

Start Freq

10.0000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.128

Mkr1 395.7 MHz

Ref 33 dBm

Atten 40 dB

-34.35 dBm

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

414.600000 MHz

Start Freq

10.0000000 MHz

Stop Freq

819.200000 MHz

CF Step

80.9200000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 414.6 MHz

Span 809.2 MHz

#Res BW 1 MHz

#VBW 1 MHz

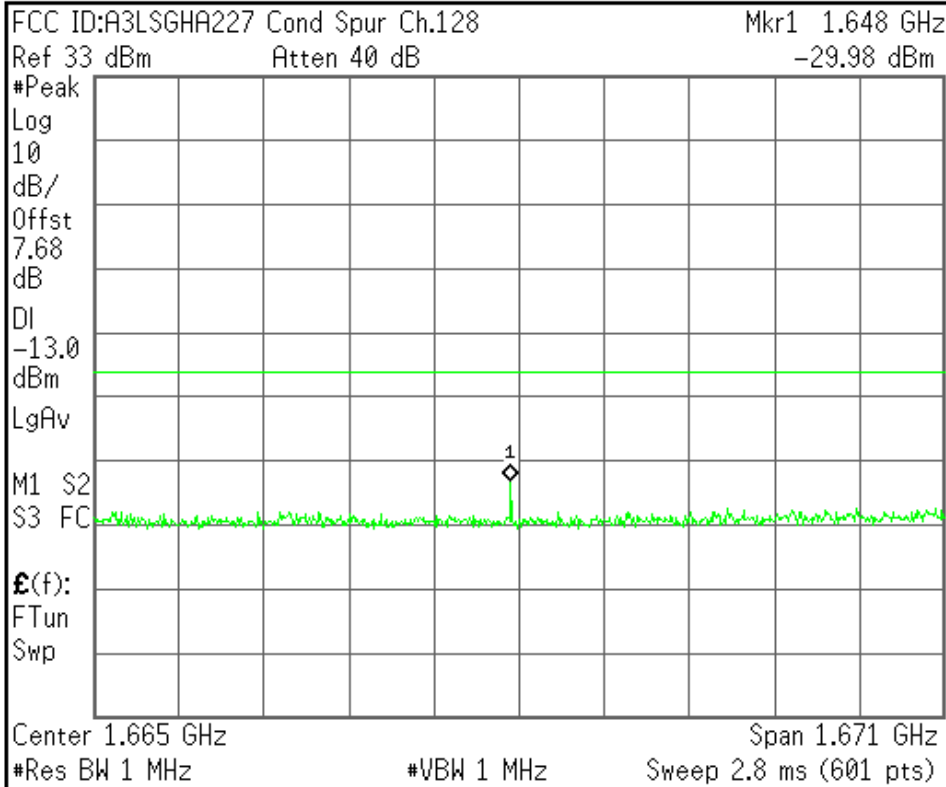
Sweep 1.36 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
 1.66460000 GHz

Start Freq  
 829.200000 MHz

Stop Freq  
 2.50000000 GHz

CF Step  
 167.080000 MHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

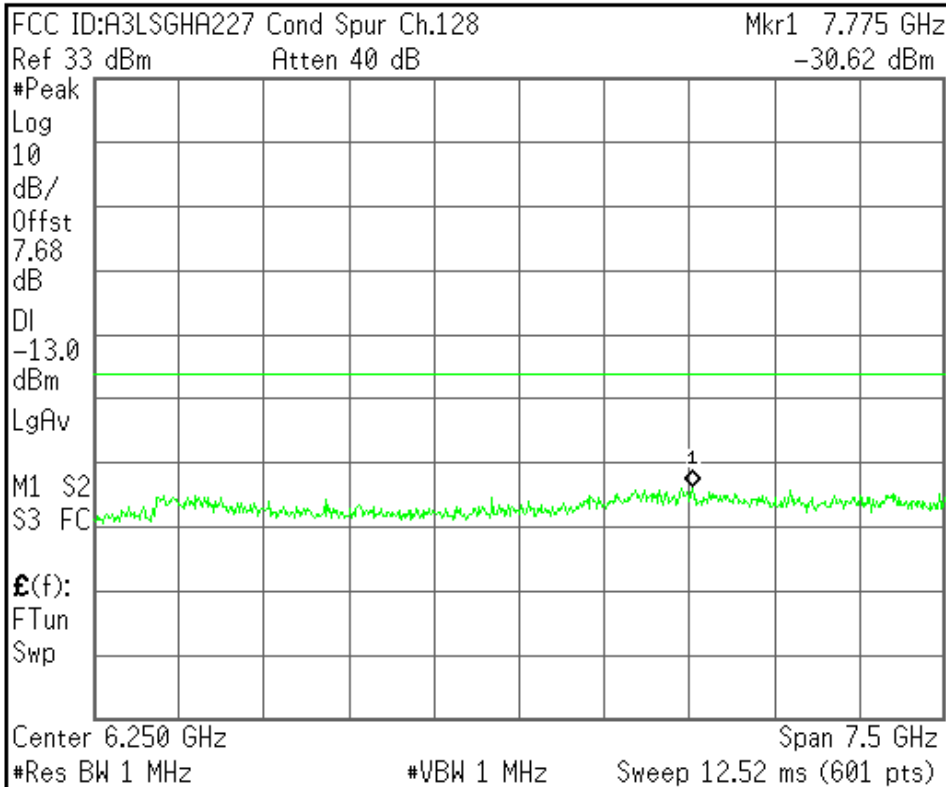
Signal Track  
 On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
 6.25000000 GHz

Start Freq  
 2.50000000 GHz

Stop Freq  
 10.00000000 GHz

CF Step  
 750.000000 MHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

Signal Track  
 On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

1.25500000 GHz

Start Freq

10.0000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.190

Mkr1 411.2 MHz

Ref 33 dBm

Atten 40 dB

-33.71 dBm

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

420.800000 MHz

Start Freq

10.0000000 MHz

Stop Freq

831.600000 MHz

CF Step

82.1600000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 420.8 MHz

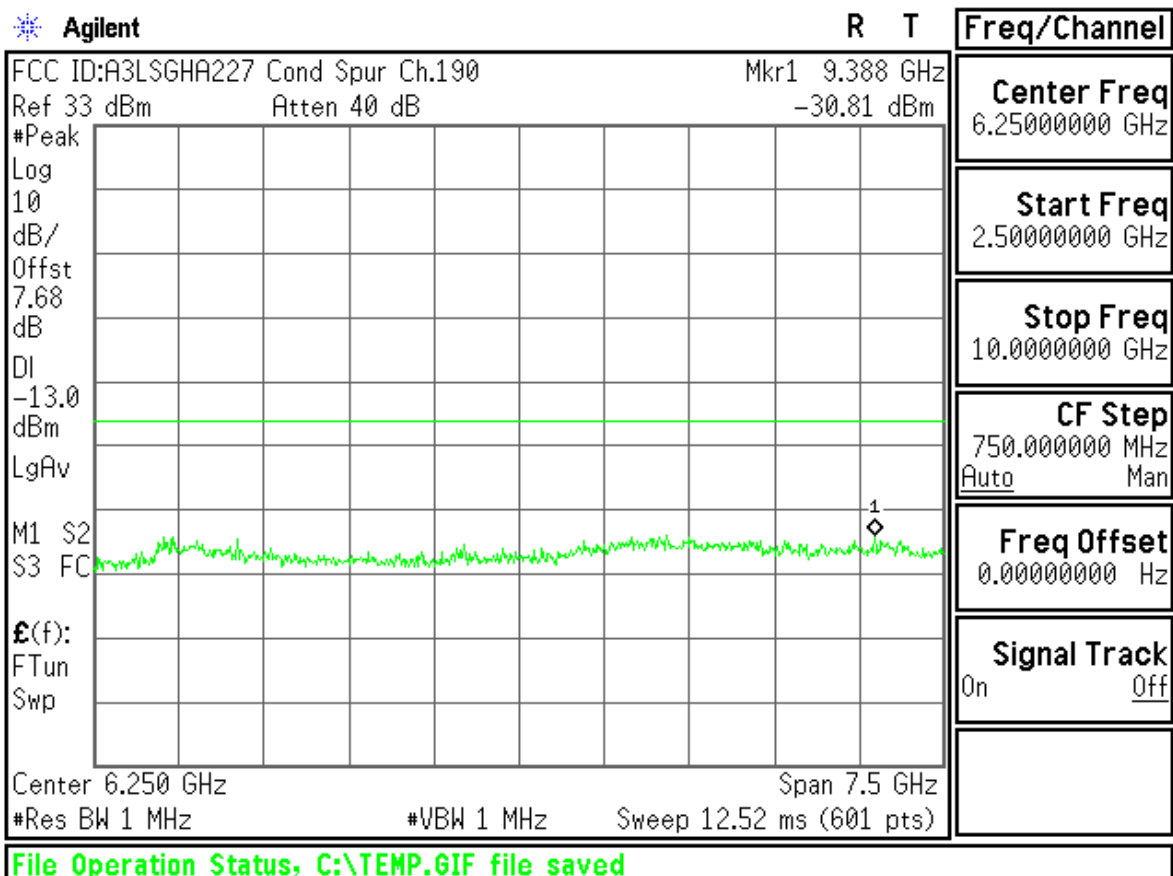
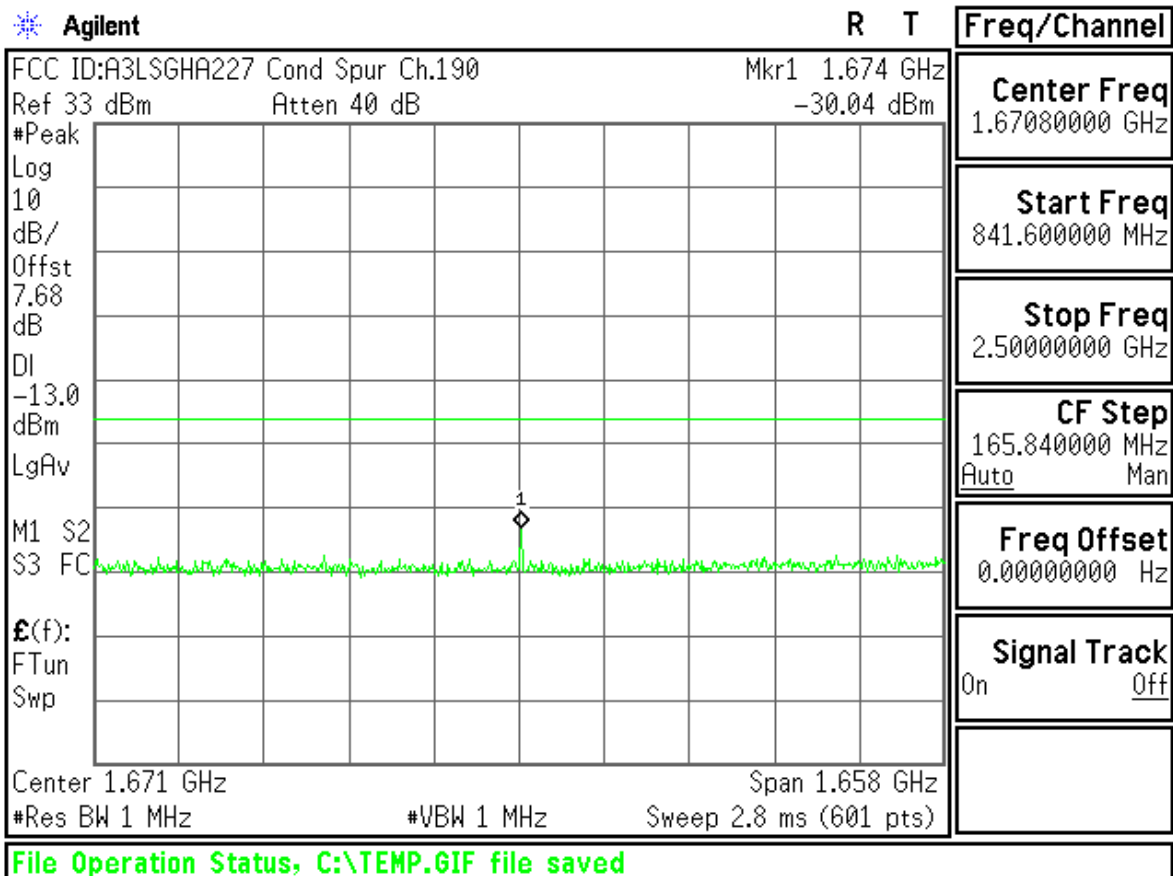
Span 821.6 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.4 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved



Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.251

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq  
1.25500000 GHz

Start Freq  
10.0000000 MHz

Stop Freq  
2.50000000 GHz

CF Step  
249.000000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.251

Mkr1 518.6 MHz

Ref 33 dBm

Atten 40 dB

-33.65 dBm

#Peak

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq  
426.900000 MHz

Start Freq  
10.0000000 MHz

Stop Freq  
843.800000 MHz

CF Step  
83.3800000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

Center 426.9 MHz

Span 833.8 MHz

#Res BW 1 MHz

#VBW 1 MHz

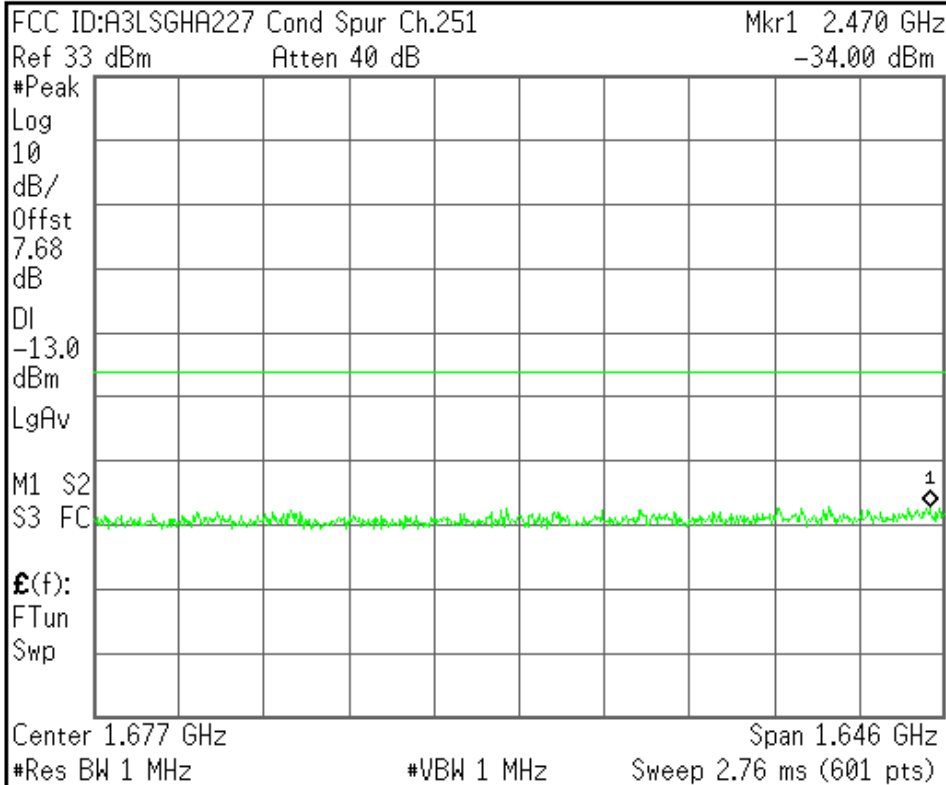
Sweep 1.4 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
 1.67690000 GHz

Start Freq  
 853.800000 MHz

Stop Freq  
 2.50000000 GHz

CF Step  
 164.620000 MHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

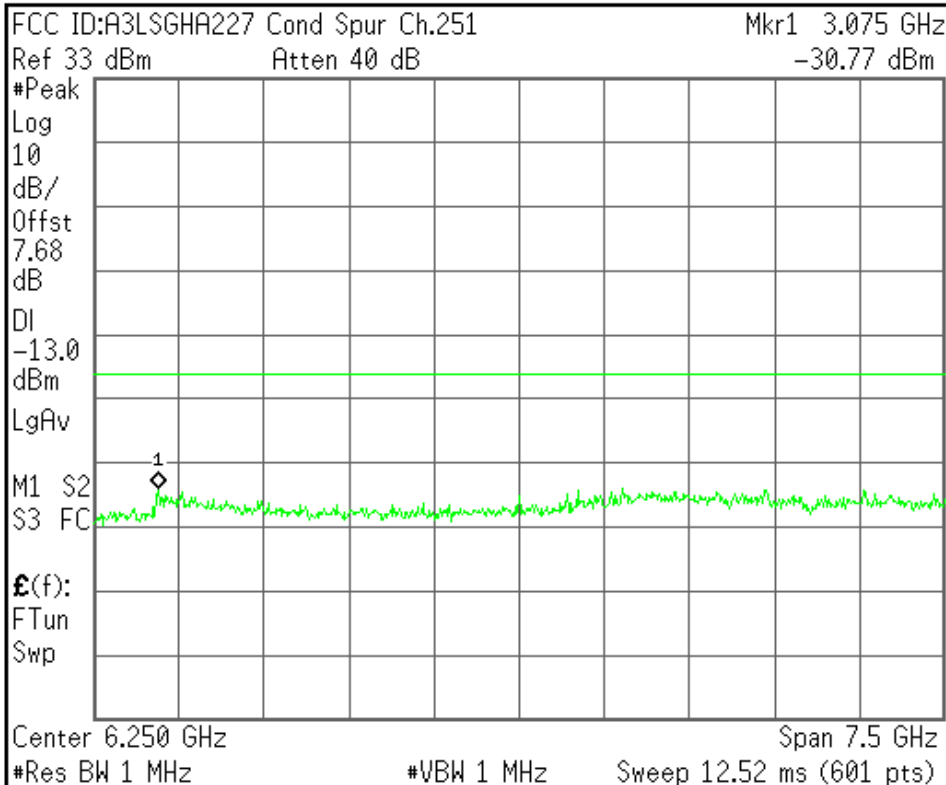
Signal Track  
 On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
 6.25000000 GHz

