



SAMSUNG ELECTRONICS Co., Ltd.,  
Regulatory Compliance Group  
IT R&D Center  
416 Maetan3-Dong,  
Yeongtong-gu, Suwon city,  
Gyeonggi-Do, Korea 443-742

## FCC CFR47 PART 22 SUBPART CERTIFICATION REPORT

**Model Tested:** SCI11  
**FCC ID (Requested):** A3LSWDSCI11  
**Report No:** FI-291-R1  
**Job No:** FI-291  
**Date issued:** November 30, 2011

- Abstract -

All measurement reported here in accordance with FCC Rules, 47CFR  
Part2, Part22

**Prepared By**

---

HK LEE - Test Engineer

**Authorized By**

---

WT 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 Output Power Variation .....                                         | 7           |
| 5.2 Effective Radiated Power / Equivalent Isotropic Radiated Power ..... | 8           |
| 5.3 Radiated Spurious & Harmonic Emission .....                          | 9           |
| 5.4 Occupied Bandwidth .....                                             | 11          |
| 5.5 Spurious and Harmonic Emissions at Antenna Terminal .....            | 11          |
| 5.5.1 Occupied Bandwidth Emission Limits .....                           | 11          |
| 5.5.2 Conducted Spurious Emission .....                                  | 12          |
| 5.6 Frequency Stability / Temperature Variation .....                    | 13          |
| <b>6. TEST DATA .....</b>                                                | <b>14</b>   |
| 6.1 Effective Radiated Power(E.R.P.) .....                               | 14          |
| 6.2 Cellular CDMA Radiated Spurious & Harmonic measurement.....          | 15          |
| 6.3 CDMA Radiated Spurious & Harmonic Conversion Table .....             | 16          |
| 6.4 Frequency Stability.....                                             | 17          |
| 6.4.1 CDMA Frequency Stability Table .....                               | 17          |
| 6.4.2 CDMA Frequency Stability Graph .....                               | 18          |
| <b>7. SAMPLE CALCULATION .....</b>                                       | <b>20</b>   |
| 7.1 Emission Designator .....                                            | 20          |
| <b>8. CONCLUSION.....</b>                                                | <b>21</b>   |
| <b>9. TEST PLOTS.....</b>                                                | <b>22</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
- FCC ID: A3LSWDSCI11
- Model: SCI11
- Quantity: Quantity production is planned
- Emission Designators: 1M29F9W(CDMA)
- Tx Freq. Range: 824.70-848.31MHz (CDMA)
- Rx Freq. Range: 869.70-893.31MHz (CDMA)
- Max. Power Rating: 0.095 W ERP CDMA (19.77 dBm)
- FCC Classification(s): Licensed Non-Broadcast Transmitter Held to Ear(TNE)
- Equipment (EUT) Type: Cellular CDMA Phone with Bluetooth, Ev-DO and WLAN, RFID
- Modulation(s): CDMA
- Frequency Tolerance:  $\pm 0.00025\%$  (2.5ppm)
- FCC Rule Part(s): §22(H), §2.
- Dates of Test: November 14-15, 2011
- Place of Test: SAMSUNG Lab,
- Test Report S/N: FI-291-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.

- End of page –

#### 4. TEST EQUIPMENT LIST

| Name Of Equipment               | Model               | Serial No.       | Due Date     |
|---------------------------------|---------------------|------------------|--------------|
| Spectrum Analyzer               | ESI26               | 836119/010       | 2012-10-25   |
|                                 | E4440A(3Hz~26.5GHz) | MY46187454       | 2012-03-08   |
|                                 | E4440A(3Hz~26.5GHz) | MY41000236       | 2012-04-27   |
| Network Analyzer                | 8753E               | JP38160590       | 2012-06-21   |
| Pre-Amplifier                   | 8449B               | 3008A00691       | 2011-12-15   |
| Communication test set          | 8960                | MY47510060       | 2012-03-08   |
|                                 | 8960                | GB42230535       | 2011-12-23   |
| Controller                      | CO2000              | CO2000/424       | Not Required |
| Turn Unit                       | CT0800              | CT0800/057       | Not Required |
| Rotating Device                 | DE3600-RH-PR        | DE3600-RH-PR/050 | Not Required |
| Antenna Master                  | MA4000              | MA4000/204       | Not Required |
| Horn Antenna                    | HF906               | 100134           | 2013-09-05   |
|                                 | BBHA9120            | 9120D-636        | 2012-07-14   |
| Dipole Antenna                  | UHA 9105            | 9105-2412        | 2013-09-09   |
|                                 | UHA 9105            | 9105-2413        | 2012-07-15   |
| Receive Antenna                 | HL040               | 353255/019       | 2013-09-05   |
| Power Supply                    | E3640A              | MY40003594       | 2012-06-21   |
|                                 | E3640A              | MY40003595       | 2012-05-27   |
|                                 | E3632A              | MY40022438       | 2012-03-08   |
| Divider                         | 11636B              | 51946            | 2012-07-04   |
|                                 | 11636B              | 51942            | 2012-07-05   |
|                                 | 11636B              | 56918            | 2012-09-28   |
| High Pass Filter                | WHK/3.0/18G-10SS    | 492              | Not Required |
|                                 | WHK/3.5/18G-10SS    | 4                | Not Required |
| Environmental Chamber           | SH-241              | 92000549         | 2012-11-14   |
|                                 | SH-241              | 92000548         | 2012-11-14   |
| Shielded Fully Anechoic Chamber | CHAMBER             | ANT0001          | Not Required |

## 5. DESCRIPTION OF TESTS

### 5.1 Output Power Variation

#### Test Condition to measure the Output Power

This device was tested under all R.C.s and S.O.s and worst case is reported with RC3/SO55, with “All Up” power control bits.

The following procedures were followed according to FCC “SAR Measurement Procedures for 3G Devices”.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 5-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3,4 or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 5-2 was applied.
5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

| Parameter      | Units       | Value |
|----------------|-------------|-------|
| $\hat{I}_{or}$ | dBm/1.23MHz | -104  |
| Pilot Ec/Ior   | dB          | -7    |
| Traffic Ec/Ior | dB          | -7.4  |

**Table 5-1**  
**Parameters for Max. Power for RC1**

| Parameter      | Units       | Value |
|----------------|-------------|-------|
| $\hat{I}_{or}$ | dBm/1.23MHz | -86   |
| Pilot Ec/Ior   | dB          | -7    |
| Traffic Ec/Ior | dB          | -7.4  |

**Table 5-2**  
**Parameters for Max. Power for RC1**

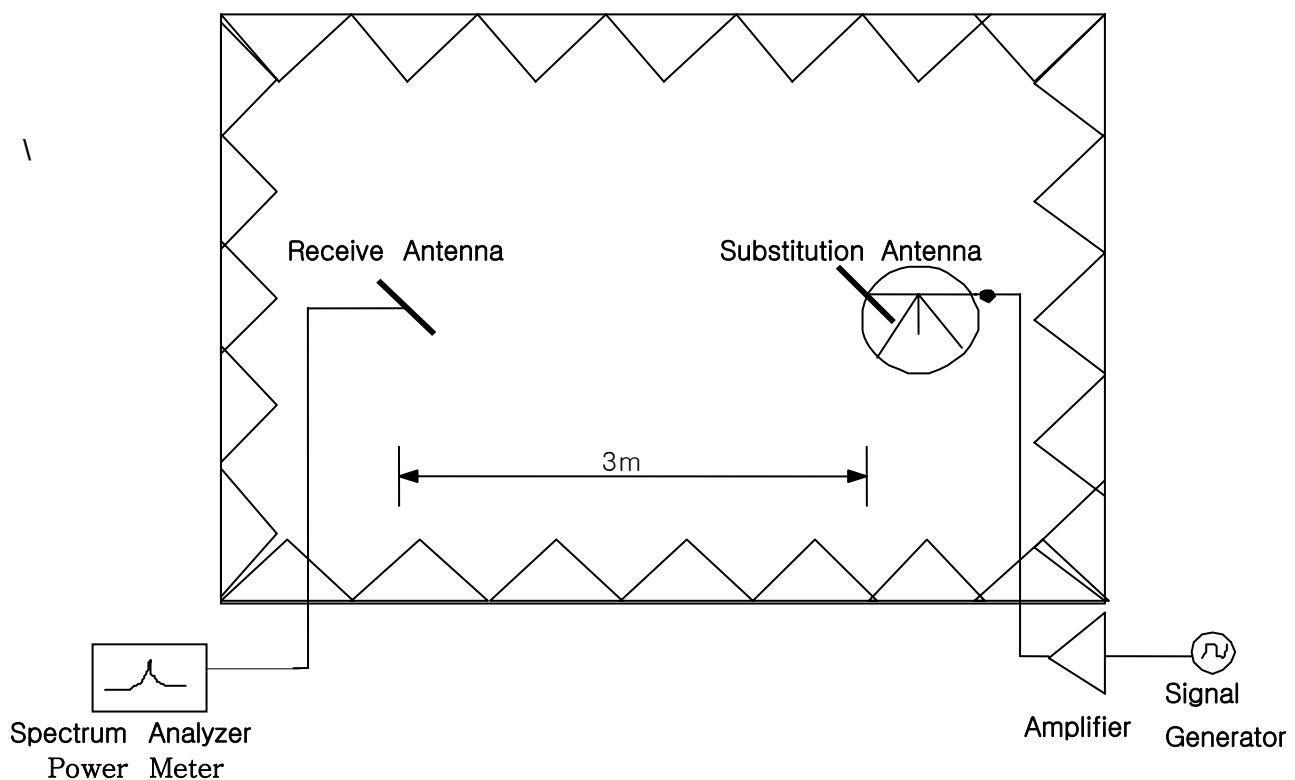
| Band     | Channel | CDMA2000 RC | SO2   | SO55  | TDSO SO32 (F-SCH) | TDSO SO32 (+SCH) | 1x EV-DO Rev. 0 | 1x EV-DO Rev. A |
|----------|---------|-------------|-------|-------|-------------------|------------------|-----------------|-----------------|
| Cellular | 1013    | RC1         | 23.95 | 23.93 | 23.88             | 23.86            | 23.95           | 24.07           |
|          |         | RC3         | 23.86 | 23.85 |                   |                  |                 |                 |
|          | 384     | RC1         | 24.02 | 24    | 23.92             | 23.92            | 24.01           | 24.13           |
|          |         | RC3         | 23.92 | 23.93 |                   |                  |                 |                 |
|          | 777     | RC1         | 24.21 | 24.22 | 24.13             | 24.14            | 24.21           | 24.29           |
|          |         | RC3         | 24.13 | 24.13 |                   |                  |                 |                 |

**Table 5-3**  
**Maximum Power Output Table for SC111**

## 5.2 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



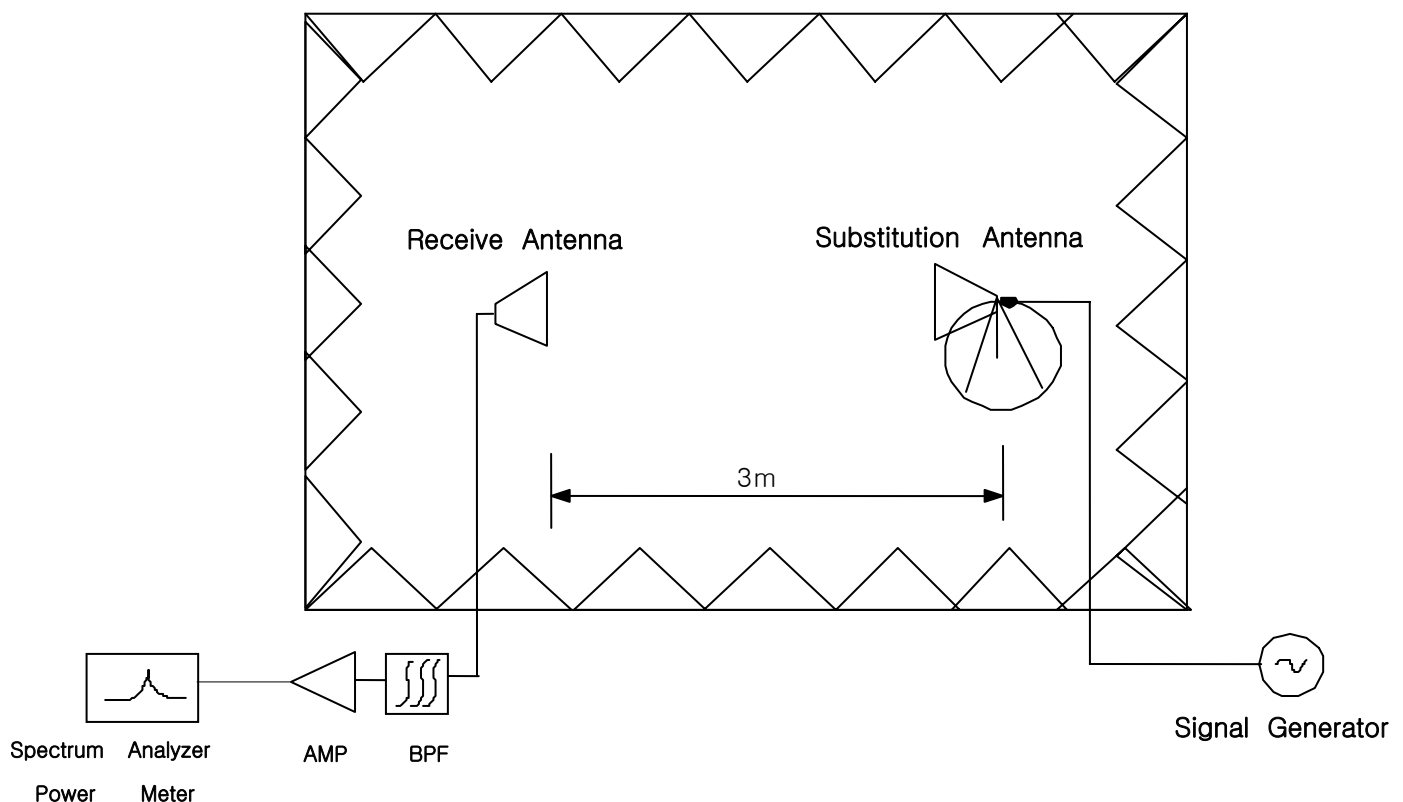
**Figure 3. Diagram of ERP/EIRP test Set-up**

The EUT was placed on the rotating device at 3-meters from the receive antenna and tested in 3 orthogonal planes. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. For CDMA & PCS 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.

## 5.3 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 and tested in 3 orthogonal planes. 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 600 PCS Mode 2<sup>nd</sup> Harmonic(3760MHz)**

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 3760MHz. 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  $25.5\text{dBm} - (-24.8) = 50.3\text{dBc}$ .

- End of page -

## **5.4 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.

## **5.5 Spurious and Harmonic Emissions at Antenna Terminal**

### **5.5.1 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.

– End of page –

| 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 1. Cellular Service Frequency Blocks**

### 5.5.2 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  $-13$ dBm, calculation shown below.

$$43 + 10\log(0.333 \text{ W}) = 38.22\text{dB}$$

$$25.22 \text{ dBm} - 38.22 \text{ dB} = -13 \text{ dBm}$$

#### **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  $-13$ dBm 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. (PCS Mode : 10MHz to 20GHz). A display line was placed at  $-13$ dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements. Plots are shown herein.

## 5.6 Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

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

Specification- The 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  $\pm 0.00025$  ( $\pm 2.5$ ppm) of the center frequency.

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25°C to 27°C to provide a reference).
2. The equipment is subjected to an overnight "soak" at -30°C without any power applied.
3. After the overnight "soak" at -30°C (Usually 14~16 hours), the equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency 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°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°C up to +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
  - The artificial load is mounted external to the temperature chamber.

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

– End of page –

## 6. TEST DATA

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

Supply Voltage : 3.7VDC

Modulation : CDMA

#### ■Reference level

| Frequency (MHz) | Output (dBm) | Polarization | P/M (dBm) | Ant gain (dBd) | Ref level (dBm) |
|-----------------|--------------|--------------|-----------|----------------|-----------------|
| 824.70          | 19.00        | H            | -18.57    | -0.67          | -17.90          |
|                 |              | V            | -19.44    | -0.67          | -18.77          |
| 836.52          | 19.00        | H            | -19.03    | -0.73          | -18.30          |
|                 |              | V            | -19.33    | -0.73          | -18.60          |
| 848.31          | 20.00        | H            | -20.23    | -0.79          | -19.44          |
|                 |              | V            | -19.44    | -0.79          | -18.65          |

#### ■Result

| Frequency (MHz) | From EUT Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | ERP (dBm) | ERP (W) | Battery  |
|-----------------|-----------------------------|--------------------|-----------------|-----------|---------|----------|
| 824.70          | -17.40                      | H                  | 61/160          | 19.50     | 0.089   | Standard |
| 836.52          | -17.83                      | H                  | 66/115          | 19.47     | 0.089   | Standard |
| 848.31          | -19.67                      | H                  | 70/90           | 19.77     | 0.095   | 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 Cellular CDMA Radiated Spurious & Harmonic measurement

### Field Strength of SPURIOUS Radiation

Operating Frequency : 824.70 MHz(Low), 836.52MHz(Middle), 848.31MHz(High)

Measured Output Power : 19.77 dBm = 0.095 W

Modulation Signal : CDMA

Limit :  $43 + 10\log_{10}(P) = 32.77 \text{ dBc}$

#### ■Result

| Channel | Harmonic | Frequency (MHz) | From EUT Tested level (dBm) | POL (H/V) | Result (dBc) |
|---------|----------|-----------------|-----------------------------|-----------|--------------|
| 1013    | 2        | 1649.40         | -61.87                      | H         | 69.05        |
|         | 3        | 2474.10         | -52.21                      | H         | 54.15        |
|         | 4        | 3298.80         | -66.35                      | V         | 64.42        |
|         | 5        | 4123.50         | -                           | -         | -            |
|         | 6        | 4948.20         | -                           | -         | -            |
|         | 7        | 5772.90         | -                           | -         | -            |
| 384     | 2        | 1673.04         | -58.35                      | V         | 66.05        |
|         | 3        | 2509.56         | -48.62                      | H         | 50.35        |
|         | 4        | 3346.08         | -65.50                      | H         | 64.32        |
|         | 5        | 4182.68         | -                           | -         | -            |
|         | 6        | 5019.12         | -                           | -         | -            |
|         | 7        | 5855.64         | -                           | -         | -            |
| 777     | 2        | 1696.62         | -60.75                      | H         | 66.40        |
|         | 3        | 2544.93         | -51.08                      | V         | 53.14        |
|         | 4        | 3393.24         | -65.70                      | H         | 64.01        |
|         | 5        | 4241.55         | -                           | -         | -            |
|         | 6        | 5089.86         | -                           | -         | -            |
|         | 7        | 5938.17         | -                           | -         | -            |