Start Freq  
 2.50000000 GHz

Stop Freq  
 10.00000000 GHz

CF Step  
 750.000000 MHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

Signal Track  
 On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.128

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

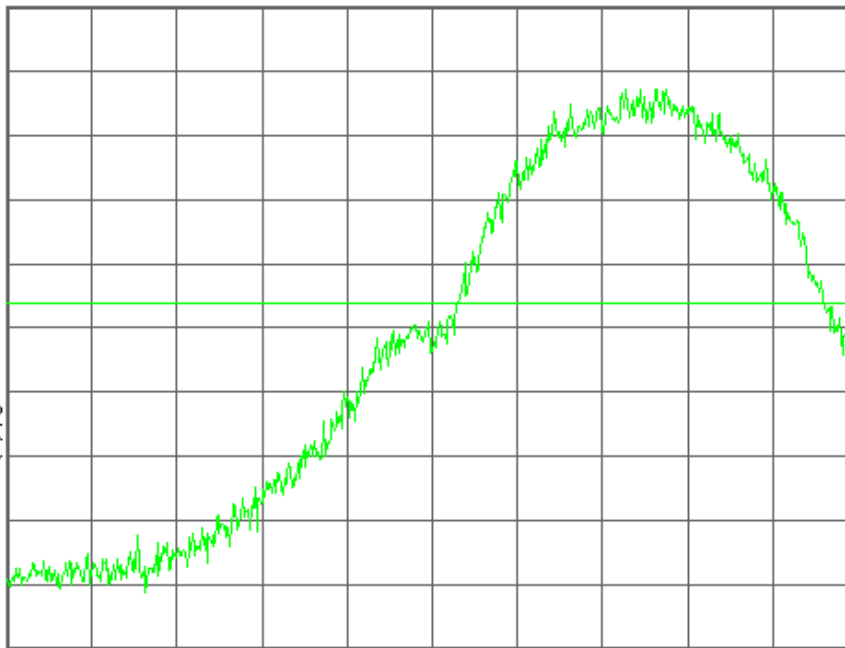
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 824.000 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
824.000000 MHz

Start Freq  
823.595000 MHz

Stop Freq  
824.405000 MHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.128

Mkr1 823.997 3 MHz

Ref 33 dBm

Atten 40 dB

-15.66 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

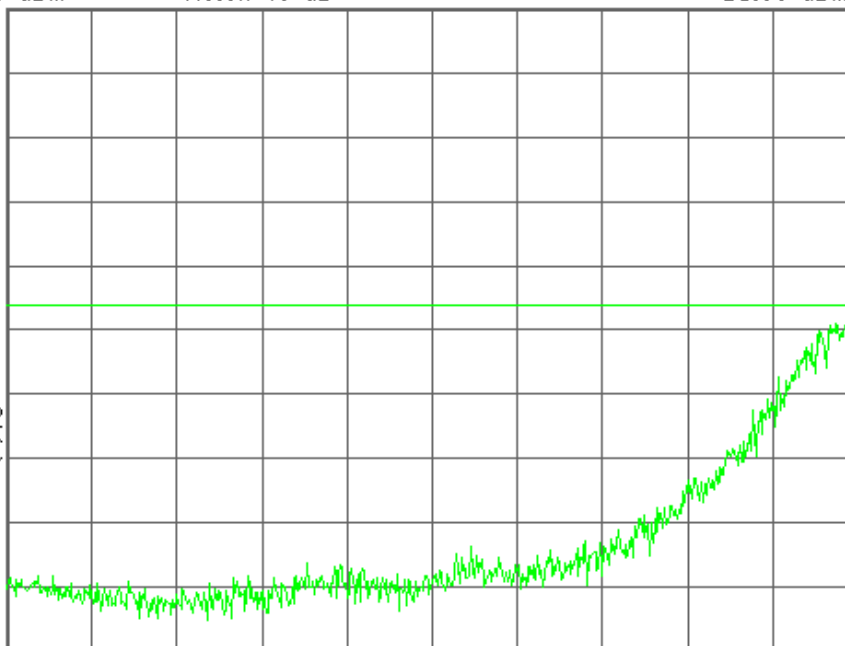
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 823.595 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
823.595000 MHz

Start Freq  
823.190000 MHz

Stop Freq  
824.000000 MHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.251

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

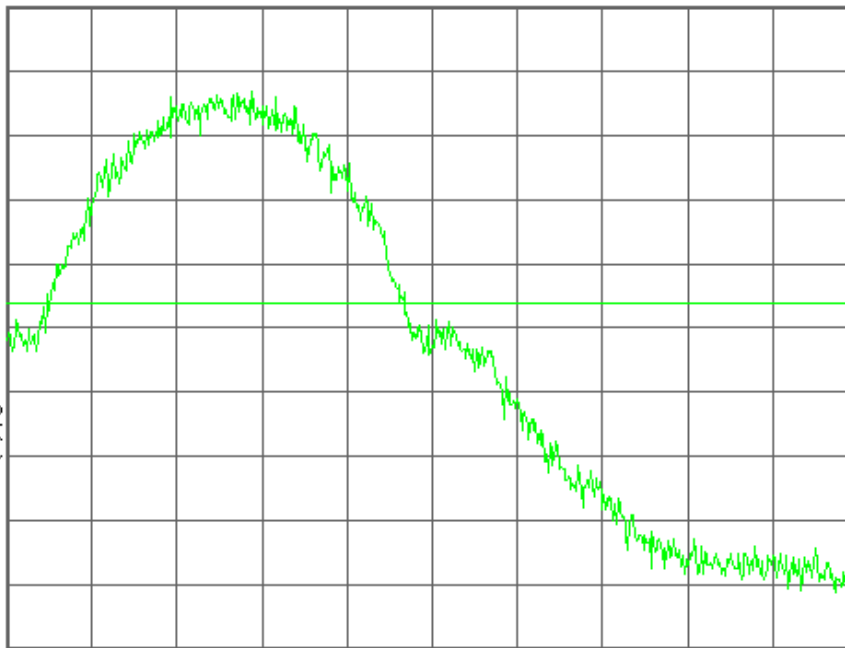
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 849.000 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq

849.000000 MHz

Start Freq

848.595000 MHz

Stop Freq

849.405000 MHz

CF Step

81.0000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.251

Mkr1 849.002 7 MHz

Ref 33 dBm

Atten 40 dB

-15.02 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

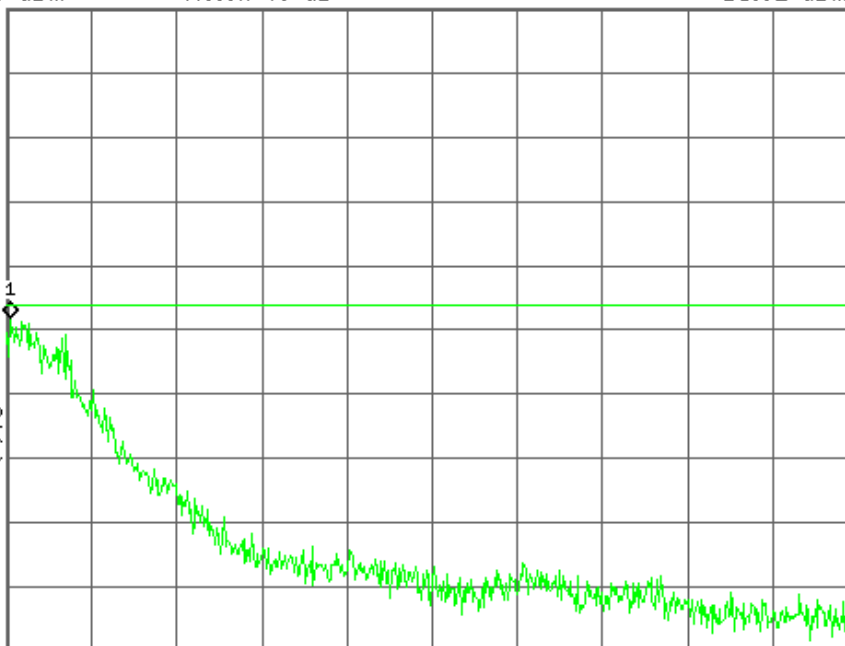
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 849.405 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq

849.405000 MHz

Start Freq

849.000000 MHz

Stop Freq

849.810000 MHz

CF Step

81.0000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

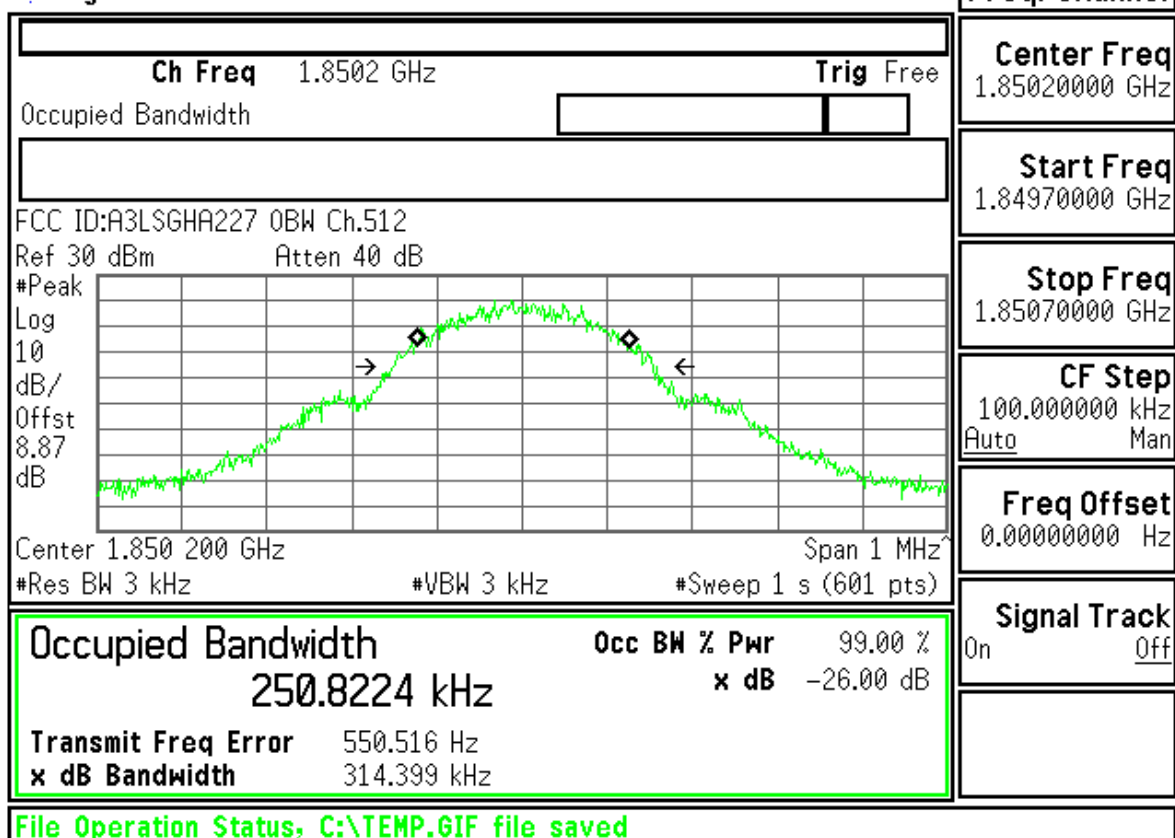
Off

File Operation Status, C:\TEMP.GIF file saved

GSM1900

Agilent

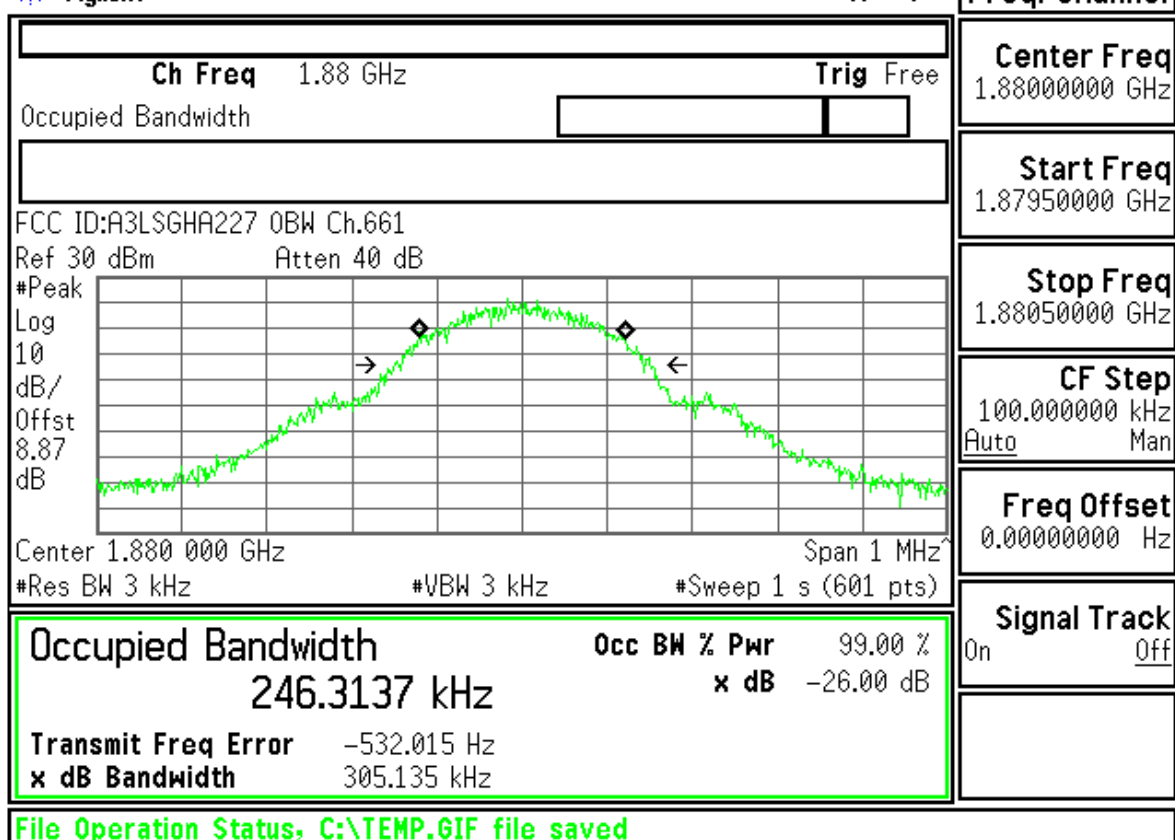
R T



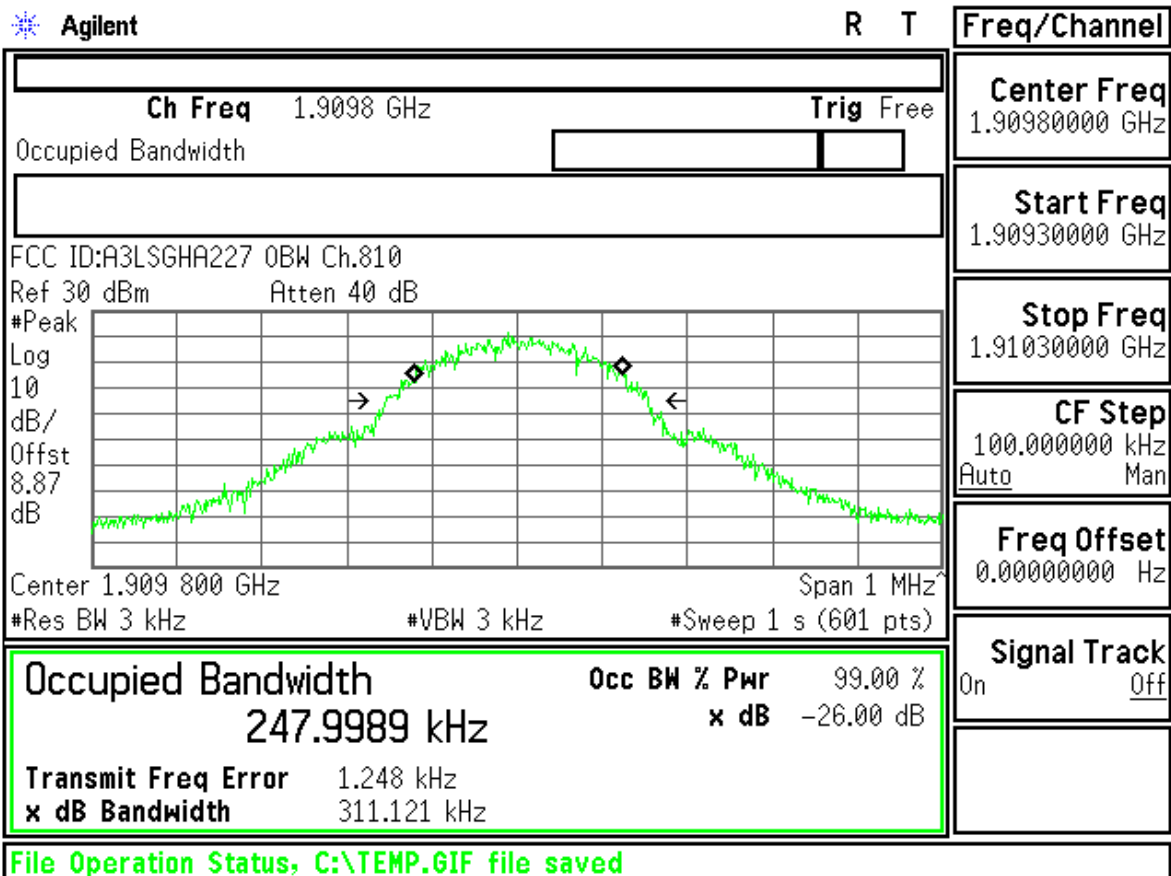
| Freq/Channel                                 |
|----------------------------------------------|
| <b>Center Freq</b><br>1.85020000 GHz         |
| <b>Start Freq</b><br>1.84970000 GHz          |
| <b>Stop Freq</b><br>1.85070000 GHz           |
| <b>CF Step</b><br>100.000000 kHz<br>Auto Man |
| <b>Freq Offset</b><br>0.00000000 Hz          |
| <b>Signal Track</b><br>On Off                |

Agilent

R T



| Freq/Channel                                 |
|----------------------------------------------|
| <b>Center Freq</b><br>1.88000000 GHz         |
| <b>Start Freq</b><br>1.87950000 GHz          |
| <b>Stop Freq</b><br>1.88050000 GHz           |
| <b>CF Step</b><br>100.000000 kHz<br>Auto Man |
| <b>Freq Offset</b><br>0.00000000 Hz          |
| <b>Signal Track</b><br>On Off                |