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

### 6.3 CDMA Radiated Spurious & Harmonic Conversion Table

Date : November 15, 2011

Test Engineer : HK LEE

- 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+ 2.15 - (-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 | ⑤Test ed EUT Level : H dBm | ⑤Test ed EUT Level : V dBm | ⑥ Result EUT : H (dBc) | ⑥ Result EUT : V (dBc) |
|------|-----|-----------------|-------------|-------------------|---------------|---------------------|---------------------|----------------------------|----------------------------|------------------------|------------------------|
| 1013 | 2   | 1649.40         | -8.77       | 9.40              | -13.60        | -27.73              | -27.03              | -61.87                     | -61.61                     | 69.05                  | 69.49                  |
|      | 3   | 2474.10         | -11.12      | 10.60             | -12.50        | -32.97              | -32.23              | -52.21                     | -52.06                     | 54.15                  | 54.74                  |
|      | 4   | 3298.80         | -12.19      | 12.00             | -12.80        | -36.08              | -36.84              | -66.91                     | -66.35                     | 65.74                  | 64.42                  |
|      | 5   | 4123.50         | -13.85      | 12.60             | -11.80        | -39.75              | -39.33              | -                          | -                          | -                      | -                      |
|      | 6   | 4948.20         | -15.03      | 12.70             | -10.70        | -42.44              | -42.28              | -                          | -                          | -                      | -                      |
|      | 7   | 5772.90         | -17.11      | 13.10             | -9.00         | -44.12              | -44.43              | -                          | -                          | -                      | -                      |
| 384  | 2   | 1673.04         | -8.83       | 9.40              | -13.60        | -27.98              | -27.21              | -60.75                     | -58.35                     | 67.68                  | 66.05                  |
|      | 3   | 2509.56         | -11.24      | 10.60             | -12.40        | -33.18              | -32.42              | -48.62                     | -49.24                     | 50.35                  | 51.73                  |
|      | 4   | 3346.08         | -12.13      | 12.00             | -12.90        | -36.09              | -36.75              | -65.50                     | -66.39                     | 64.32                  | 64.55                  |
|      | 5   | 4182.68         | -14.18      | 12.60             | -11.40        | -39.47              | -39.56              | -                          | -                          | -                      | -                      |
|      | 6   | 5019.12         | -15.91      | 12.70             | -9.80         | -42.07              | -42.44              | -                          | -                          | -                      | -                      |
|      | 7   | 5855.64         | -17.15      | 13.10             | -9.00         | -45.07              | -44.94              | -                          | -                          | -                      | -                      |
| 777  | 2   | 1696.62         | -8.88       | 9.40              | -13.50        | -29.26              | -28.45              | -60.75                     | -60.91                     | 66.40                  | 67.37                  |
|      | 3   | 2544.93         | -11.22      | 10.60             | -12.40        | -32.63              | -32.85              | -51.61                     | -51.08                     | 53.89                  | 53.14                  |
|      | 4   | 3393.24         | -12.28      | 12.00             | -12.70        | -36.60              | -36.89              | -65.70                     | -66.07                     | 64.01                  | 64.09                  |
|      | 5   | 4241.55         | -14.15      | 12.60             | -11.50        | -39.36              | -39.77              | -                          | -                          | -                      | -                      |
|      | 6   | 5089.86         | -16.16      | 12.70             | -9.50         | -42.73              | -42.38              | -                          | -                          | -                      | -                      |
|      | 7   | 5938.17         | -17.34      | 13.10             | -8.80         | -45.37              | -45.34              | -                          | -                          | -                      | -                      |

## 6.4 Frequency Stability

### 6.4.1 CDMA Frequency Stability Table

Operating Frequency : 836,520,000 Hz

Channel : 384

Reference Voltage : 3.7VDC

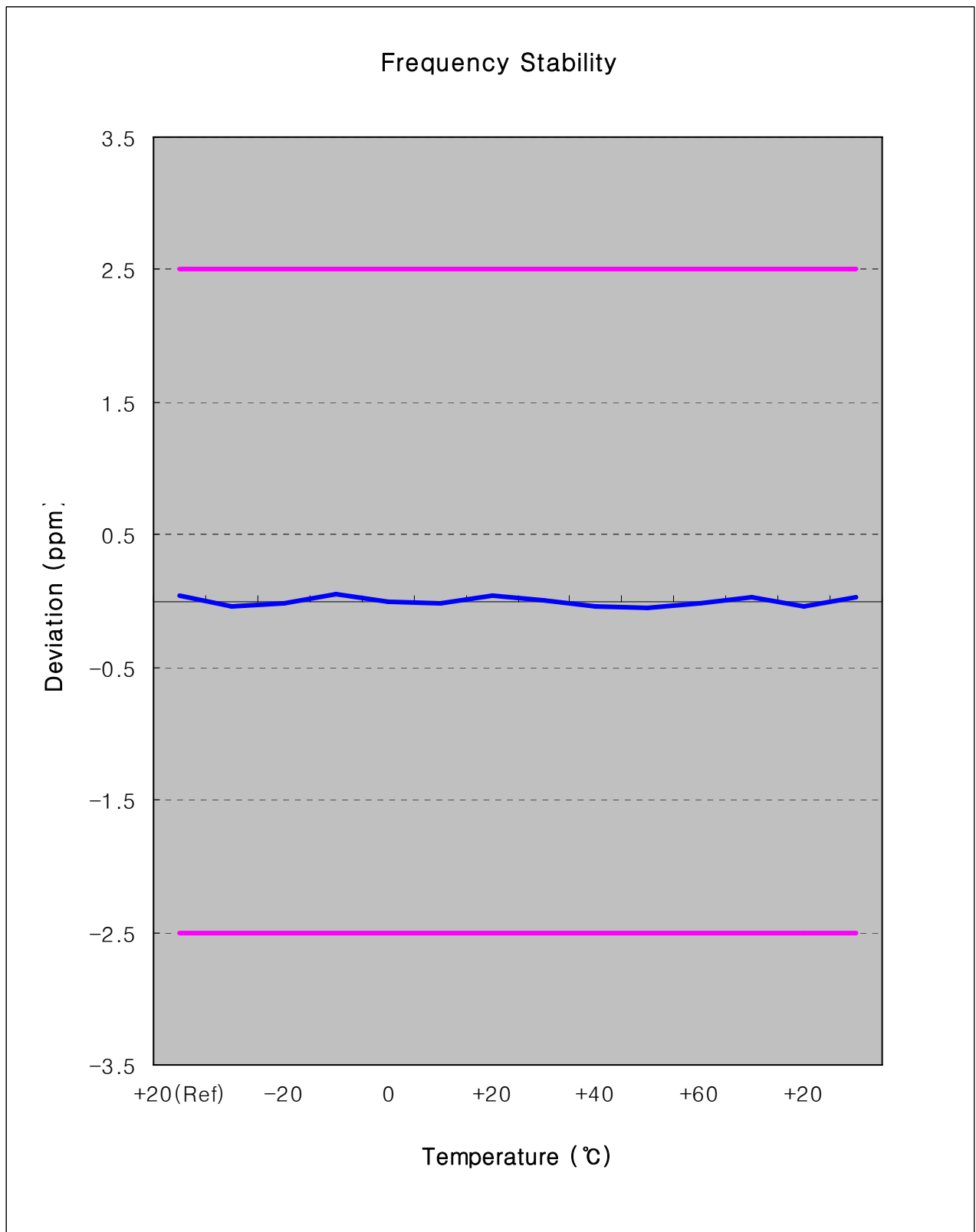
**Deviation Limit :  $\pm 0.00025$  % or 2.5ppm**

| Voltage (%)    | Power (VDC) | Temp. (°C) | Frequency Error (Hz) | Frequency (Hz) | Deviation (%) | ppm    |
|----------------|-------------|------------|----------------------|----------------|---------------|--------|
| 100%           | 3.70        | +20(Ref)   | 3.90                 | 836,520,004    | 0.000000      | 0.005  |
| 100%           |             | -30        | -34.50               | 836,519,966    | -0.000004     | -0.041 |
| 100%           |             | -20        | 33.30                | 836,520,033    | 0.000004      | 0.040  |
| 100%           |             | -10        | -30.80               | 836,519,969    | -0.000004     | -0.037 |
| 100%           |             | 0          | -17.00               | 836,519,983    | -0.000002     | -0.020 |
| 100%           |             | +10        | -48.00               | 836,519,952    | -0.000006     | -0.057 |
| 100%           |             | +20        | 3.90                 | 836,520,004    | 0.000000      | 0.005  |
| 100%           |             | +30        | -39.40               | 836,519,961    | -0.000005     | -0.047 |
| 100%           |             | +40        | 25.10                | 836,520,025    | 0.000003      | 0.030  |
| 100%           |             | +50        | 2.80                 | 836,520,003    | 0.000000      | 0.003  |
| 100%           |             | +60        | -29.50               | 836,519,971    | -0.000004     | -0.035 |
| 115%           | 4.26        | +20        | -10.90               | 836,519,989    | -0.000001     | -0.013 |
| Batt. Endpoint | 3.35        | +20        | -23.50               | 836,519,977    | -0.000003     | -0.028 |

**Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.**

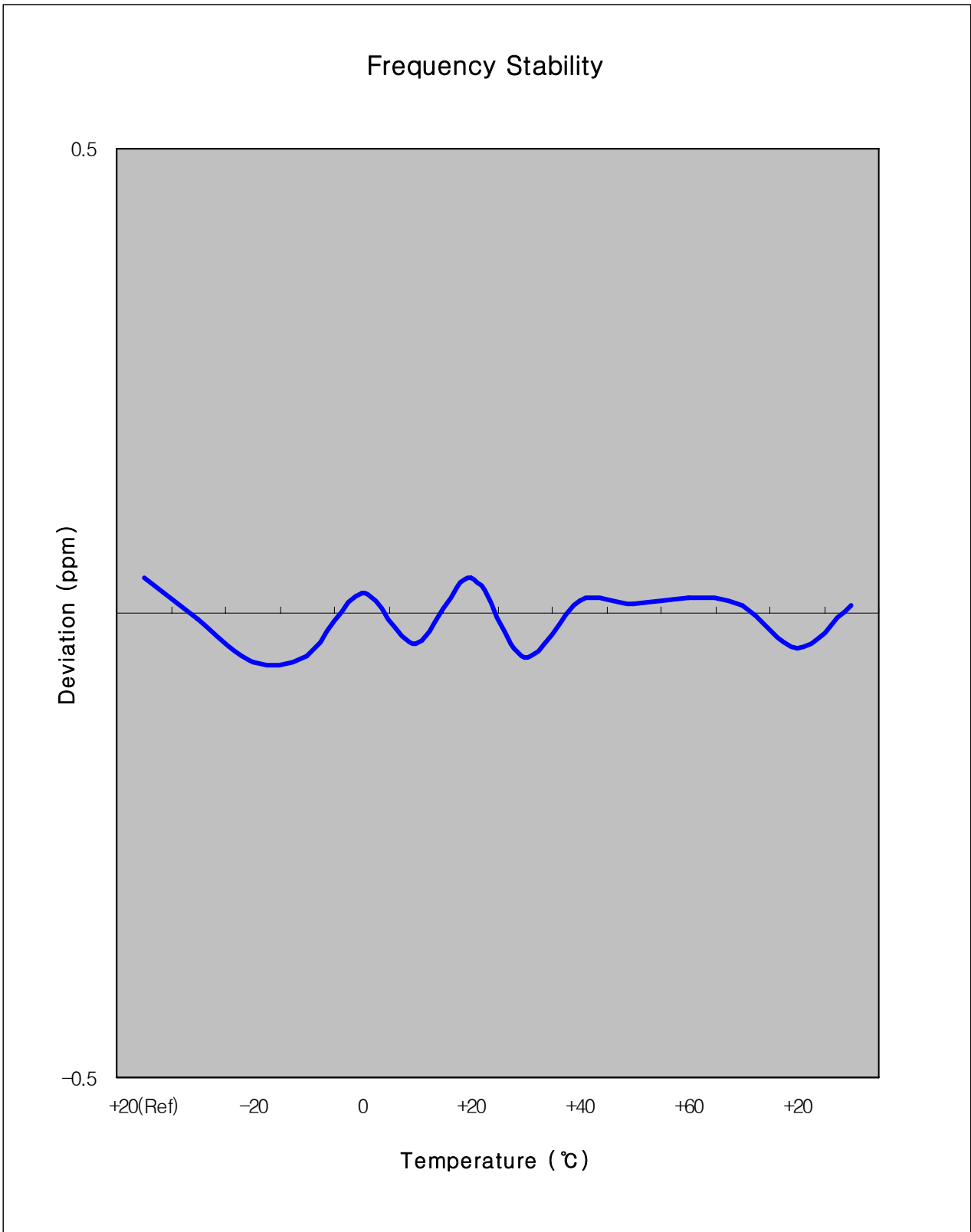
**The EUT is tested down to the battery end point**

### 6.4.2 CDMA Frequency Stability Graph



– End of page –

Zoom In



– End of page –

## 7. SAMPLE CALCULATION

### 7.1 Emission Designator

Emission Designator = 1M25F9W

CDMA BW = 1.25MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination(Audio/Data)

(Measured at the 99.75% power bandwidth)

– End of page –



## **8. CONCLUSION**

The data collected shows that the SAMSUNG Cellular CDMA Phone with Bluetooth, Ev-DO and WLAN, RFID

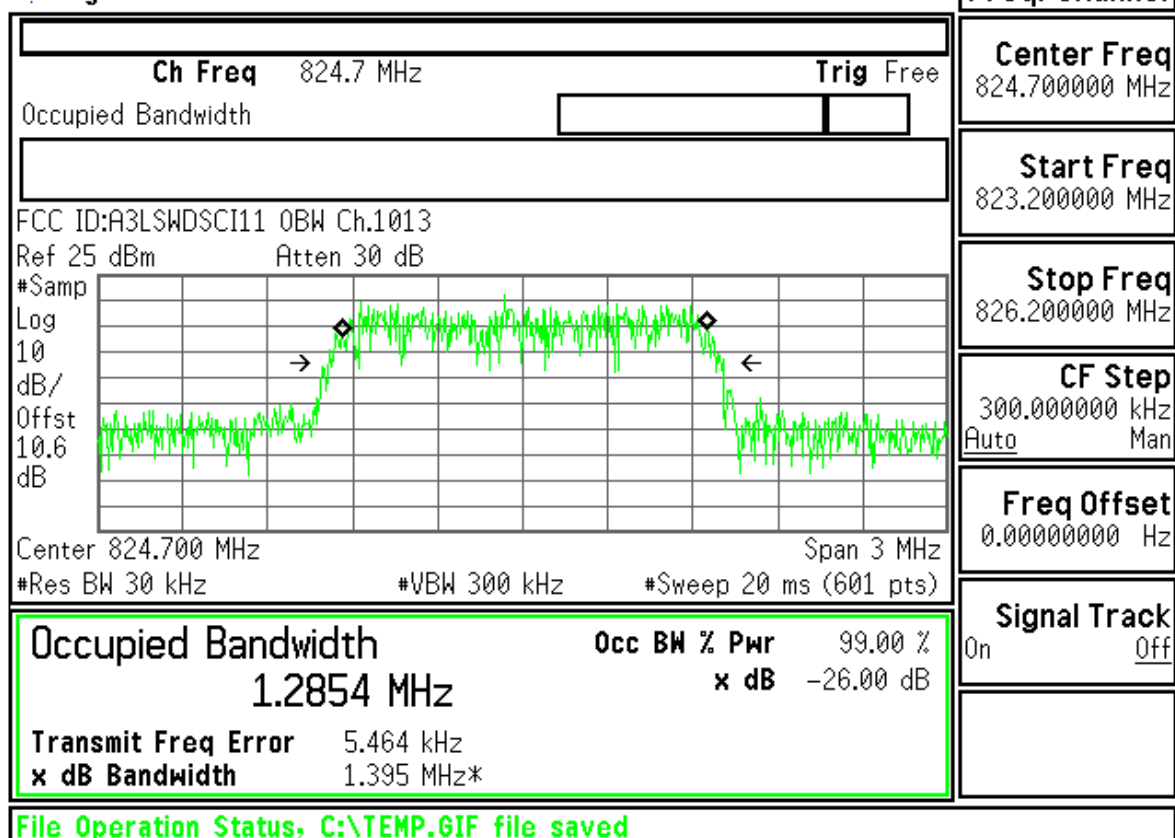
FCC ID : A3LSWDSCI11 complies with all the requirements of Parts 2, 22 of the FCC Rules.