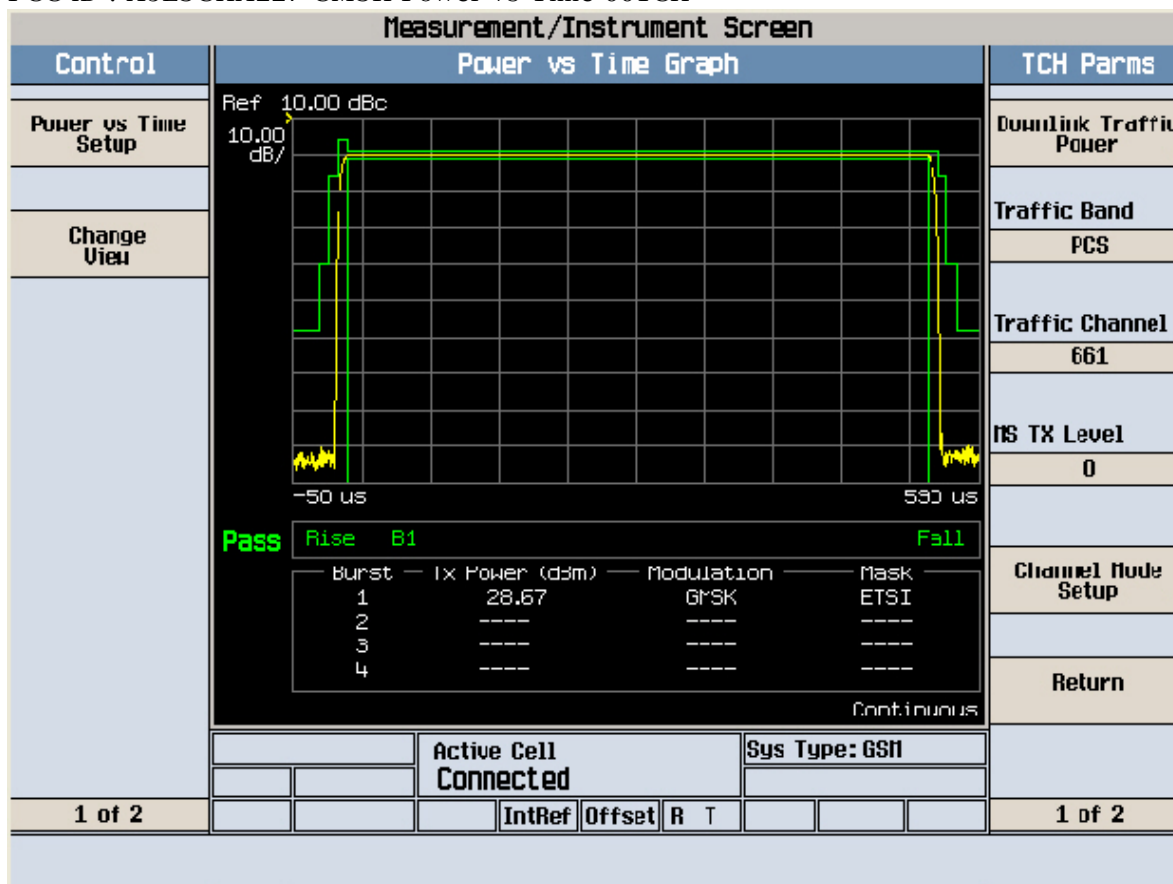
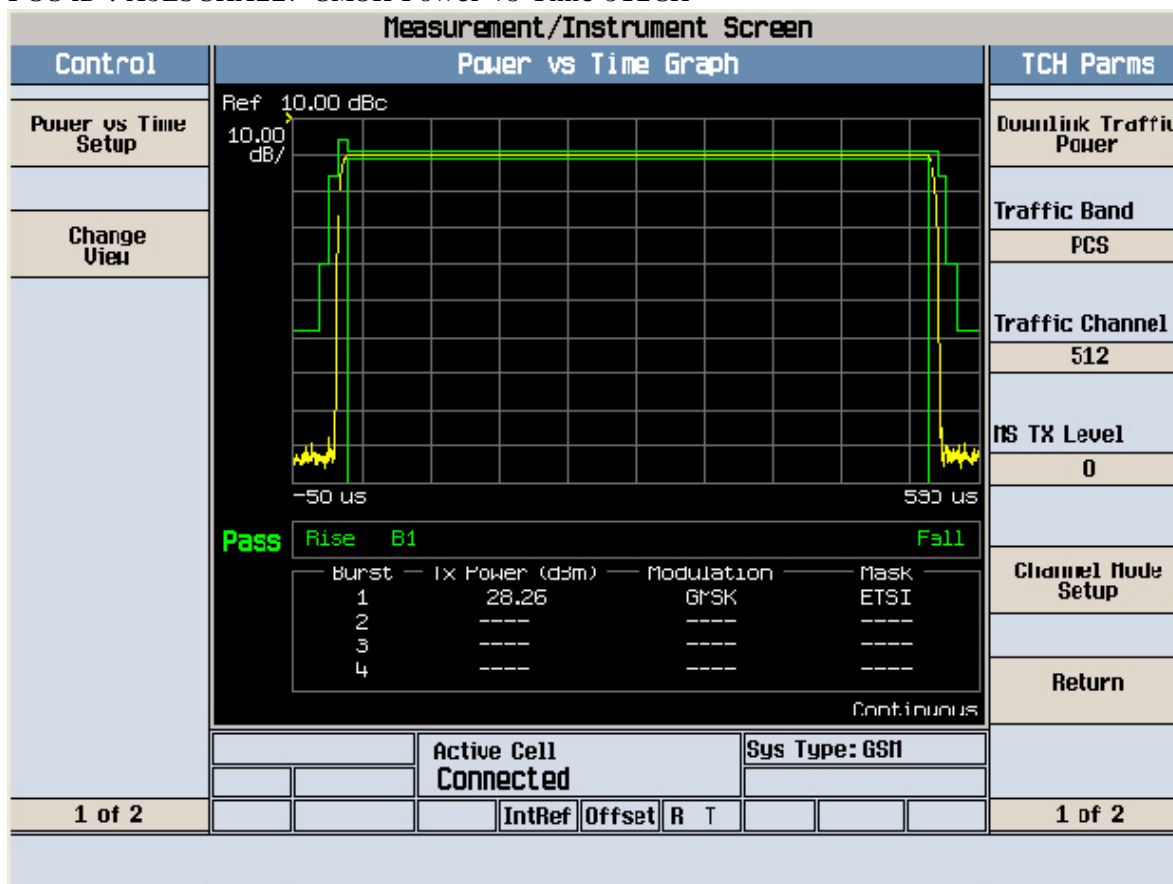


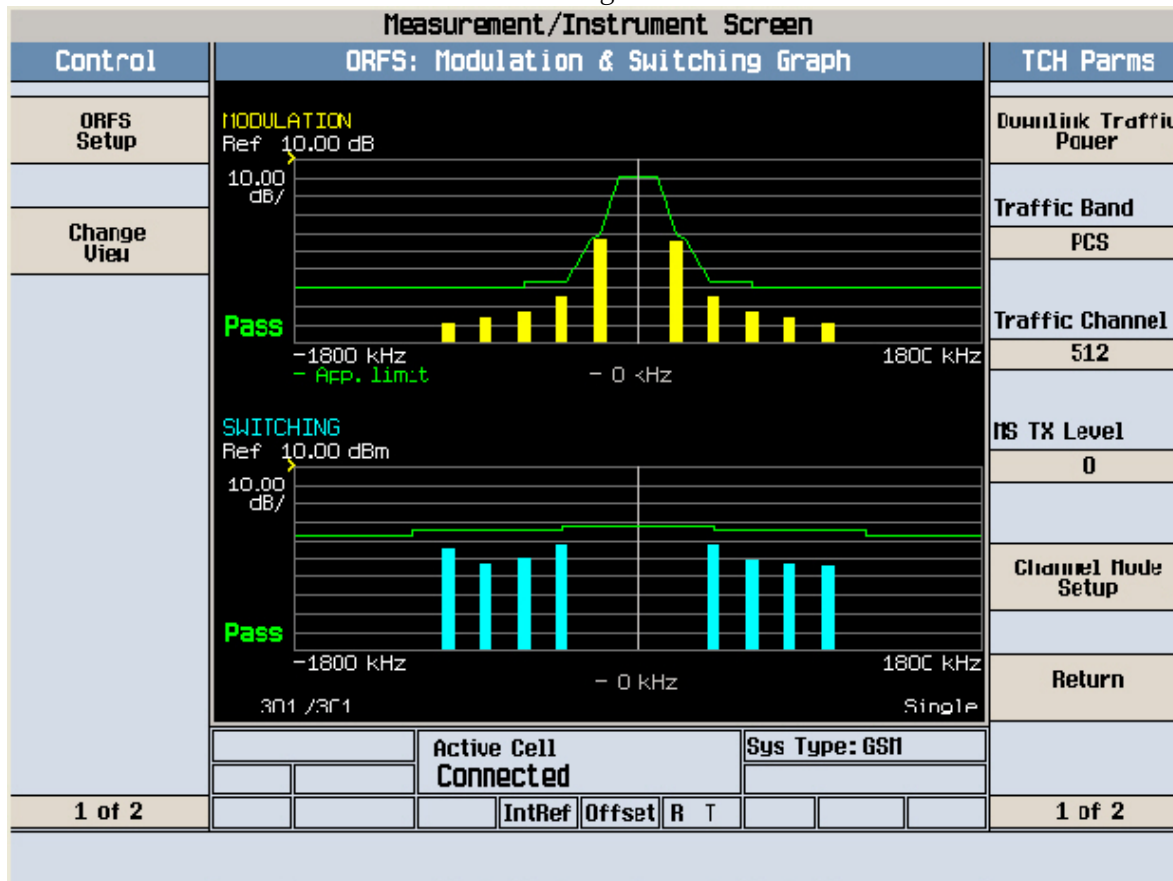
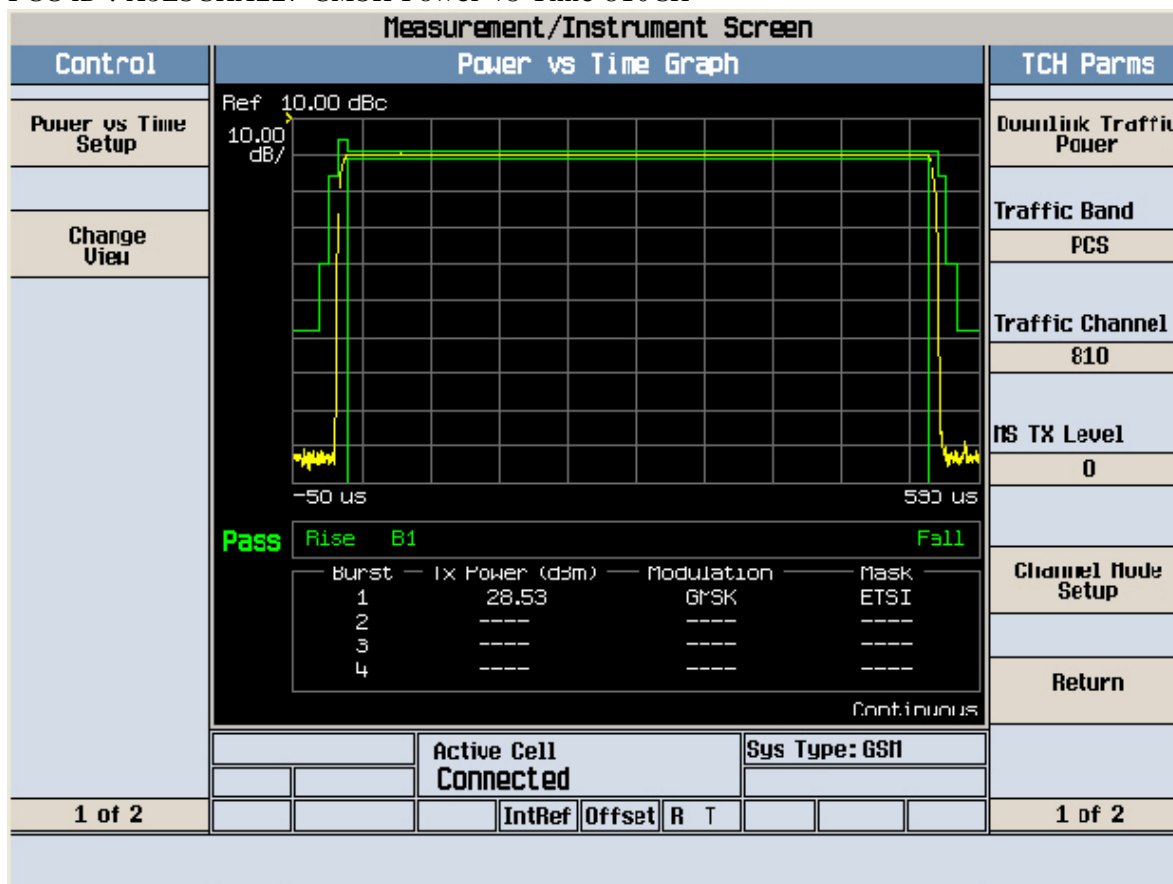
FCC ID : A3LSGHA227 Transmit Power 512CH

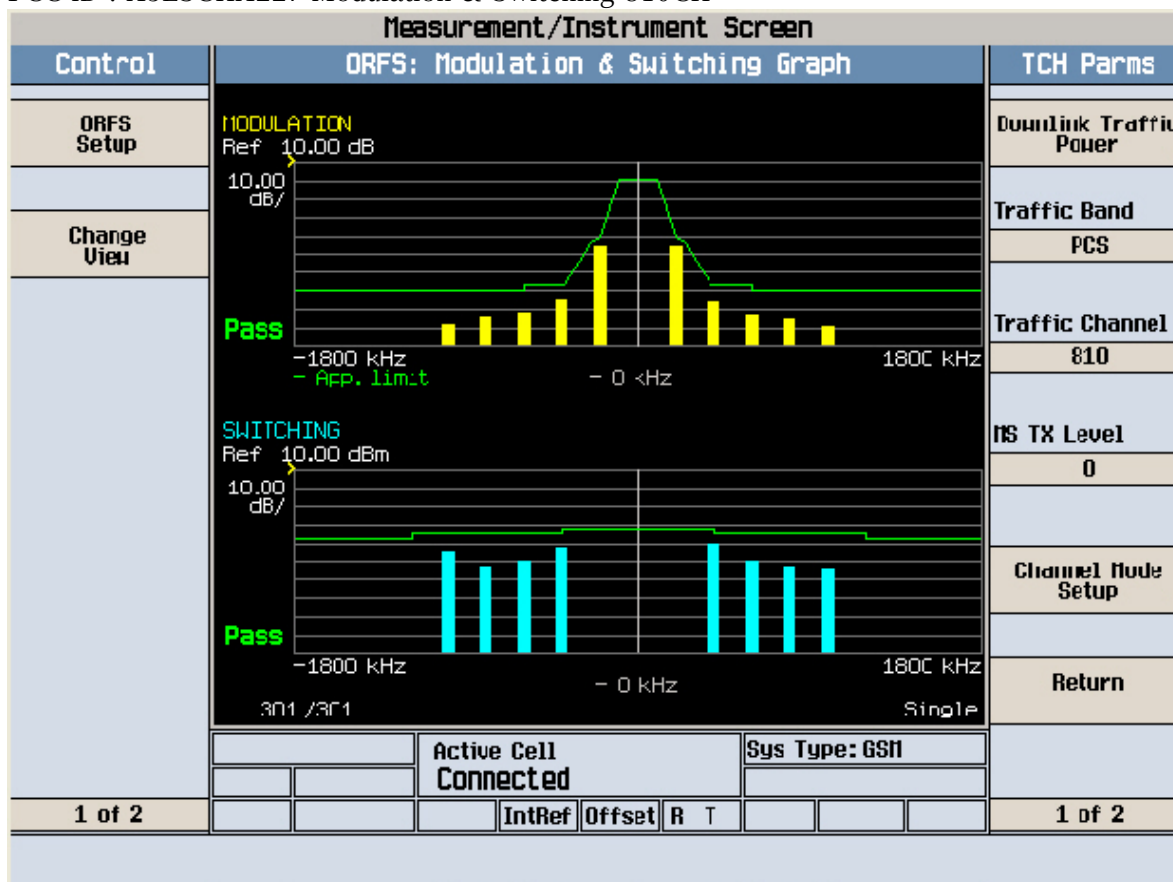
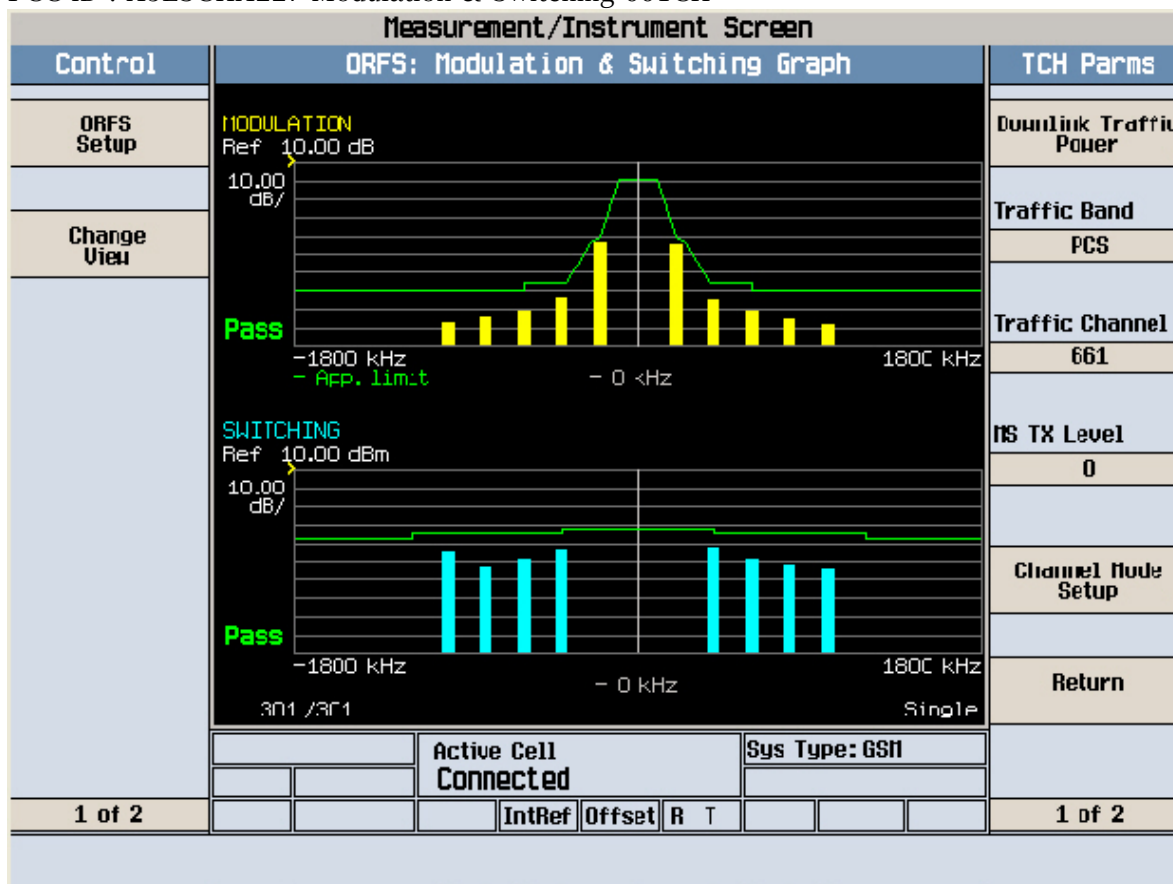
| Measurement/Instrument Screen |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|-------------------------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|---------------|--|--|--|-------------------------|-------------|-----------------------|---------|--------------|-------------|---------------|------|---------|------|-------------------------|--------|---------|------|------|--------------------------|---------|------|------|--------|-----------|------|------|------|-----------------|--|--------|--|--|
| Control                       |      | Transmit Power                                                                                                                                                                                                                                                                                                                                                                                                                      |        |        |        |               |  |  |  | TCH Parms               |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Transmit Power Setup ▾        |      | <table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td></tr><tr><td>Burst Power</td><td>28.25</td><td>----</td><td>----</td><td>----</td></tr><tr><td>Estimated Carrier Power</td><td>28.25</td><td>----</td><td>----</td><td>----</td></tr></table>                                                                                                                                                   |        |        |        |               |  |  |  |                         | Burst 1     | Burst 2               | Burst 3 | Burst 4      | Burst Power | 28.25         | ---- | ----    | ---- | Estimated Carrier Power | 28.25  | ----    | ---- | ---- | Downlink Traffic Power ▾ |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         | Burst 1     | Burst 2               | Burst 3 | Burst 4      |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  | Burst Power             | 28.25       | ----                  | ----    | ----         |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  | Estimated Carrier Power | 28.25       | ----                  | ----    | ----         |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      | Traffic Band                                                                                                                                                                                                                                                                                                                                                                                                                        |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| PCS                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Swap Window Positions         |      | <table><tr><th colspan="4">Phase &amp; Frequency Error</th></tr><tr><th>Peak Phase °</th><th>RMS Phase °</th><th colspan="2">Frequency Hz</th></tr><tr><td>Minimum</td><td>4.22</td><td>1.82</td><td>-31.97</td></tr><tr><td>Maximum</td><td>6.00</td><td>2.17</td><td>-13.28</td></tr><tr><td>Average</td><td>5.16</td><td>2.00</td><td>-22.54</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td>Pass</td><td>Pass</td></tr></table> |        |        |        |               |  |  |  | Phase & Frequency Error |             |                       |         | Peak Phase ° | RMS Phase ° | Frequency Hz  |      | Minimum | 4.22 | 1.82                    | -31.97 | Maximum | 6.00 | 2.17 | -13.28                   | Average | 5.16 | 2.00 | -22.54 | Pass/Fail | Pass | Pass | Pass | Traffic Channel |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  | Phase & Frequency Error |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  | Peak Phase °            | RMS Phase ° | Frequency Hz          |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  | Minimum                 | 4.22        | 1.82                  | -31.97  |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      | Maximum                                                                                                                                                                                                                                                                                                                                                                                                                             | 6.00   | 2.17   | -13.28 |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Average                       | 5.16 | 2.00                                                                                                                                                                                                                                                                                                                                                                                                                                | -22.54 |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Pass/Fail                     | Pass | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                | Pass   |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| 512                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| MS TX Level                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| 0                             |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Channel Mode Setup ▾          |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| Return                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
| 1 of 2                        |      | <table><tr><td colspan="2"></td><td colspan="4">Active Cell Connected</td><td colspan="2">Sys Type: GSM</td></tr><tr><td></td><td></td><td colspan="4"></td><td colspan="2"></td></tr><tr><td></td><td></td><td></td><td>IntRef</td><td>Offset</td><td>R</td><td>T</td><td></td><td></td><td></td></tr></table>                                                                                                                     |        |        |        |               |  |  |  |                         |             | Active Cell Connected |         |              |             | Sys Type: GSM |      |         |      |                         |        |         |      |      |                          |         |      |      | IntRef | Offset    | R    | T    |      |                 |  | 1 of 2 |  |  |
|                               |      | Active Cell Connected                                                                                                                                                                                                                                                                                                                                                                                                               |        |        |        | Sys Type: GSM |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     |        |        |        |               |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                     | IntRef | Offset | R      | T             |  |  |  |                         |             |                       |         |              |             |               |      |         |      |                         |        |         |      |      |                          |         |      |      |        |           |      |      |      |                 |  |        |  |  |