– End of page -

## 9. TEST PLOTS

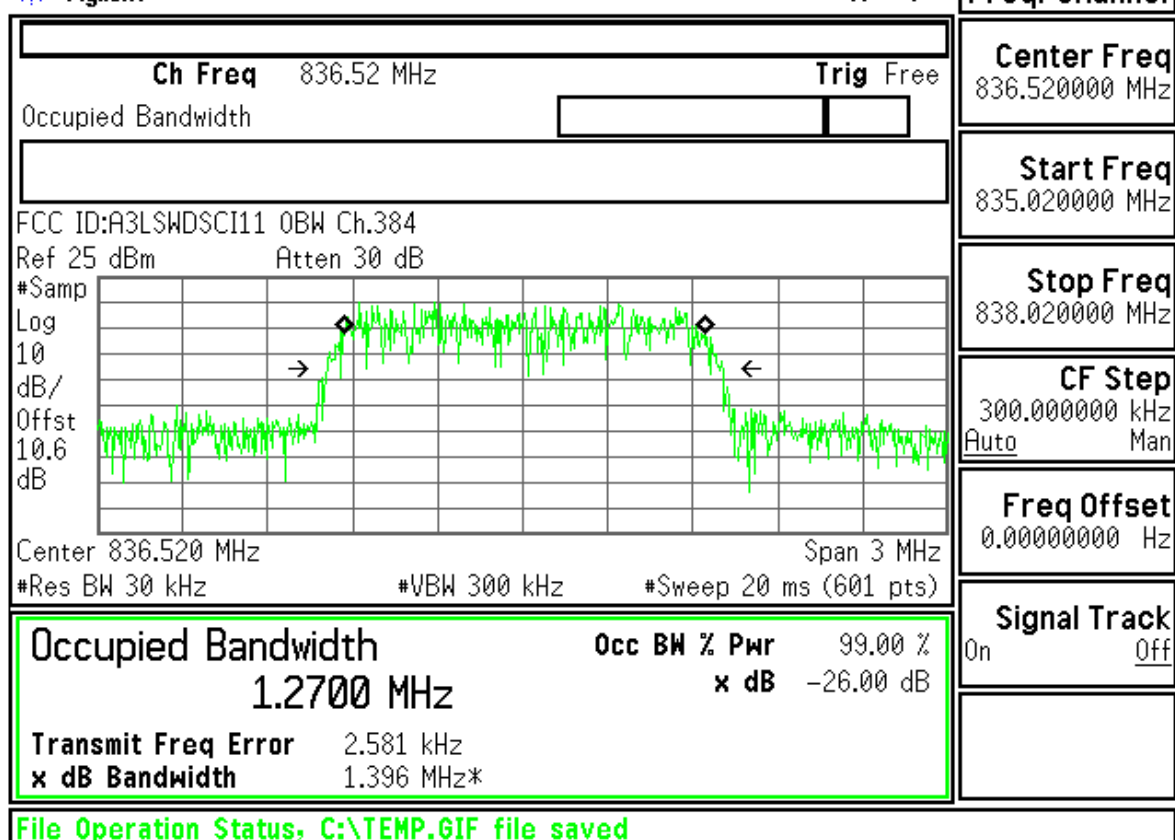
Agilent

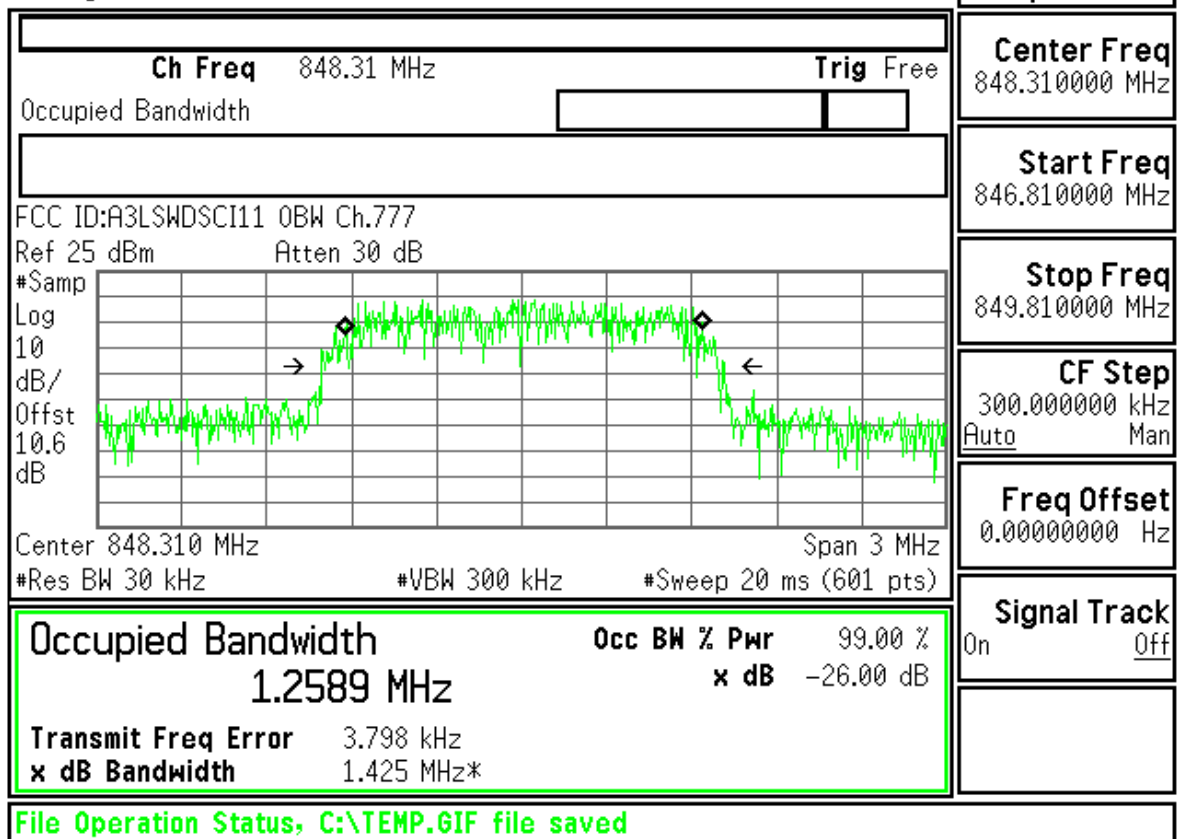
R T



Agilent

R T





Agilent

R T

Freq/Channel

FCC ID:A3LSWDSCI11 Cond Spur Ch.1013

Ref 25 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

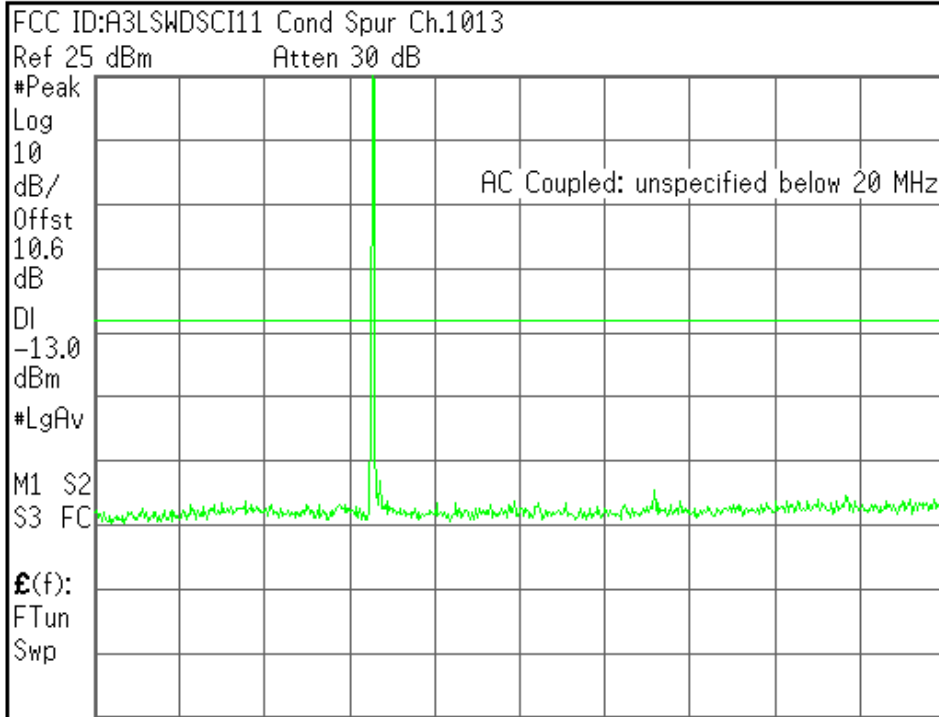
M1 S2

S3 FC

£(f):

FTun

Swp



Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

Invalid suffix

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

Agilent

R T

Freq/Channel

FCC ID:A3LSWDSCI11 Cond Spur Ch.1013

Mkr1 374.5 MHz

Ref 25 dBm

Atten 30 dB

-41.35 dBm

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

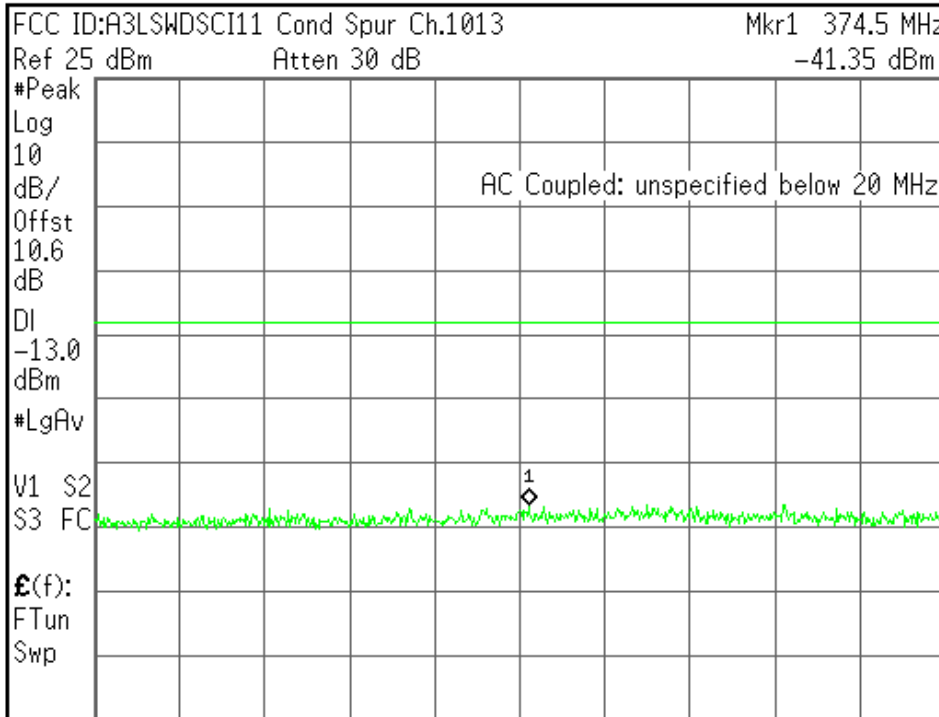
V1 S2

S3 FC

£(f):