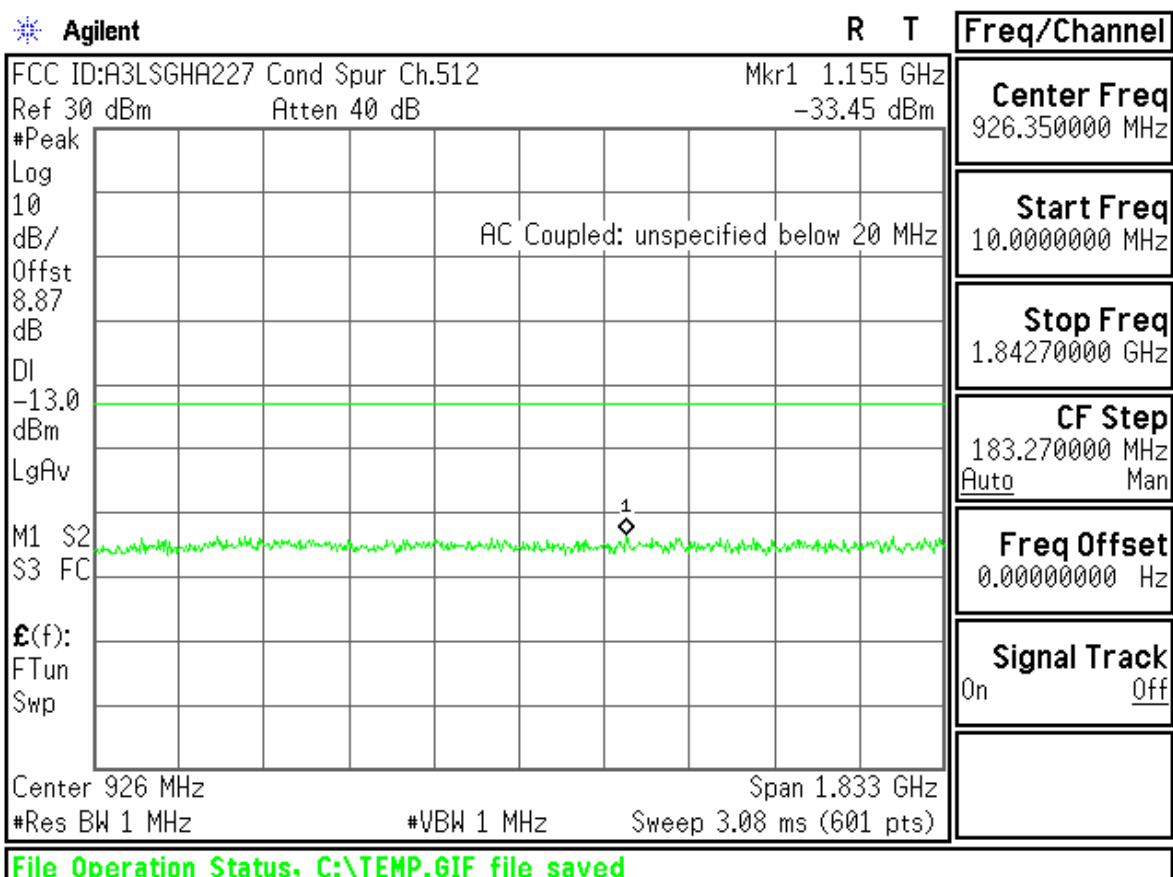
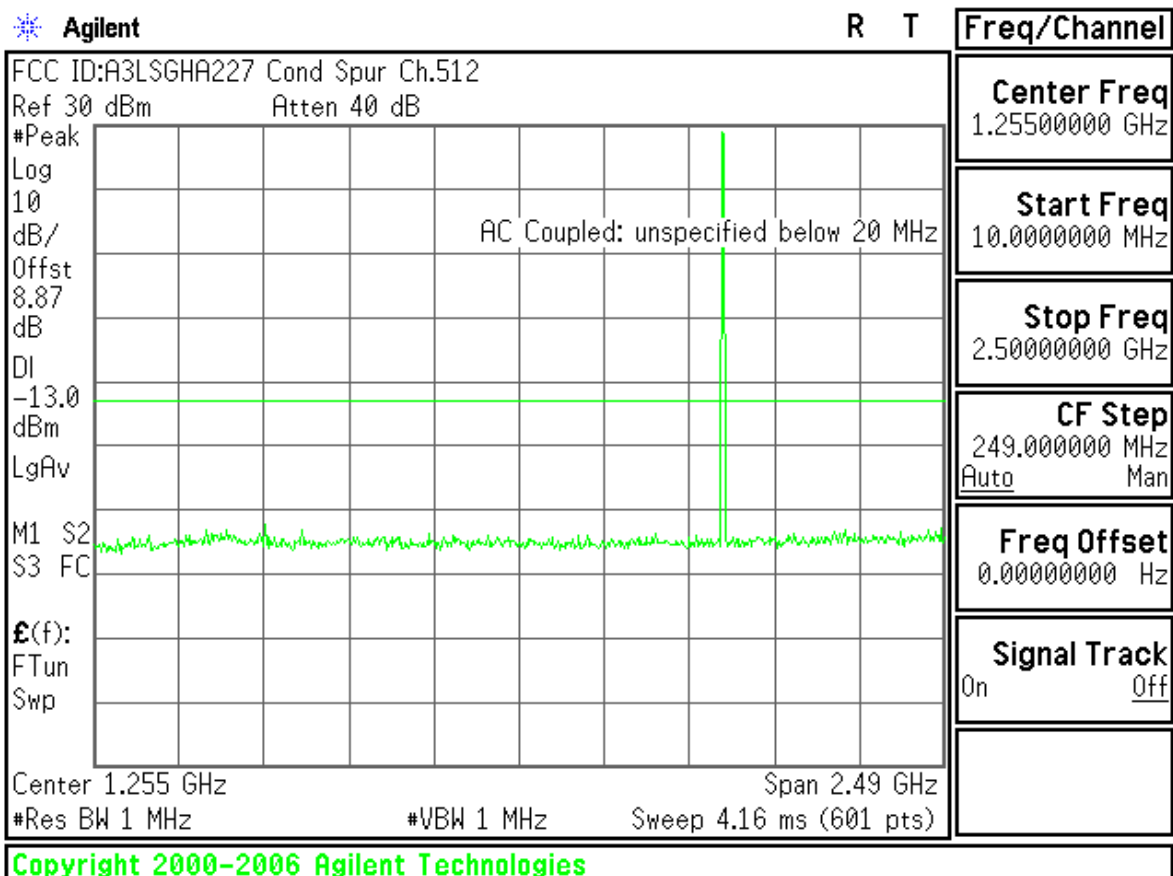
| Measurement/Instrument Screen |         |                                                                                                                                                                                                                                                                                   |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|-------------------------------|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--------|--------|---------------|--|--------------------|---------|---------|---------|---------|-------------|-------|------|------|------|-------------------------|-------|------|------|------|------------------------|--|
| Control                       |         | Transmit Power                                                                                                                                                                                                                                                                    |  |        |        |               |  | TCH Parms          |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
| Transmit Power Setup ▾        |         | <table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td></tr><tr><td>Burst Power</td><td>28.66</td><td>----</td><td>----</td><td>----</td></tr><tr><td>Estimated Carrier Power</td><td>28.66</td><td>----</td><td>----</td><td>----</td></tr></table> |  |        |        |               |  |                    | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst Power | 28.66 | ---- | ---- | ---- | Estimated Carrier Power | 28.66 | ---- | ---- | ---- | Downlink Traffic Power |  |
|                               | Burst 1 |                                                                                                                                                                                                                                                                                   |  |        |        |               |  | Burst 2            | Burst 3 | Burst 4 |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
| Burst Power                   | 28.66   |                                                                                                                                                                                                                                                                                   |  |        |        |               |  | ----               | ----    | ----    |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
| Estimated Carrier Power       | 28.66   |                                                                                                                                                                                                                                                                                   |  |        |        |               |  | ----               | ----    | ----    |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
| Swap Window Positions         |         | Traffic Band                                                                                                                                                                                                                                                                      |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | PCS                                                                                                                                                                                                                                                                               |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | Traffic Channel                                                                                                                                                                                                                                                                   |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | 661                                                                                                                                                                                                                                                                               |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
| 1 of 2                        |         | Single                                                                                                                                                                                                                                                                            |  |        |        |               |  | MS TX Level        |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | 50 / 50                                                                                                                                                                                                                                                                           |  |        |        |               |  | 0                  |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | Single                                                                                                                                                                                                                                                                            |  |        |        |               |  | Channel Mode Setup |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | Return                                                                                                                                                                                                                                                                            |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         | Active Cell Connected                                                                                                                                                                                                                                                             |  |        |        | Sys Type: GSM |  | 1 of 2             |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         |                                                                                                                                                                                                                                                                                   |  |        |        |               |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |
|                               |         |                                                                                                                                                                                                                                                                                   |  | IntRef | Offset | R T           |  |                    |         |         |         |         |             |       |      |      |      |                         |       |      |      |      |                        |  |

| Measurement/Instrument Screen |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|-------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|------|-------|------|--|--|-------------------------|--------------|-------------|---------------|---------|-----------------------|--------------|-------------|---------------|------|-------------------------|-------|------|-------|------|------------------------|------|------|-------|--|---------|------|------|------|--|-----------|------|------|------|--|-----------------|--|
| Control                       |      | Transmit Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |       |      |       |      |  |  | TCH Parms               |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| Transmit Power Setup ▾        |      | <table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td></tr><tr><td>Burst Power</td><td>28.53</td><td>----</td><td>----</td><td>----</td></tr><tr><td>Estimated Carrier Power</td><td>28.53</td><td>----</td><td>----</td><td>----</td></tr></table>                                                                                                                                                                                                        |       |      |       |      |  |  |                         | Burst 1      | Burst 2     | Burst 3       | Burst 4 | Burst Power           | 28.53        | ----        | ----          | ---- | Estimated Carrier Power | 28.53 | ---- | ----  | ---- | Downlink Traffic Power |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         | Burst 1      | Burst 2     | Burst 3       | Burst 4 |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  | Burst Power             | 28.53        | ----        | ----          | ----    |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      | Estimated Carrier Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 28.53 | ---- | ----  | ---- |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      | Traffic Band                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| PCS                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| Swap Window Positions         |      | <table><tr><td colspan="5">Phase &amp; Frequency Error</td></tr><tr><td></td><td>Peak Phase °</td><td>RMS Phase °</td><td colspan="2">Frequency Hz</td></tr><tr><td>Minimum</td><td>4.24</td><td>1.62</td><td colspan="2">-2.03</td></tr><tr><td>Maximum</td><td>6.14</td><td>2.16</td><td colspan="2">16.52</td></tr><tr><td>Average</td><td>5.13</td><td>1.90</td><td colspan="2">6.96</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td>Pass</td><td colspan="2">Pass</td></tr></table> |       |      |       |      |  |  | Phase & Frequency Error |              |             |               |         |                       | Peak Phase ° | RMS Phase ° | Frequency Hz  |      | Minimum                 | 4.24  | 1.62 | -2.03 |      | Maximum                | 6.14 | 2.16 | 16.52 |  | Average | 5.13 | 1.90 | 6.96 |  | Pass/Fail | Pass | Pass | Pass |  | Traffic Channel |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  | Phase & Frequency Error |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         | Peak Phase ° | RMS Phase ° | Frequency Hz  |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      | Minimum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 4.24  | 1.62 | -2.03 |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      | Maximum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6.14  | 2.16 | 16.52 |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| Average                       | 5.13 | 1.90                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6.96  |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| Pass/Fail                     | Pass | Pass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Pass  |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| 810                           |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| MS TX Level                   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| 0                             |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| 1 of 2                        |      | <table><tr><td colspan="5">50 / 50</td></tr><tr><td colspan="3">Active Cell Connected</td><td colspan="2">Sys Type: GSM</td></tr><tr><td colspan="5"></td></tr></table>                                                                                                                                                                                                                                                                                                                  |       |      |       |      |  |  | 50 / 50                 |              |             |               |         | Active Cell Connected |              |             | Sys Type: GSM |      |                         |       |      |       |      | Channel Mode Setup     |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  | 50 / 50                 |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  | Active Cell Connected   |              |             | Sys Type: GSM |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
|                               |      | Return                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |
| 1 of 2                        |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |      |       |      |  |  |                         |              |             |               |         |                       |              |             |               |      |                         |       |      |       |      |                        |      |      |       |  |         |      |      |      |  |           |      |      |      |  |                 |  |





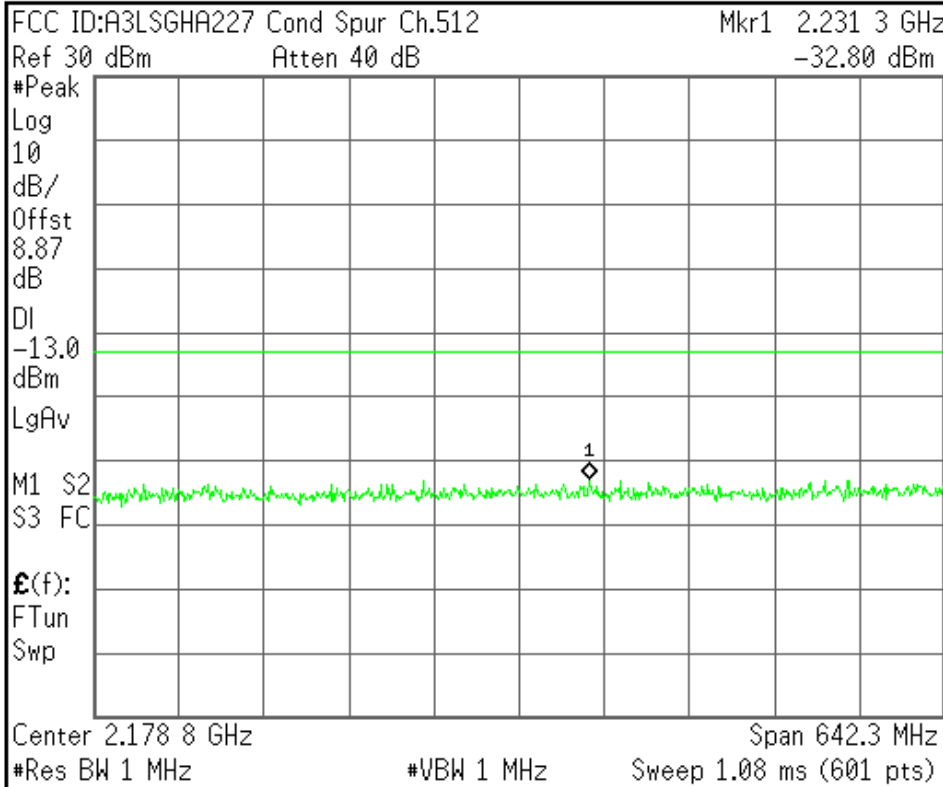




Agilent

R T

Freq/Channel



Center Freq  
2.17885000 GHz

Start Freq  
1.85770000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
64.2300000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