FTun

Swp



Center 367.4 MHz

Span 714.7 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.2 ms (601 pts)

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

Center Freq  
367.350000 MHz

Start Freq  
10.0000000 MHz

Stop Freq  
724.700000 MHz

CF Step  
71.4700000 MHz  
Auto Man

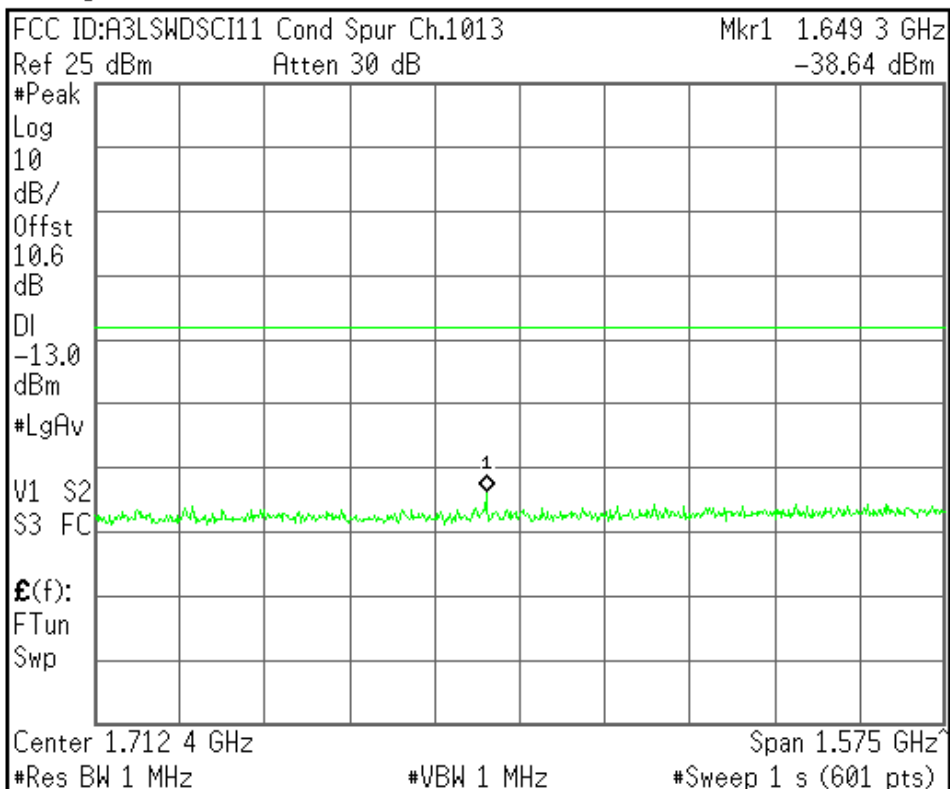
Freq Offset  
0.00000000 Hz

Signal Track  
On Off

Agilent

R T

Freq/Channel



Center Freq  
1.71235000 GHz

Start Freq  
924.700000 MHz

Stop Freq  
2.50000000 GHz

CF Step  
157.530000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

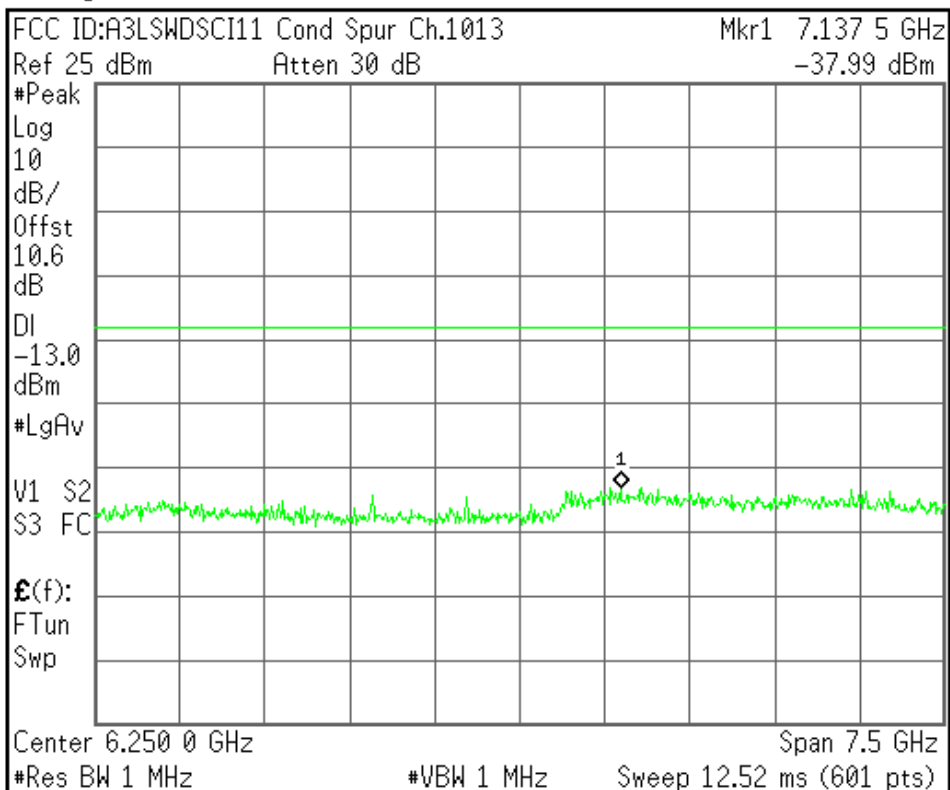
Signal Track  
On Off

Suffix not allowed

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:A3LSWDSCI11 Cond Spur Ch.384

Ref 25 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

10.6

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:A3LSWDSCI11 Cond Spur Ch.384

Mkr1 293.3 MHz

Ref 25 dBm

Atten 30 dB

-41.30 dBm

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq  
373.260000 MHz

Start Freq  
10.0000000 MHz

Stop Freq  
736.520000 MHz

CF Step  
72.6520000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

Center 373.3 MHz

Span 726.5 MHz

#Res BW 1 MHz

#VBW 1 MHz

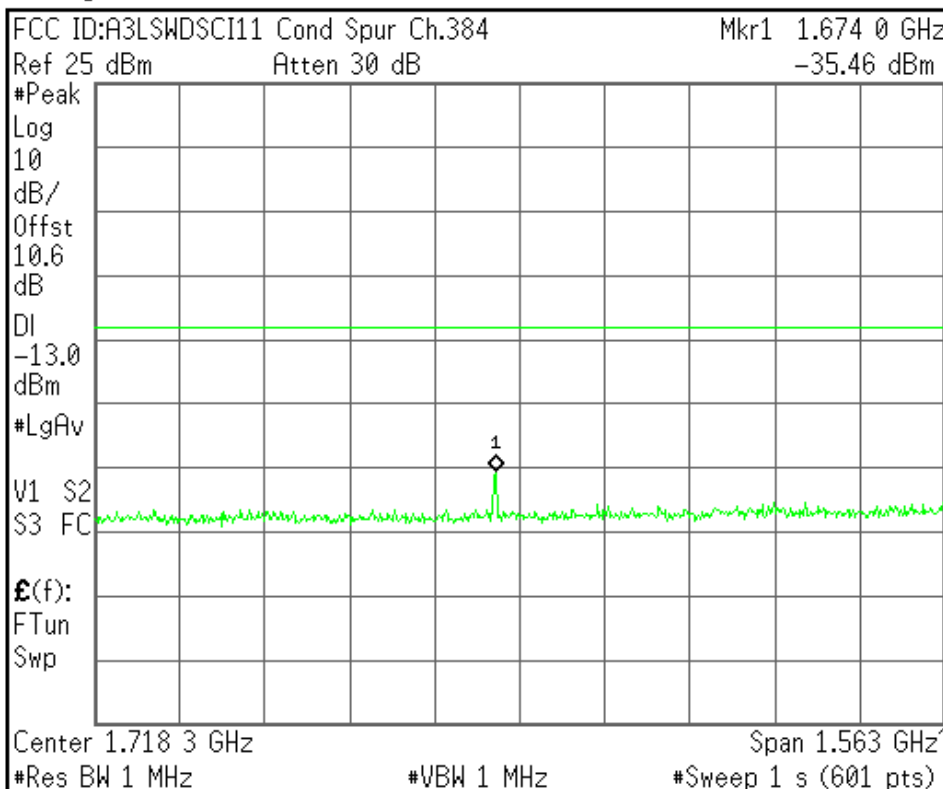
Sweep 1.24 ms (601 pts)

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

Agilent

R T

Freq/Channel



Center Freq  
 1.71826000 GHz

Start Freq  
 936.520000 MHz

Stop Freq  
 2.50000000 GHz

CF Step  
 156.348000 MHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

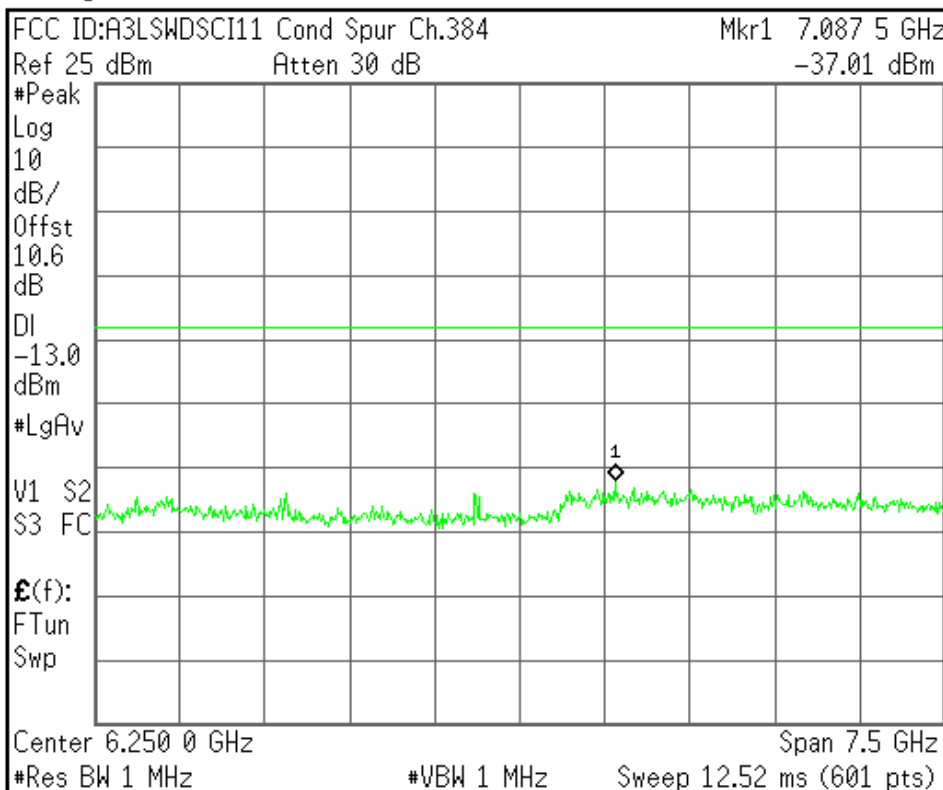
Signal Track  
 On Off

Suffix not allowed

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:A3LSWDSCI11 Cond Spur Ch.777

Ref 25 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

10.6

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:A3LSWDSCI11 Cond Spur Ch.777

Mkr1 384.1 MHz

Ref 25 dBm

Atten 30 dB

-41.28 dBm

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

V1 S2

S3 FC

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq  
379.155000 MHz

Start Freq  
10.0000000 MHz

Stop Freq  
748.310000 MHz

CF Step  
73.8310000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

Center 379.2 MHz

Span 738.3 MHz

#Res BW 1 MHz

#VBW 1 MHz

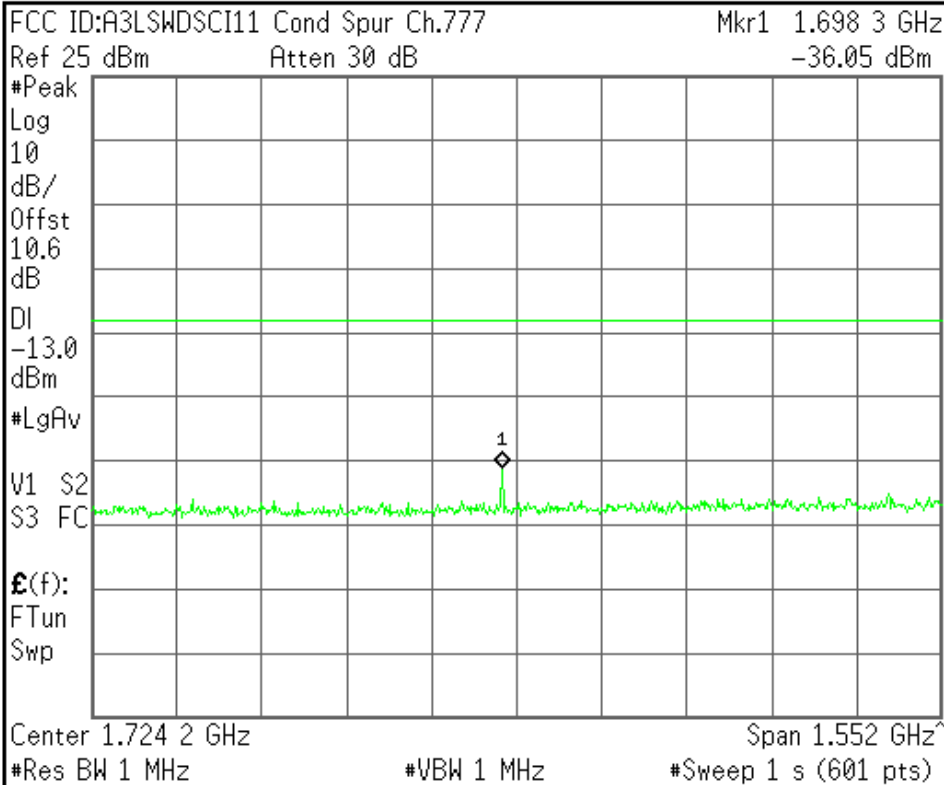
Sweep 1.24 ms (601 pts)