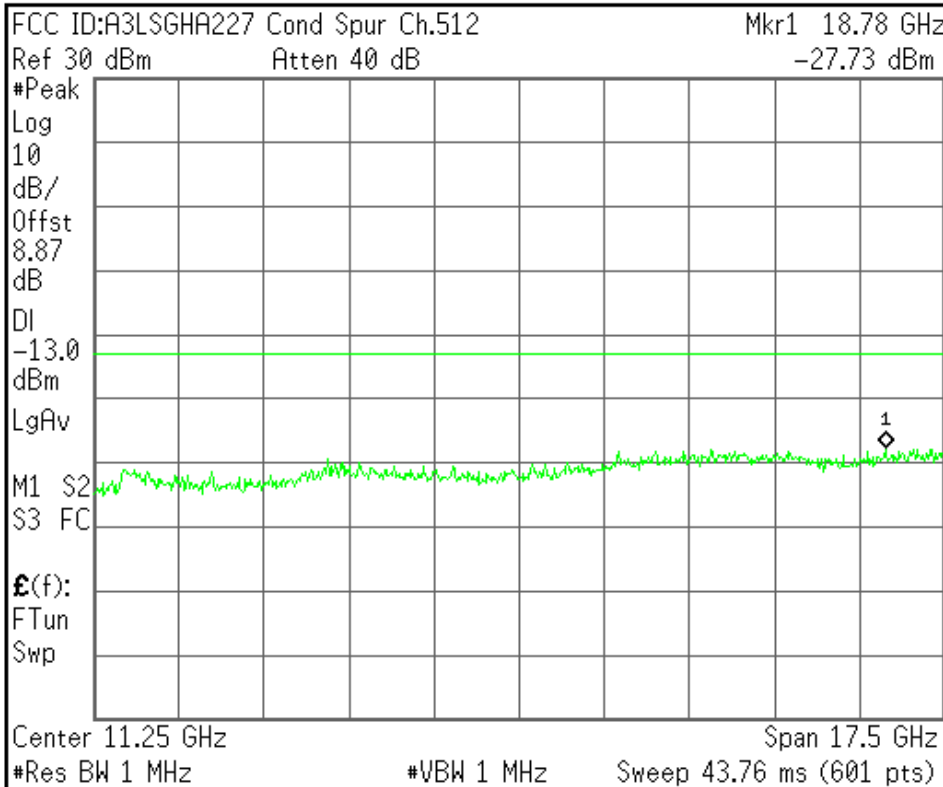
Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
11.2500000 GHz

Start Freq  
2.50000000 GHz

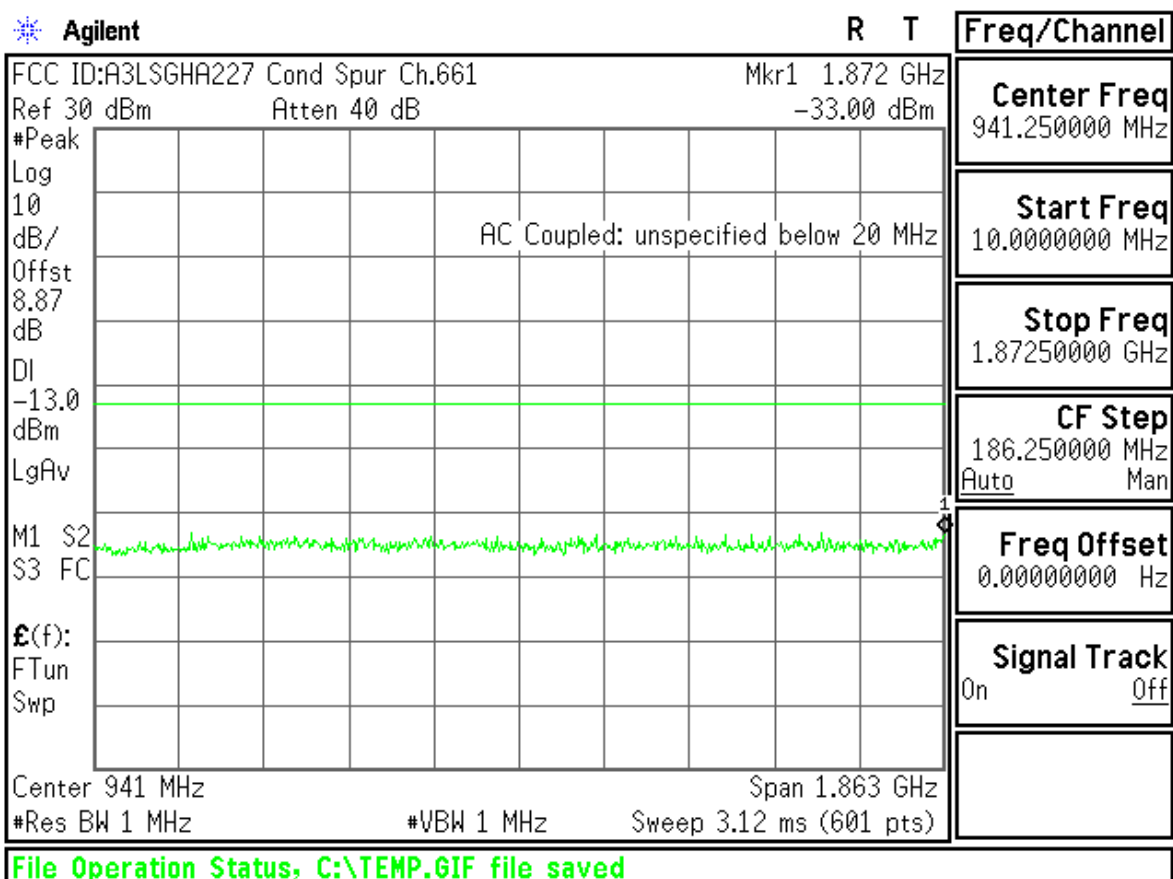
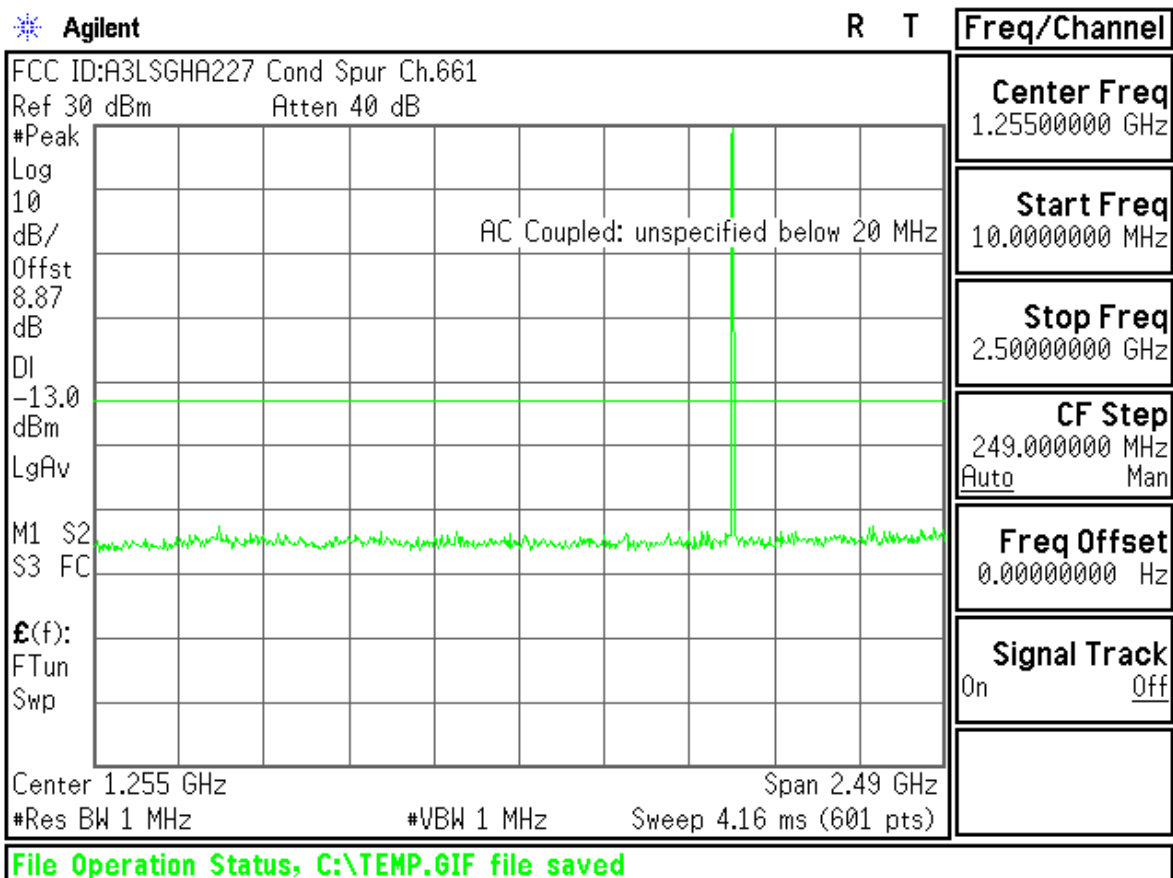
Stop Freq  
20.0000000 GHz

CF Step  
1.75000000 GHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

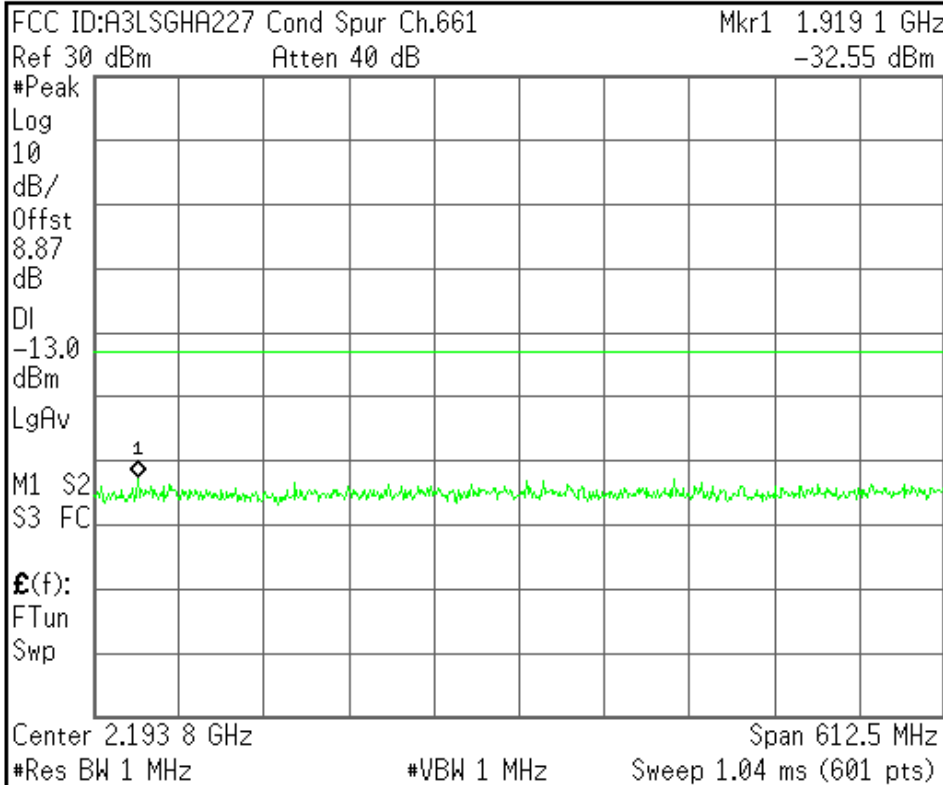
File Operation Status, C:\TEMP.GIF file saved



Agilent

R T

Freq/Channel



Center Freq  
2.19375000 GHz

Start Freq  
1.88750000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
61.2500000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

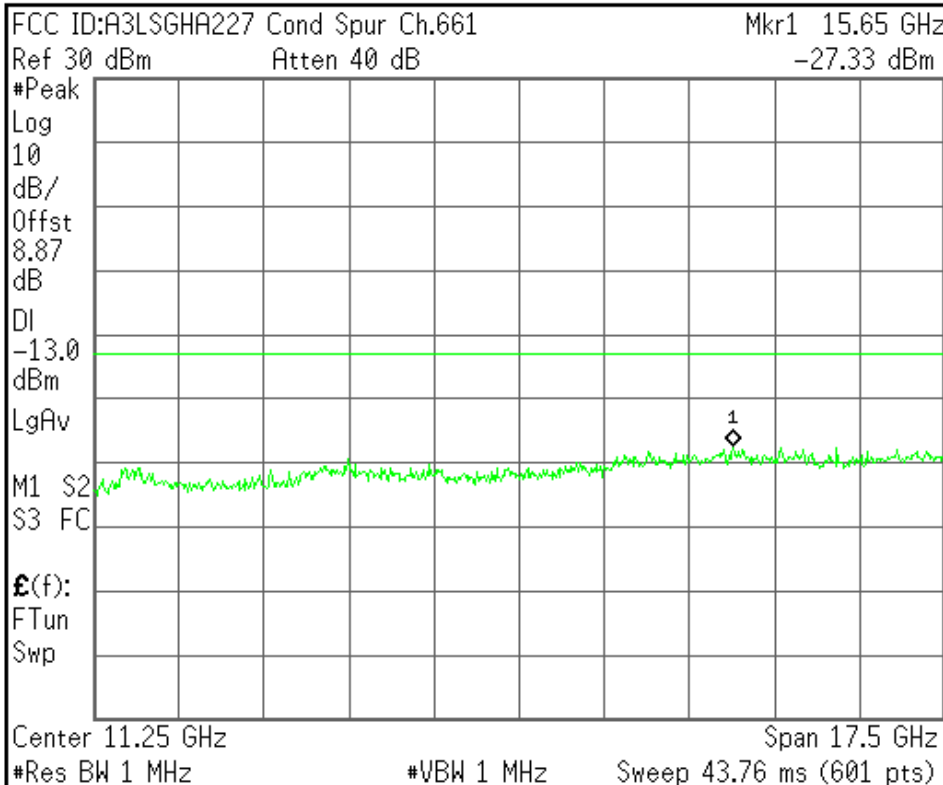
Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
11.2500000 GHz

Start Freq  
2.50000000 GHz

Stop Freq  
20.0000000 GHz

CF Step  
1.75000000 GHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.810

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

1.25500000 GHz

Start Freq

10.00000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.0000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Cond Spur Ch.810

Mkr1 978 MHz

Ref 30 dBm

Atten 40 dB

-33.14 dBm

#Peak

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

956.150000 MHz

Start Freq

10.00000000 MHz

Stop Freq

1.90230000 GHz

CF Step

189.230000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 956 MHz

Span 1.892 GHz

#Res BW 1 MHz

#VBW 1 MHz

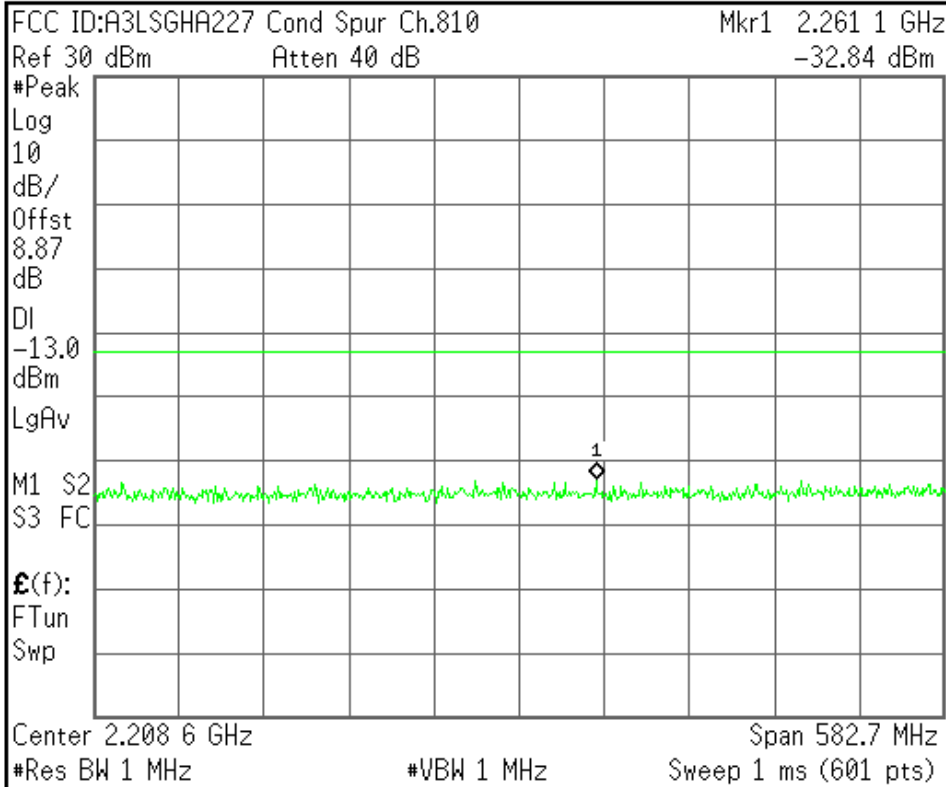
Sweep 3.16 ms (601 pts)

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
2.20865000 GHz

Start Freq  
1.91730000 GHz

Stop Freq  
2.50000000 GHz

CF Step  
58.2700000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

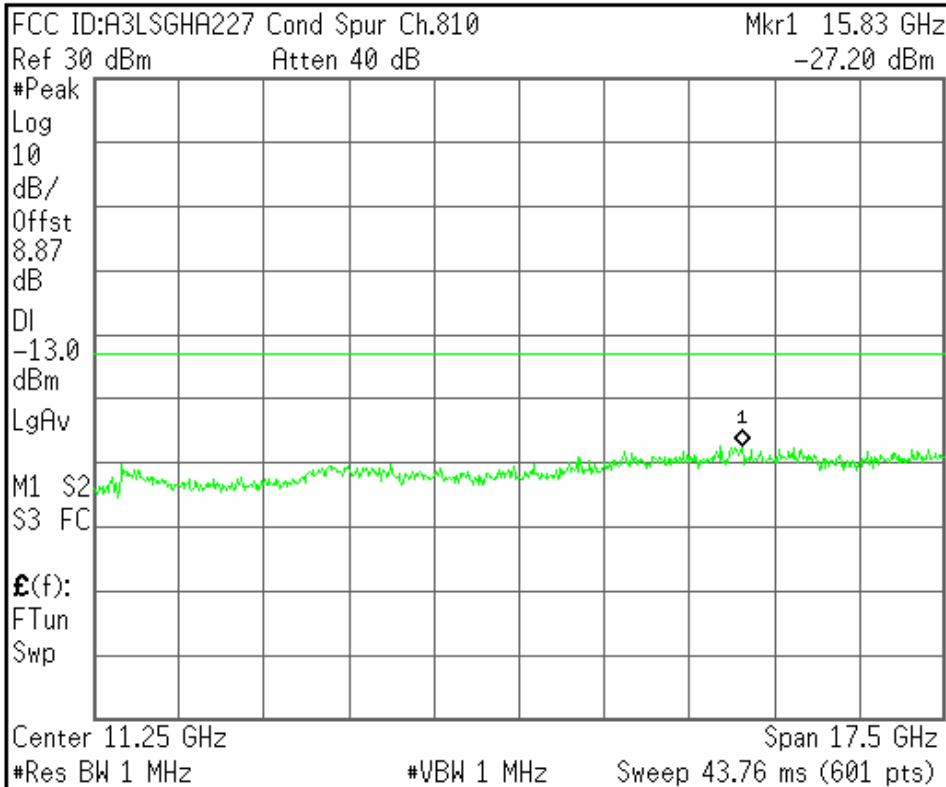
Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel



Center Freq  
11.2500000 GHz

Start Freq  
2.50000000 GHz

Stop Freq  
20.0000000 GHz

CF Step  
1.75000000 GHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.512

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

PAvg

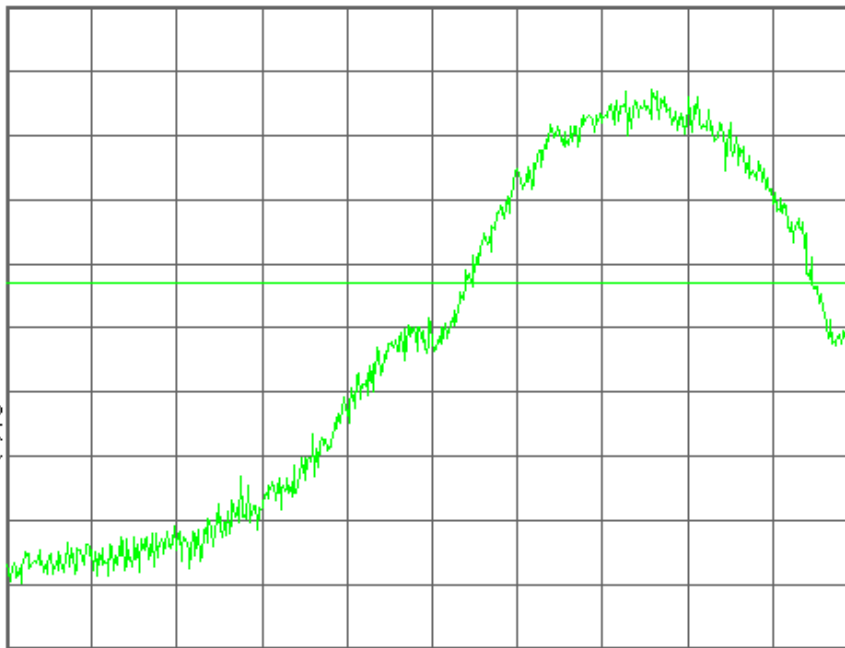
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 1.850 000 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.85000000 GHz

Start Freq  
1.84959500 GHz

Stop Freq  
1.85040500 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.512

Mkr1 1.849 977 3 GHz

Ref 30 dBm

Atten 40 dB

-18.10 dBm

#Avg

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

PAvg

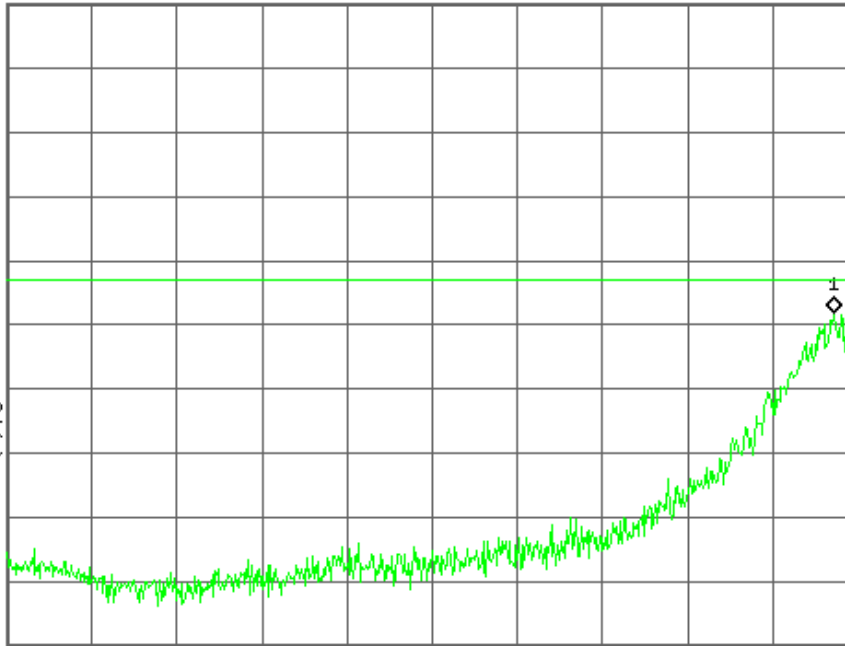
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Center 1.849 595 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.84959500 GHz

Start Freq  
1.84919000 GHz

Stop Freq  
1.85000000 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.810

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

PAvg

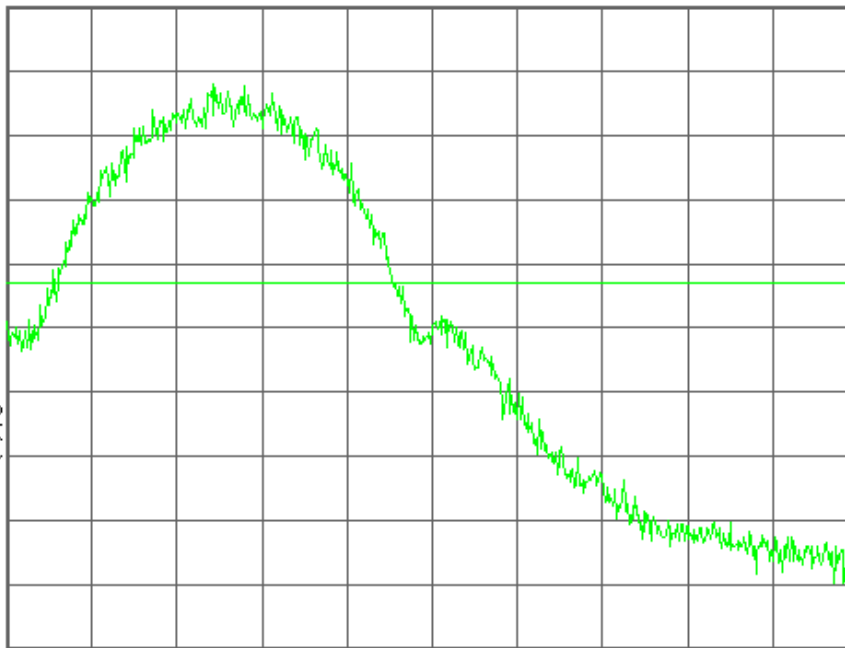
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Center 1.910 000 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.91000000 GHz

Start Freq  
1.90959500 GHz

Stop Freq  
1.91040500 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.810

Mkr1 1.909 996 7 GHz

Ref 30 dBm

Atten 40 dB

-18.13 dBm

#Avg

Log

10

dB/

Offst

8.87

dB

DI

-13.0

dBm

PAvg

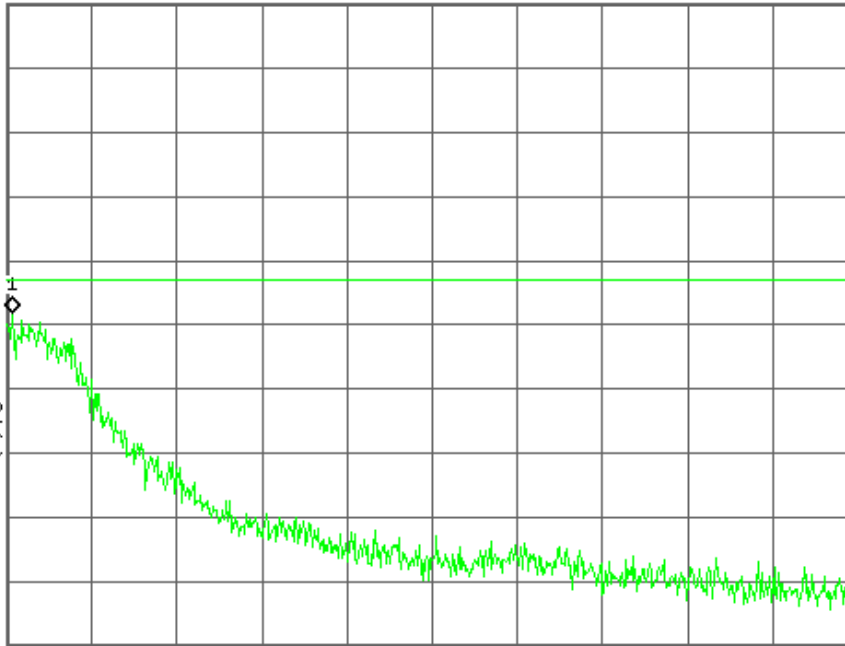
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Center 1.910 405 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.91040500 GHz

Start Freq  
1.91000000 GHz

Stop Freq  
1.91081000 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

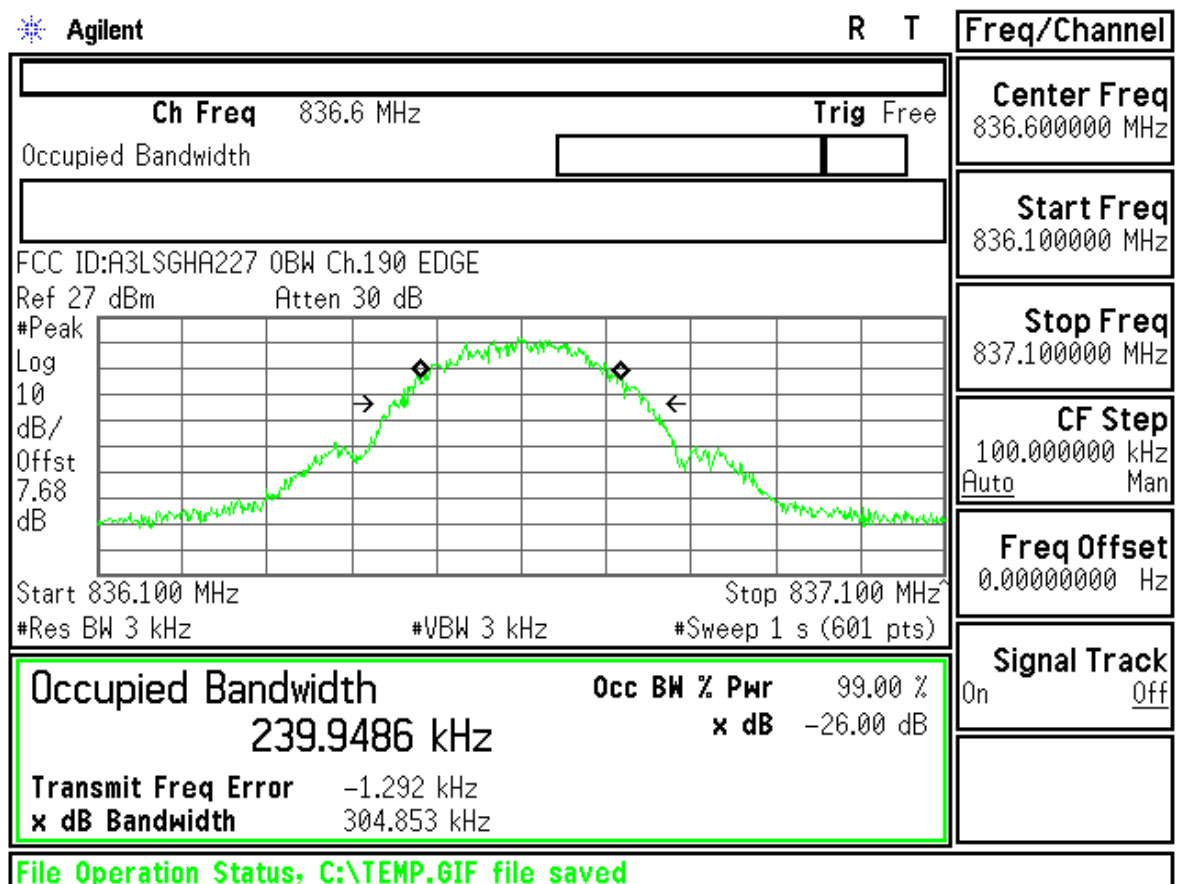
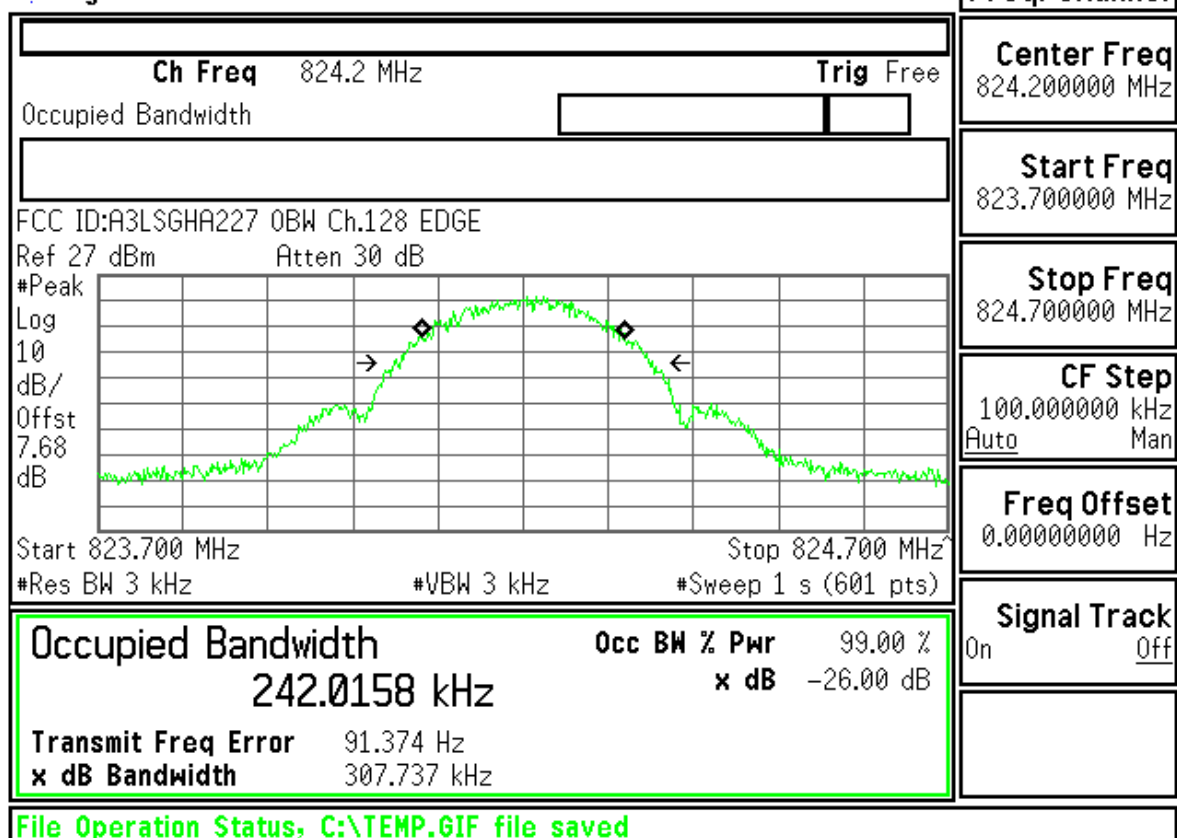
Signal Track  
On Off

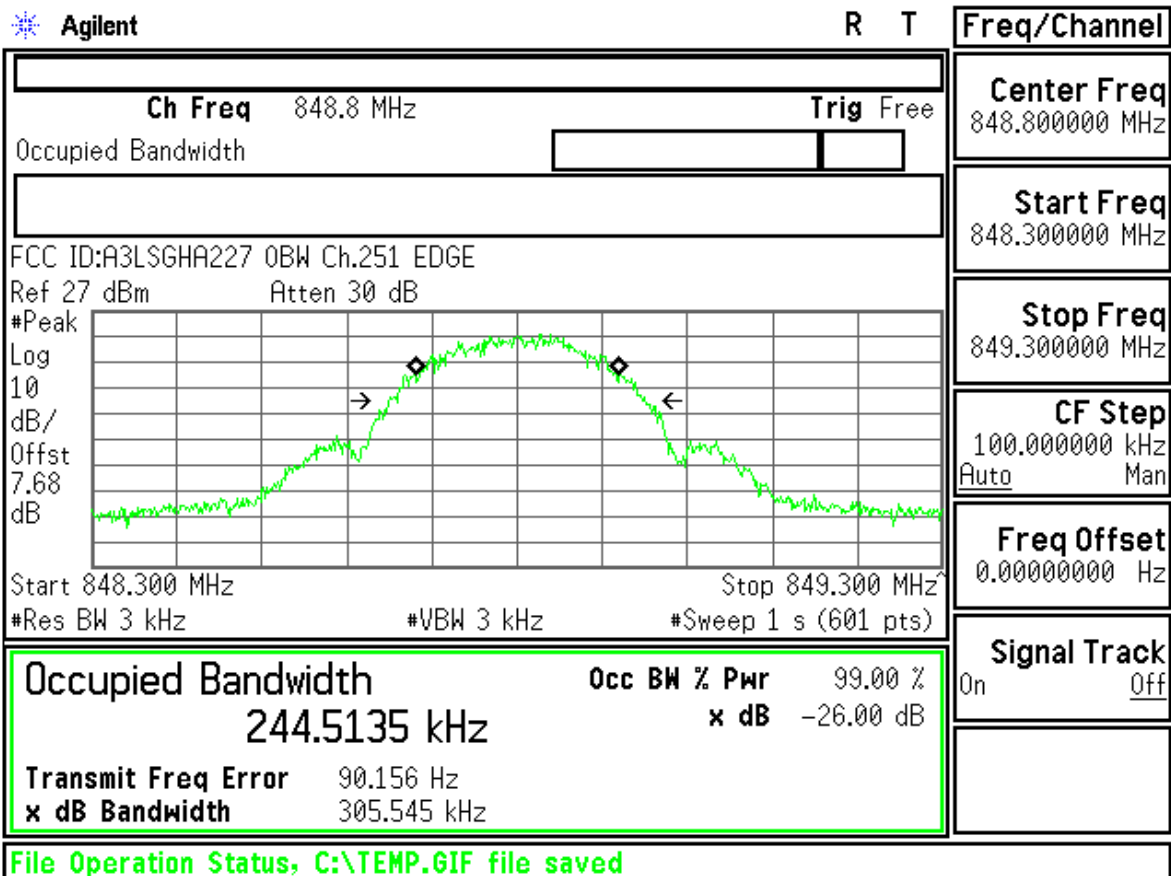
File Operation Status, C:\TEMP.GIF file saved

EDGE850

Agilent

R T





ID : A3LSGHA227 Transmit Power 128CH EDGE

| Measurement/Instrument Screen |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|-------------------------------|--|----------------------|--|-----------|--|--------------------------|--|-----------|--|--------------------------|--|--------|--|
| Control                       |  | EGPRS Transmit Power |  |           |  |                          |  |           |  | PDCH Params              |  |        |  |
| EGPRS Transmit Power Setup ▾  |  | EPK Burst Power      |  |           |  | EPK Est Carrier Power    |  |           |  | Downlink Traffic Power ▾ |  |        |  |
|                               |  | Minimum              |  | Maximum   |  | Minimum                  |  | Maximum   |  | Traffic Band             |  |        |  |
|                               |  | 25.83 dBm            |  | 27.14 dBm |  | 26.52 dBm                |  | 26.57 dBm |  | GS1850                   |  |        |  |
|                               |  | Average              |  | Std Dev   |  | Average                  |  | Std Dev   |  | Traffic Channel          |  |        |  |
|                               |  | 26.48 dBm            |  | 0.24 dBm  |  | 26.54 dBm                |  | 0.01 dBm  |  | 128                      |  |        |  |
|                               |  | 200 / 200            |  |           |  |                          |  | Single    |  |                          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|                               |  |                      |  |           |  | Active Cell Transferring |  |           |  | Sys Type: EGPRS          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  |        |  |
| 1 of 2                        |  |                      |  |           |  | IntRef                   |  | Offset    |  | R T                      |  |        |  |
|                               |  |                      |  |           |  |                          |  |           |  |                          |  | 1 of 2 |  |

| Measurement/Instrument Screen |  |                      |  |                          |  |                         |  |                 |                          |                 |  |
|-------------------------------|--|----------------------|--|--------------------------|--|-------------------------|--|-----------------|--------------------------|-----------------|--|
| Control                       |  | EGPRS Transmit Power |  |                          |  |                         |  |                 | PDCH Parms               |                 |  |
| EGPRS Transmit Power Setup ▾  |  | EP SK Burst Power    |  |                          |  | EP SK Est Carrier Power |  |                 | Downlink Traffic Power   |                 |  |
|                               |  | Minimum              |  | Maximum                  |  | Minimum                 |  | Maximum         |                          | Traffic Band    |  |
|                               |  | 25.91 dBm            |  | 27.46 dBm                |  | 26.69 dBm               |  | 26.75 dBm       |                          | GS1850          |  |
|                               |  | Average              |  | Std Dev                  |  | Average                 |  | Std Dev         |                          | Traffic Channel |  |
|                               |  | 26.64 dBm            |  | 0.25 dBm                 |  | 26.72 dBm               |  | 0.01 dBm        |                          | 190             |  |
|                               |  | 200 / 200            |  |                          |  | Single                  |  |                 |                          |                 |  |
|                               |  |                      |  |                          |  |                         |  |                 | HS TX Level              |                 |  |
|                               |  |                      |  |                          |  |                         |  |                 | Modulation Coding Scheme |                 |  |
|                               |  |                      |  |                          |  |                         |  |                 | Return                   |                 |  |
|                               |  |                      |  | Active Cell Transferring |  |                         |  | Sys Type: EGPRS |                          |                 |  |
|                               |  |                      |  |                          |  |                         |  |                 |                          |                 |  |
| 1 of 2                        |  |                      |  |                          |  | IntRef                  |  | Offset          |                          | R T             |  |
|                               |  |                      |  |                          |  |                         |  |                 |                          | 1 of 2          |  |

| Measurement/Instrument Screen |  |                          |  |           |  |                         |                 |           |                        |        |
|-------------------------------|--|--------------------------|--|-----------|--|-------------------------|-----------------|-----------|------------------------|--------|
| Control                       |  | EGPRS Transmit Power     |  |           |  |                         |                 |           | PDCH Parms             |        |
| EGPRS Transmit Power Setup ▾  |  | EP SK Burst Power        |  |           |  | EP SK Est Carrier Power |                 |           | Downlink Traffic Power |        |
|                               |  | Minimum                  |  | Maximum   |  | Minimum                 |                 | Maximum   | Traffic Band           |        |
|                               |  | 25.42 dBm                |  | 26.85 dBm |  | 26.18 dBm               |                 | 26.23 dBm | GS1850                 |        |
|                               |  | Average                  |  | Std Dev   |  | Average                 |                 | Std Dev   | Traffic Channel        |        |
|                               |  | 26.15 dBm                |  | 0.24 dBm  |  | 26.21 dBm               |                 | 0.01 dBm  | 251                    |        |
|                               |  | 200 / 200                |  |           |  |                         |                 |           | Single                 |        |
|                               |  |                          |  |           |  |                         |                 |           |                        |        |
|                               |  | Active Cell Transferring |  |           |  |                         | Sys Type: EGPRS |           |                        |        |
|                               |  |                          |  |           |  |                         |                 |           |                        |        |
| 1 of 2                        |  |                          |  |           |  | IntRef                  | Offset          | R T       |                        | 1 of 2 |

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.128 EDGE

Ref 27 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

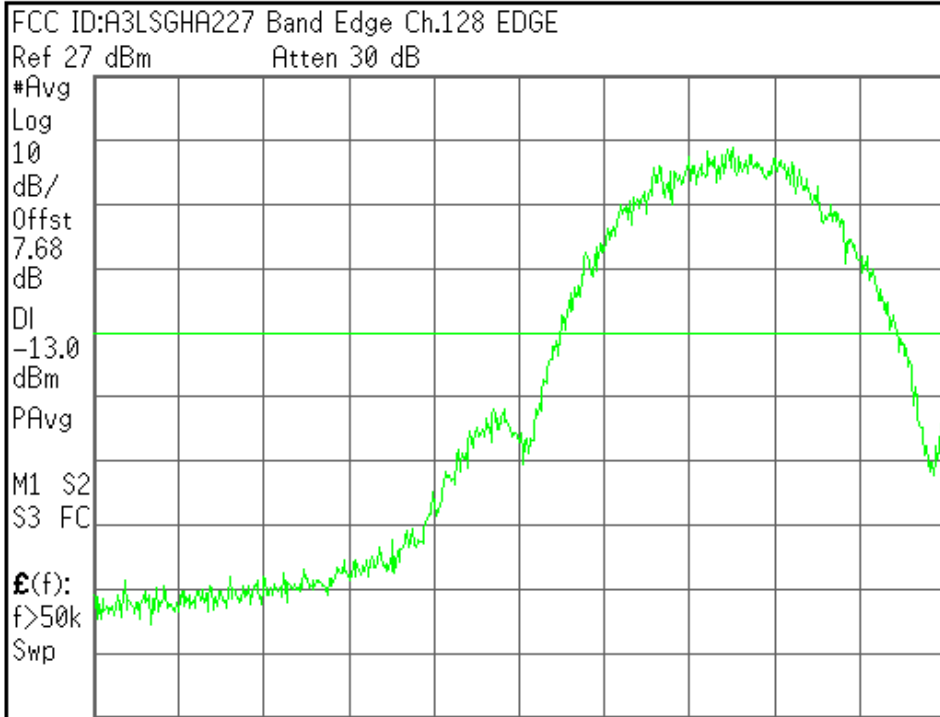
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Start 823.595 0 MHz

Stop 824.050 0 MHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

**Center Freq**  
824.000000 MHz

**Start Freq**  
823.595000 MHz

**Stop Freq**  
824.405000 MHz

**CF Step**  
81.0000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.128 EDGE

Mkr1 823.979 9 MHz

Ref 27 dBm

Atten 30 dB

-25.78 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

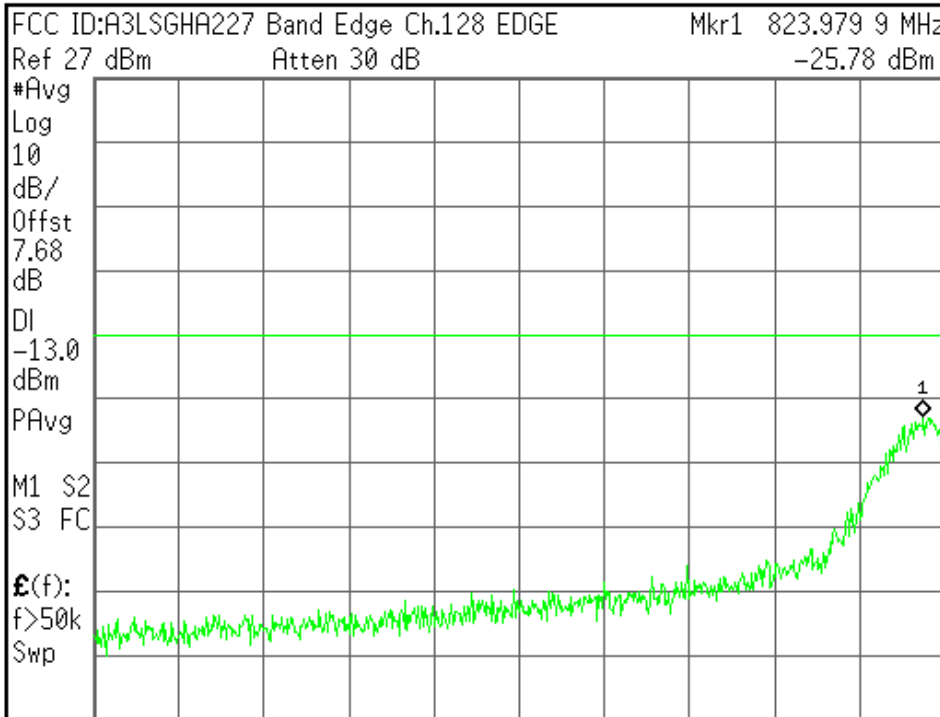
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Start 823.190 0 MHz

Stop 824.000 0 MHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

**Center Freq**  
823.595000 MHz

**Start Freq**  
823.190000 MHz

**Stop Freq**  
824.000000 MHz

**CF Step**  
81.0000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.251 EDGE

Ref 27 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

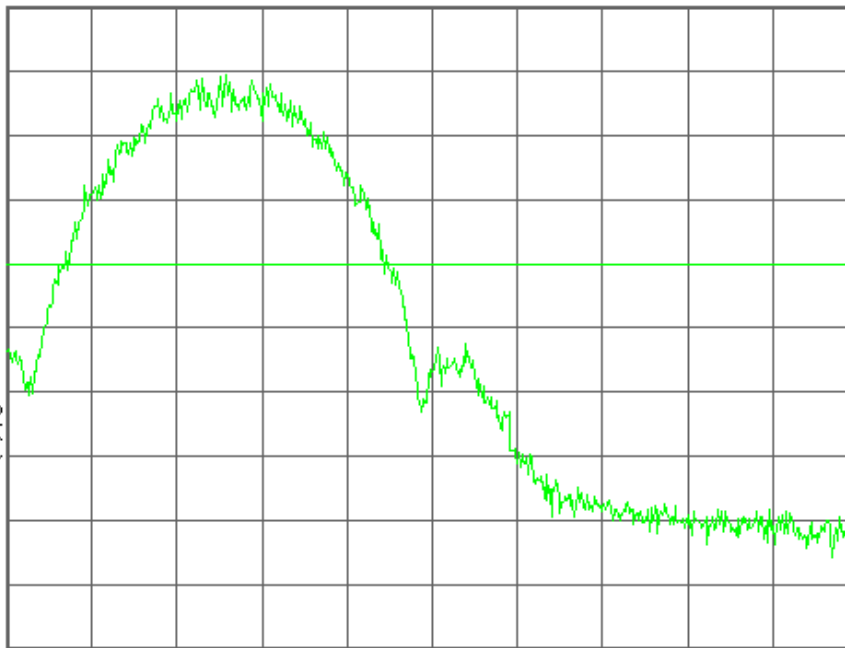
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Start 848.595 0 MHz

Stop 849.405 0 MHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
849.000000 MHz

Start Freq  
848.595000 MHz

Stop Freq  
849.405000 MHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.251 EDGE

Mkr1 849.038 8 MHz

Ref 27 dBm

Atten 30 dB

-26.50 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

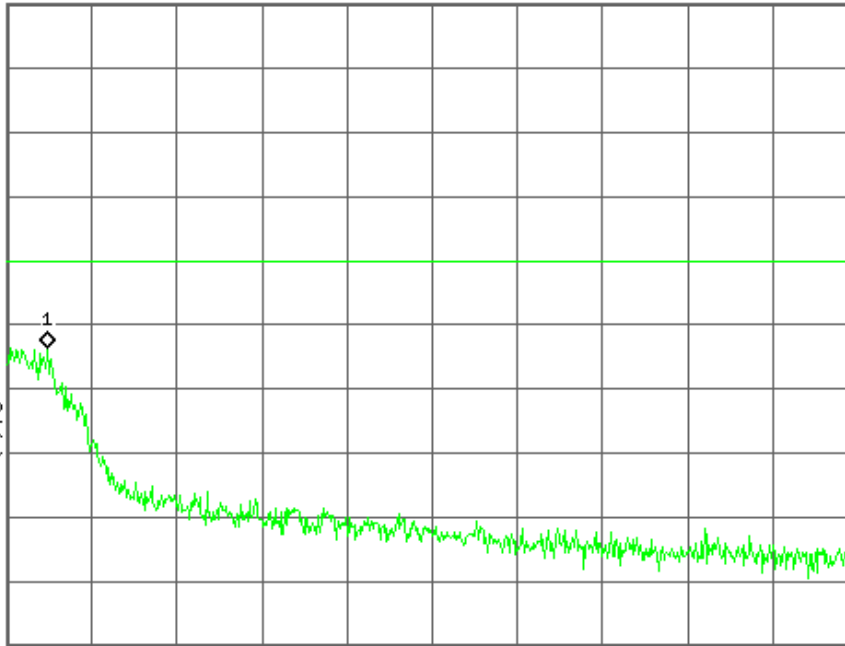
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Start 849.000 0 MHz

Stop 849.810 0 MHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
849.405000 MHz

Start Freq  
849.000000 MHz

Stop Freq  
849.810000 MHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

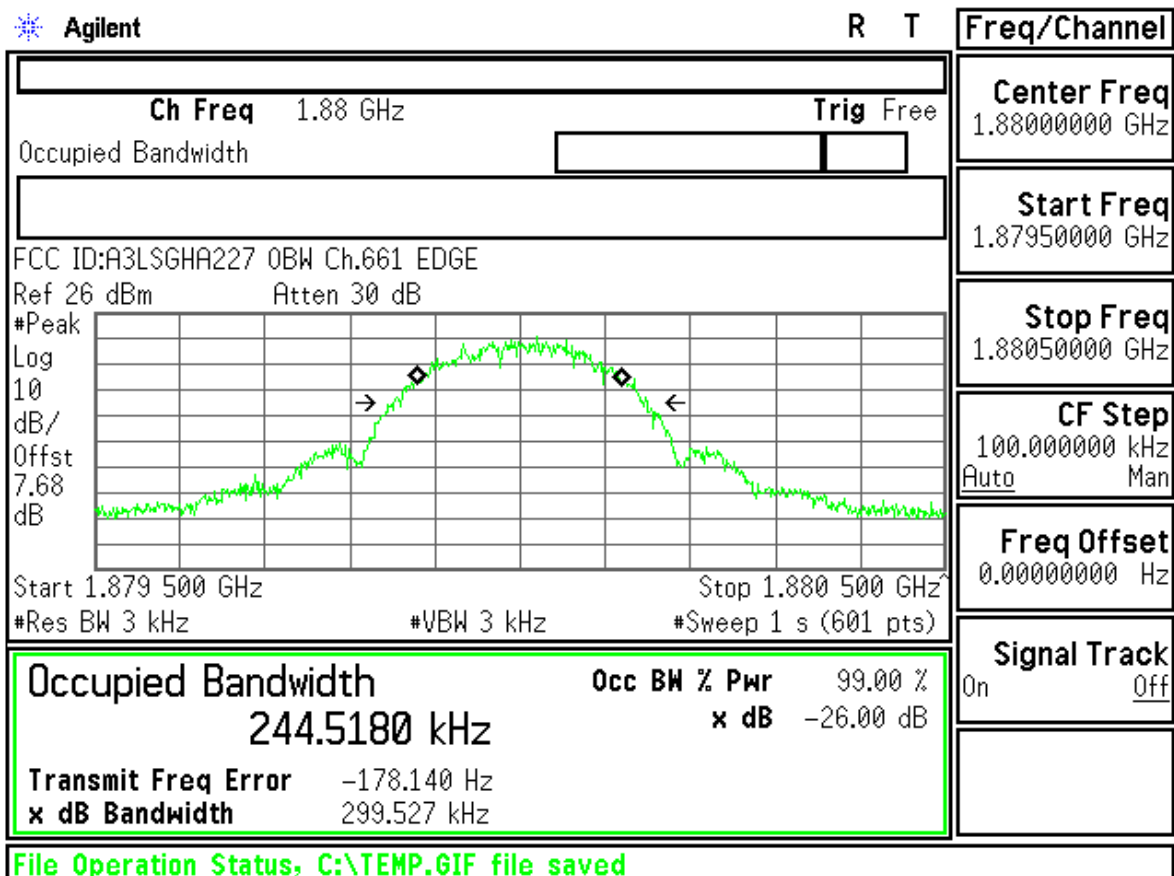
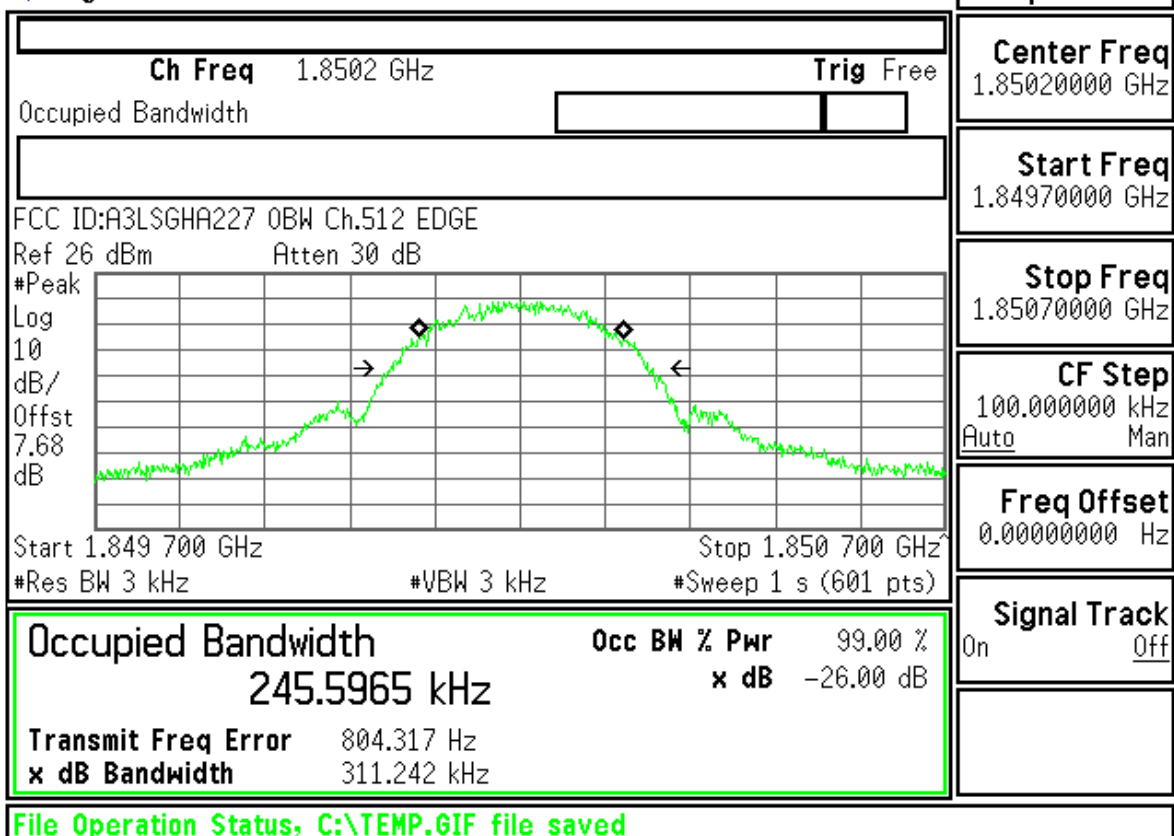
EDGE1900