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

Agilent

R T

Freq/Channel



Center Freq  
1.72415500 GHz

Start Freq  
948.310000 MHz

Stop Freq  
2.50000000 GHz

CF Step  
155.169000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

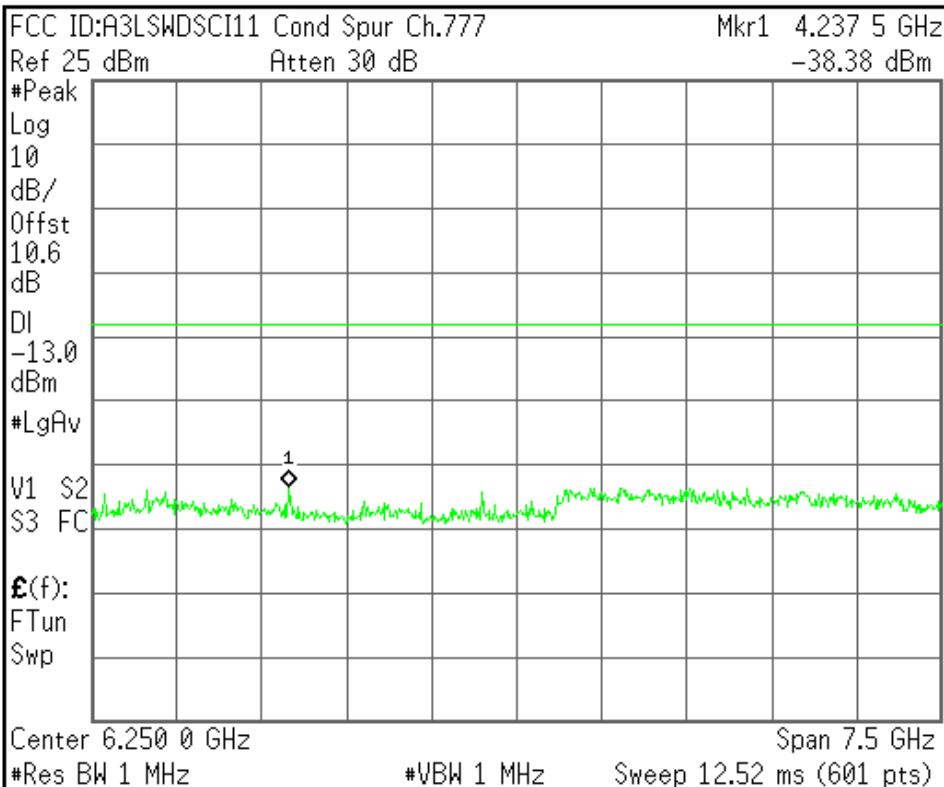
Signal Track  
On Off

Suffix not allowed

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

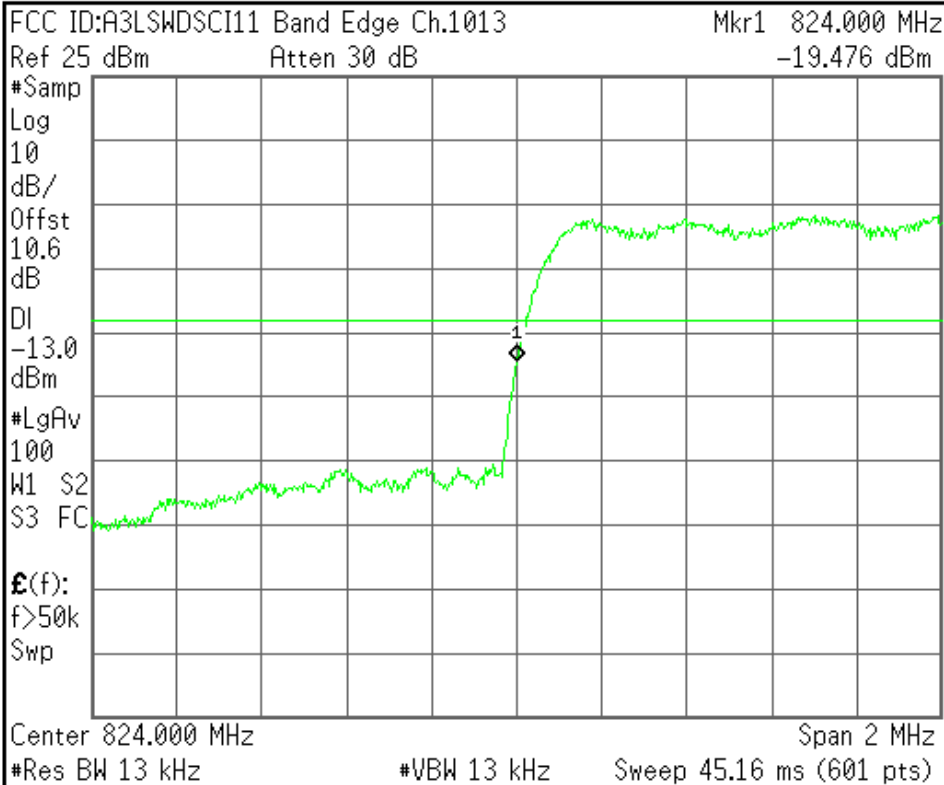
Signal Track  
On Off

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

Agilent

R T

Freq/Channel



Center Freq  
824.000000 MHz

Start Freq  
823.000000 MHz

Stop Freq  
825.000000 MHz

CF Step  
200.000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

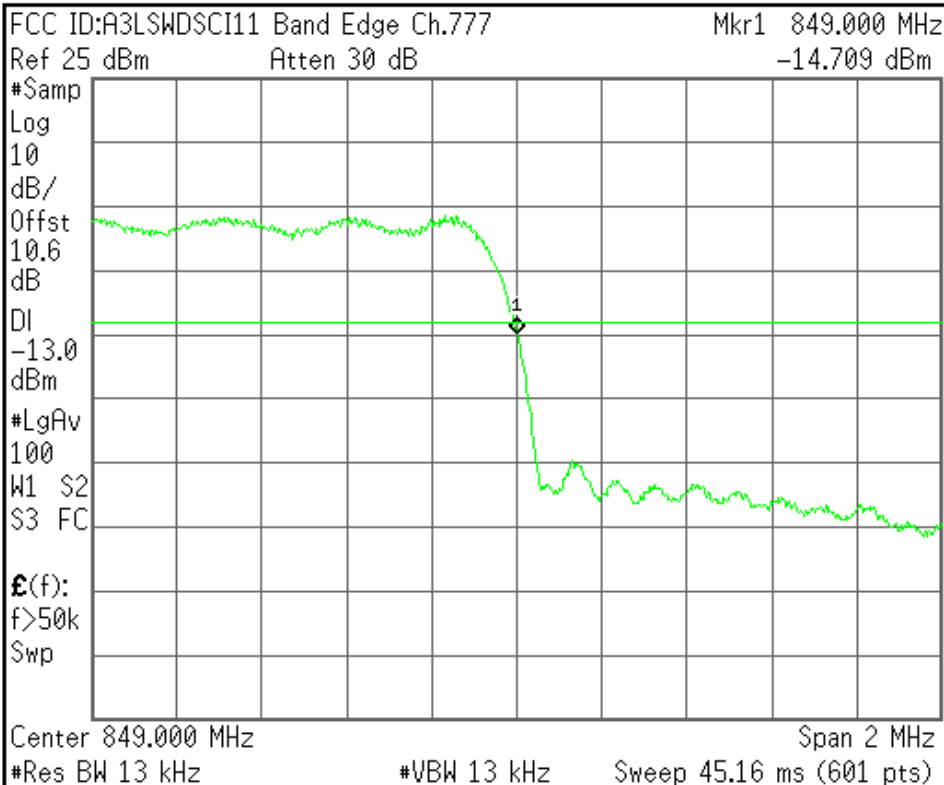
Signal Track  
On Off

Invalid suffix

Agilent

R T

Freq/Channel



Center Freq  
849.000000 MHz

Start Freq  
848.000000 MHz

Stop Freq  
850.000000 MHz

CF Step  
200.000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

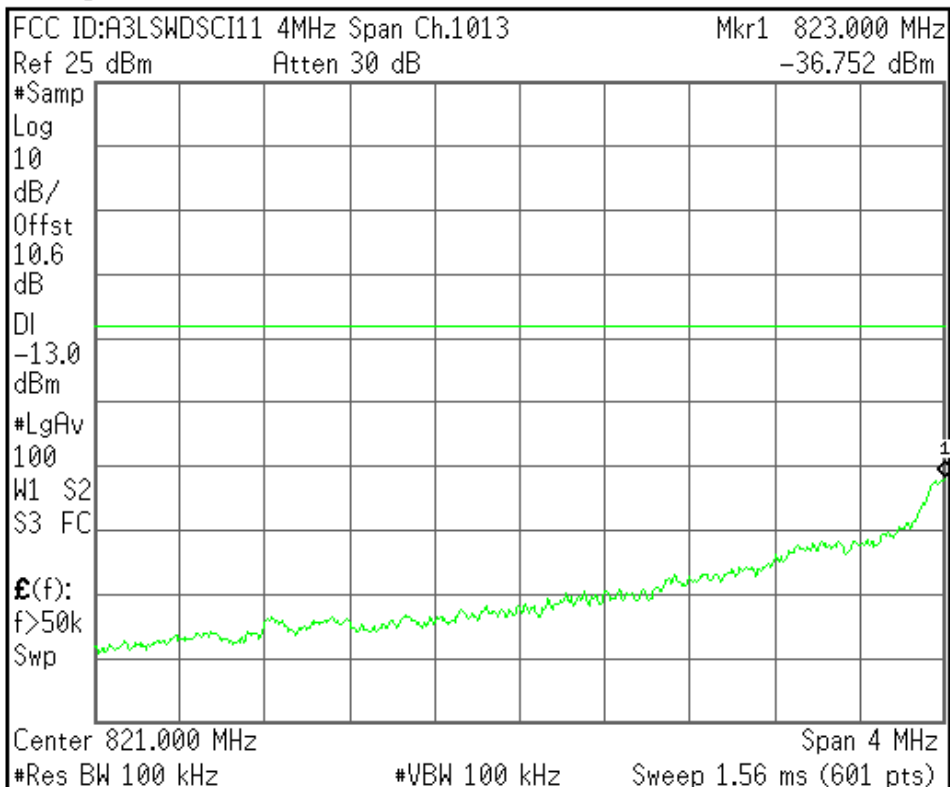
Signal Track  
On Off

Invalid suffix

Agilent

R T

Freq/Channel



Center Freq  
 821.000000 MHz

Start Freq  
 819.000000 MHz

Stop Freq  
 823.000000 MHz

CF Step  
 400.000000 kHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

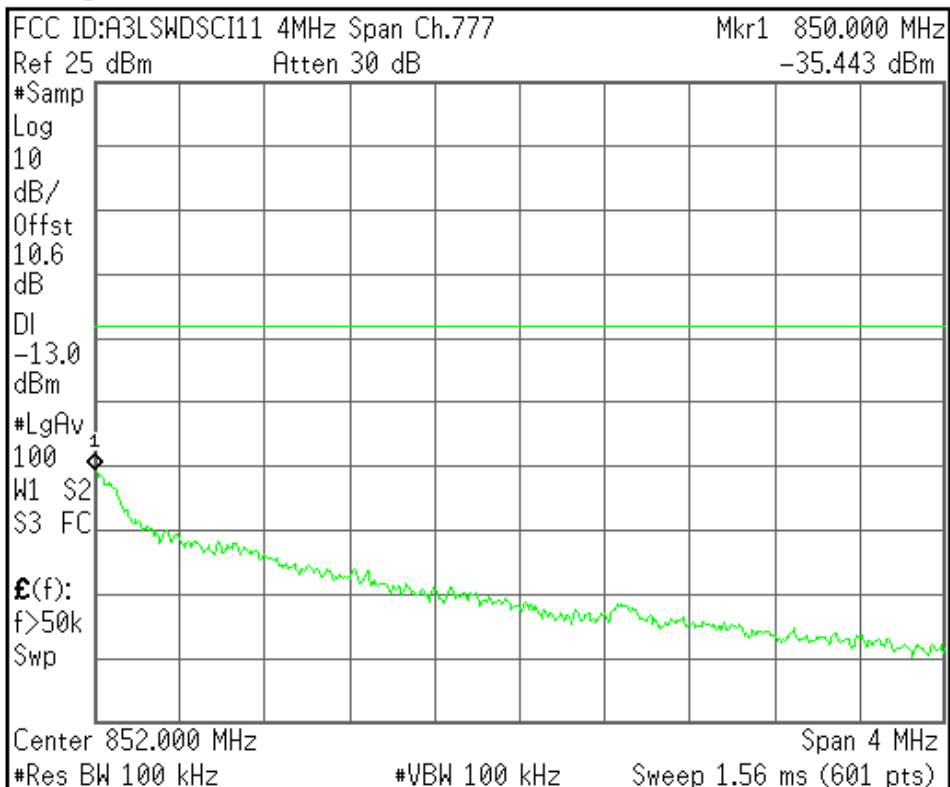
Signal Track  
 On Off

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

Agilent

R T

Freq/Channel



Center Freq  
 852.000000 MHz

Start Freq  
 850.000000 MHz

Stop Freq  
 854.000000 MHz

CF Step  
 400.000000 kHz  
 Auto Man

Freq Offset  
 0.00000000 Hz

Signal Track  
 On Off

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