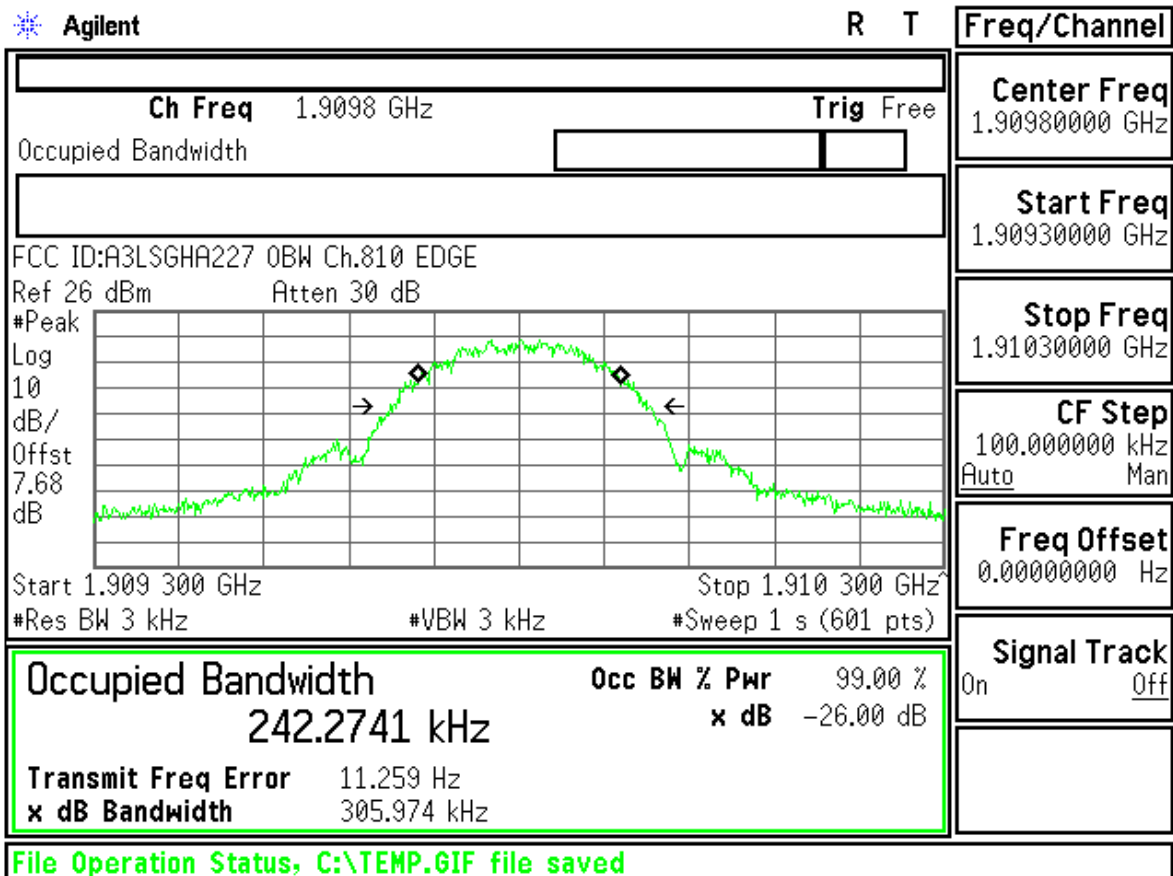


Agilent

R T

Freq/Channel





ID : A3LSGHA227 Transmit Power 512CH EDGE

| Measurement/Instrument Screen |  |                      |  |                          |  |                       |  |                 |                          |                 |                            |  |
|-------------------------------|--|----------------------|--|--------------------------|--|-----------------------|--|-----------------|--------------------------|-----------------|----------------------------|--|
| Control                       |  | EGPRS Transmit Power |  |                          |  |                       |  |                 | PDCH Parms               |                 |                            |  |
| EGPRS Transmit Power Setup ▾  |  | EPK Burst Power      |  |                          |  | EPK Est Carrier Power |  |                 | Downlink Traffic Power ▾ |                 |                            |  |
|                               |  | Minimum              |  | Maximum                  |  | Minimum               |  | Maximum         |                          | Traffic Band    |                            |  |
|                               |  | 23.83 dBm            |  | 25.83 dBm                |  | 24.54 dBm             |  | 25.36 dBm       |                          | PCS             |                            |  |
|                               |  | Average              |  | Std Dev                  |  | Average               |  | Std Dev         |                          | Traffic Channel |                            |  |
|                               |  | 24.98 dBm            |  | 0.38 dBm                 |  | 25.05 dBm             |  | 0.31 dBm        |                          | 512             |                            |  |
|                               |  | 200 /200             |  |                          |  |                       |  | Single          |                          |                 |                            |  |
|                               |  |                      |  |                          |  |                       |  |                 |                          |                 | HS TX Level ▾              |  |
|                               |  |                      |  |                          |  |                       |  |                 |                          |                 | Modulation Coding Scheme ▾ |  |
|                               |  |                      |  |                          |  |                       |  |                 |                          |                 | Return                     |  |
|                               |  |                      |  | Active Cell Transferring |  |                       |  | Sys Type: EGPRS |                          |                 |                            |  |
|                               |  |                      |  |                          |  | IntRef                |  | Offset          |                          | R T             |                            |  |
| 1 of 2                        |  |                      |  |                          |  |                       |  |                 |                          | 1 of 2          |                            |  |

| Measurement/Instrument Screen |  |                          |  |           |  |                         |  |                          |  |                        |  |        |  |
|-------------------------------|--|--------------------------|--|-----------|--|-------------------------|--|--------------------------|--|------------------------|--|--------|--|
| Control                       |  | EGPRS Transmit Power     |  |           |  |                         |  |                          |  | PDCH Params            |  |        |  |
| EGPRS Transmit Power Setup ▾  |  | EP SK Burst Power        |  |           |  | EP SK Est Carrier Power |  |                          |  | Downlink Traffic Power |  |        |  |
|                               |  | Minimum                  |  | Maximum   |  | Minimum                 |  | Maximum                  |  | Traffic Band           |  |        |  |
|                               |  | 24.47 dBm                |  | 25.97 dBm |  | 25.15 dBm               |  | 25.33 dBm                |  | PCS                    |  |        |  |
|                               |  | Average                  |  | Std Dev   |  | Average                 |  | Std Dev                  |  | Traffic Channel        |  |        |  |
|                               |  | 25.16 dBm                |  | 0.24 dBm  |  | 25.21 dBm               |  | 0.04 dBm                 |  | 661                    |  |        |  |
|                               |  | 200 /200                 |  |           |  |                         |  |                          |  | Single                 |  |        |  |
|                               |  |                          |  |           |  |                         |  |                          |  | HS TX Level            |  |        |  |
|                               |  |                          |  |           |  |                         |  | Modulation Coding Scheme |  |                        |  |        |  |
|                               |  |                          |  |           |  |                         |  | Return                   |  |                        |  |        |  |
|                               |  | Active Cell Transferring |  |           |  | Sys Type: EGPRS         |  |                          |  |                        |  |        |  |
|                               |  |                          |  |           |  |                         |  |                          |  |                        |  |        |  |
| 1 of 2                        |  |                          |  |           |  | IntRef                  |  | Offset                   |  | R T                    |  | 1 of 2 |  |

| Measurement/Instrument Screen |  |                          |  |           |  |                         |  |                 |  |                        |  |  |  |        |  |
|-------------------------------|--|--------------------------|--|-----------|--|-------------------------|--|-----------------|--|------------------------|--|--|--|--------|--|
| Control                       |  | EGPRS Transmit Power     |  |           |  |                         |  |                 |  | PDCH Params            |  |  |  |        |  |
| EGPRS Transmit Power Setup ▾  |  | EP SK Burst Power        |  |           |  | EP SK Est Carrier Power |  |                 |  | Downlink Traffic Power |  |  |  |        |  |
|                               |  | Minimum                  |  | Maximum   |  | Minimum                 |  | Maximum         |  | Traffic Band           |  |  |  |        |  |
|                               |  | 23.91 dBm                |  | 25.22 dBm |  | 24.65 dBm               |  | 24.80 dBm       |  | PCS                    |  |  |  |        |  |
|                               |  | Average                  |  | Std Dev   |  | Average                 |  | Std Dev         |  | Traffic Channel        |  |  |  |        |  |
|                               |  | 24.61 dBm                |  | 0.24 dBm  |  | 24.69 dBm               |  | 0.03 dBm        |  | 810                    |  |  |  |        |  |
|                               |  | 200 /200                 |  |           |  |                         |  |                 |  | Single                 |  |  |  |        |  |
|                               |  |                          |  |           |  |                         |  |                 |  |                        |  |  |  |        |  |
|                               |  | Active Cell Transferring |  |           |  |                         |  | Sys Type: EGPRS |  |                        |  |  |  |        |  |
|                               |  |                          |  |           |  |                         |  |                 |  |                        |  |  |  |        |  |
| 1 of 2                        |  |                          |  |           |  | IntRef                  |  | Offset          |  | R T                    |  |  |  | 1 of 2 |  |

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.512 EDGE

Ref 26 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

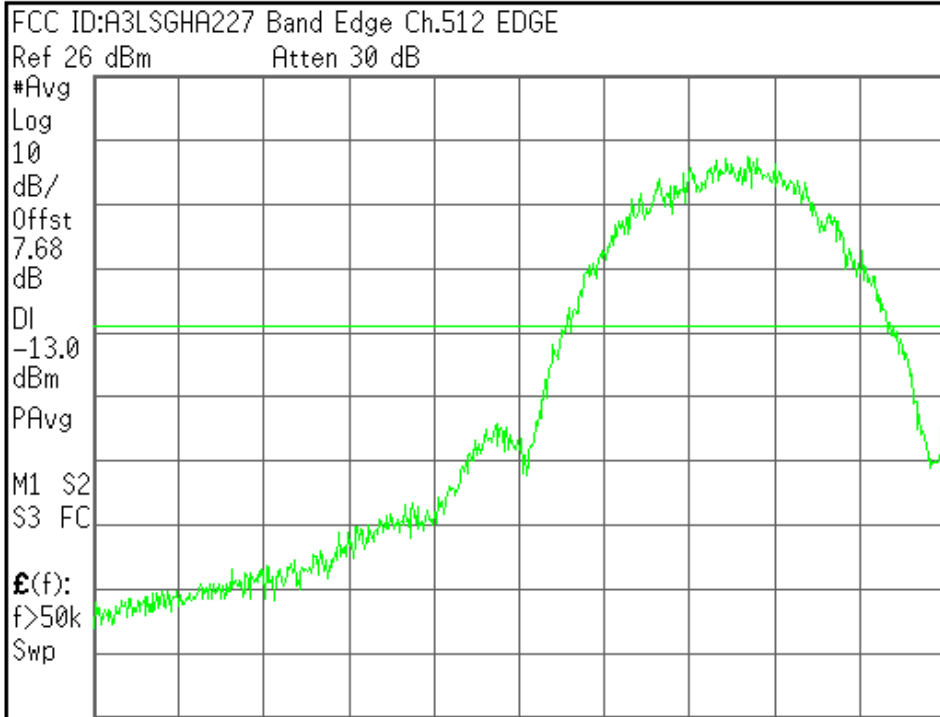
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Start 1.849 595 0 GHz

Stop 1.850 405 0 GHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

**Center Freq**  
1.85000000 GHz

**Start Freq**  
1.84959500 GHz

**Stop Freq**  
1.85040500 GHz

**CF Step**  
81.0000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.512 EDGE

Mkr1 1.849 982 6 GHz

Ref 26 dBm

Atten 30 dB

-27.78 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

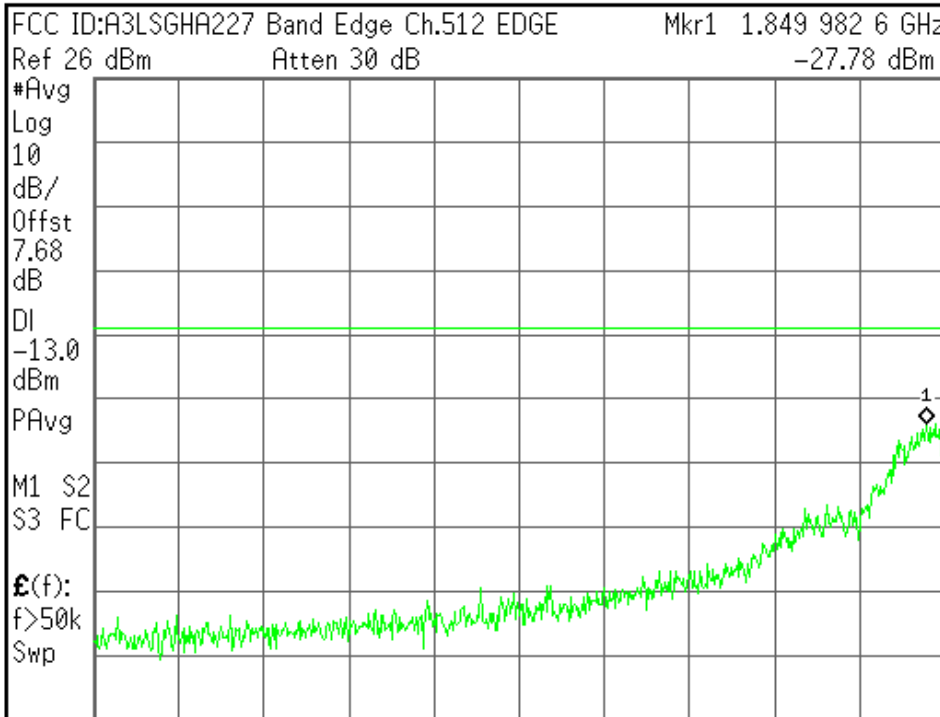
M1 S2

S3 FC

$E(f)$ :

f>50k

Swp



Start 1.849 190 0 GHz

Stop 1.850 000 0 GHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

**Center Freq**  
1.84959500 GHz

**Start Freq**  
1.84919000 GHz

**Stop Freq**  
1.85000000 GHz

**CF Step**  
81.0000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.810 EDGE

Ref 26 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

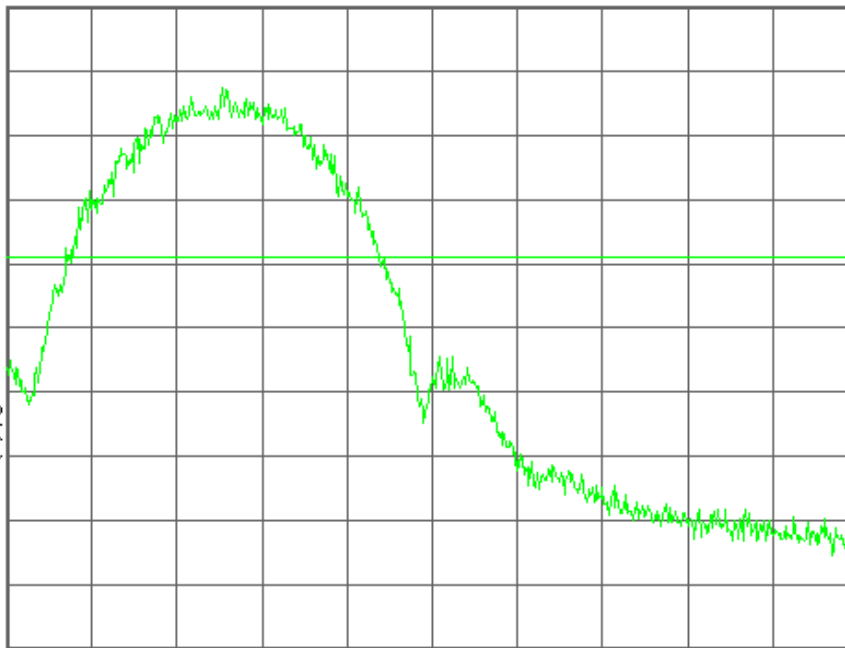
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Start 1.909 595 0 GHz

Stop 1.910 405 0 GHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.91000000 GHz

Start Freq  
1.90959500 GHz

Stop Freq  
1.91040500 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA227 Band Edge Ch.810 EDGE

Mkr1 1.910 031 5 GHz

Ref 26 dBm

Atten 30 dB

-29.47 dBm

#Avg

Log

10

dB/

Offst

7.68

dB

DI

-13.0

dBm

PAvg

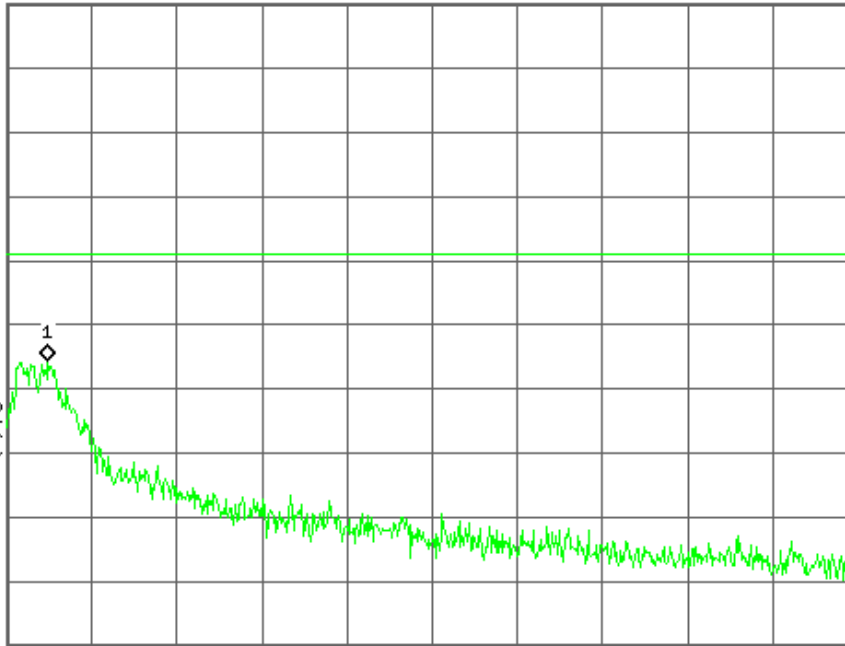
M1 S2

S3 FC

$\mathcal{E}(f)$ :

f>50k

Swp



Start 1.910 000 0 GHz

Stop 1.910 810 0 GHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq  
1.91040500 GHz

Start Freq  
1.91000000 GHz

Stop Freq  
1.91081000 GHz

CF Step  
81.0000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

File Operation Status, C:\TEMP.GIF file saved