



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 & 24 SUBPART CERTIFICATION REPORT

Model Tested : SGH-M140L  
Additional Model : SGH-M140  
FCC ID(Requested) : A3LSGHM140L  
Report No : FF-029-R1  
Job No : FF-029  
Date issued : March 03 , 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>4</b>
<b>4. TEST EQUIPMENT LIST .....</b>	<b>4</b>
<b>5. DESCRIPTION OF TESTS .....</b>	<b>4</b>
5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power .....	4
5.2. Radiated Spurious & Harmonic Emission .....	4
5.3. Occupied Bandwidth .....	4
5.4. Spurious and Harmonic Emission at Antenna Terminal .....	4
5.4.1. Occupied Bandwidth Emission Limits .....	4
5.4.2. Conducted Spurious Emission .....	4
5.5. Frequency Stability / Temperature Variation .....	4
<b>6. TEST DATA .....</b>	<b>4</b>
6.1. Effective Radiated Power (E.R.P.) .....	4
6.2. Equivalent Isotropic Radiated Power (E.I.R.P.) .....	4
6.3. GSM850 Radiated Spurious & Harmonic measurement .....	4
6.4. GSM1900 Radiated Spurious & Harmonic measurement .....	4
6.5. GSM850 Radiated Spurious & Harmonic Conversion Table .....	4
6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table .....	4
6.7. Frequency Stability .....	4
6.7.1. GSM850 Frequency Stability Table .....	4
6.7.2. GSM850 Frequency Stability Graph .....	4
6.7.3. GSM1900 Frequency Stability Table .....	4
6.7.4. GSM1900 Frequency Stability Graph .....	4
<b>7. CONCLUSION .....</b>	<b>4</b>
<b>8. TEST PLOTS .....</b>	<b>4</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.

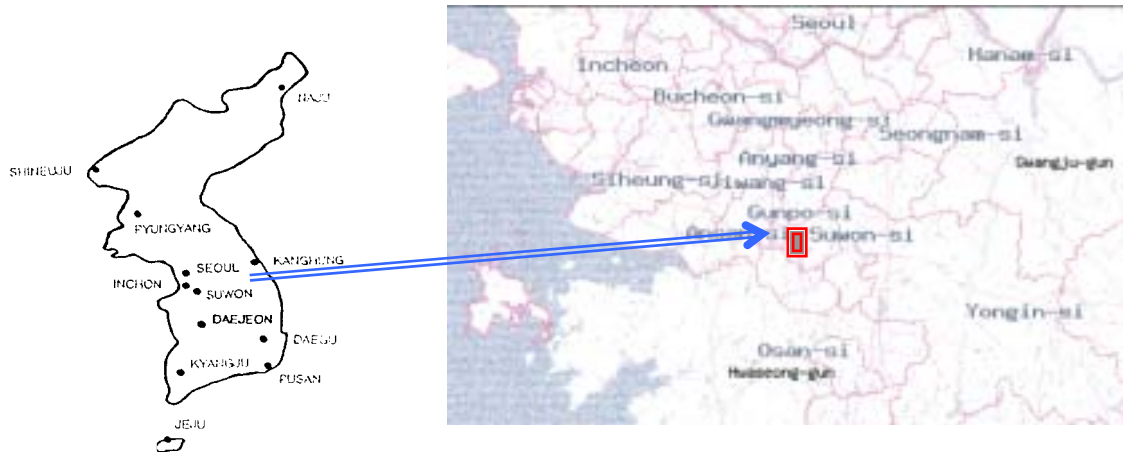
### 1.1. §2.1033 General Information

- 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 : A3LSGHM140L
- Additional Model : SGH-M140
- Quantity : Quantity production is planned
- Emission Designators : 251KGXW(GSM850)  
247KGXW(GSM1900)
- 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 : 0.998 W ERP GSM850 (29.99dBm)  
0.910 W EIRP GSM1900 (29.59dBm)
- FCC Classification(s) : Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : Dual-Band GSM850/1900 Phone
- Frequency Tolerance :  $\pm 0.00025\%$  (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : February 19-20, 2008
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FF-029-R1

## 2. INTRODUCTION

### 2.1. General

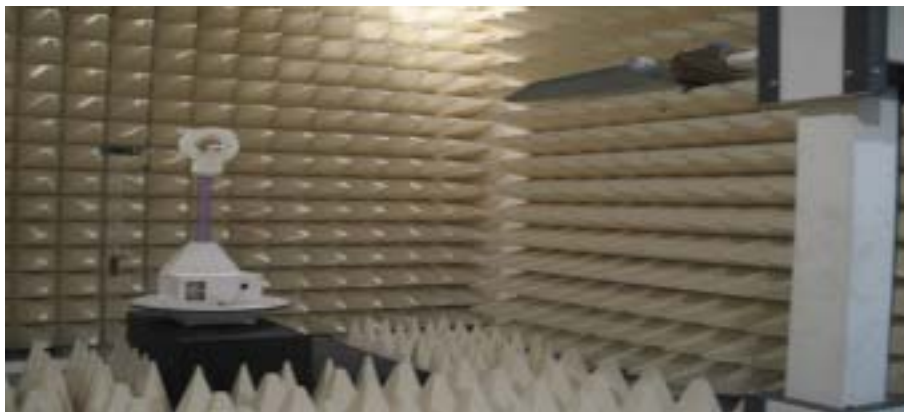
These measurement test were conducted at **SAMSUNG ELECTRONICS CO., LTD(SUWON)**. The site address is 416 Maetan3-Dong, Yeongtong-gu, Suwon City, Gyeonggi-Do, Korea 443-742 The site have 1 Fully-anechoic chamber and measurement facility.



**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

<b>Name Of Equipment</b>	<b>Model</b>	<b>Serial No.</b>	<b>Due Date</b>
Spectrum Analyzer	ESI26	836119/010	2008-10-17
	E4440A(3Hz~26.5GHz)	MY41000236	2008-04-14
	E4440A(3Hz~26.5GHz)	MY41000233	2008-07-23
Signal Generator	SMR20	835197/030	2008-12-05
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
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	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

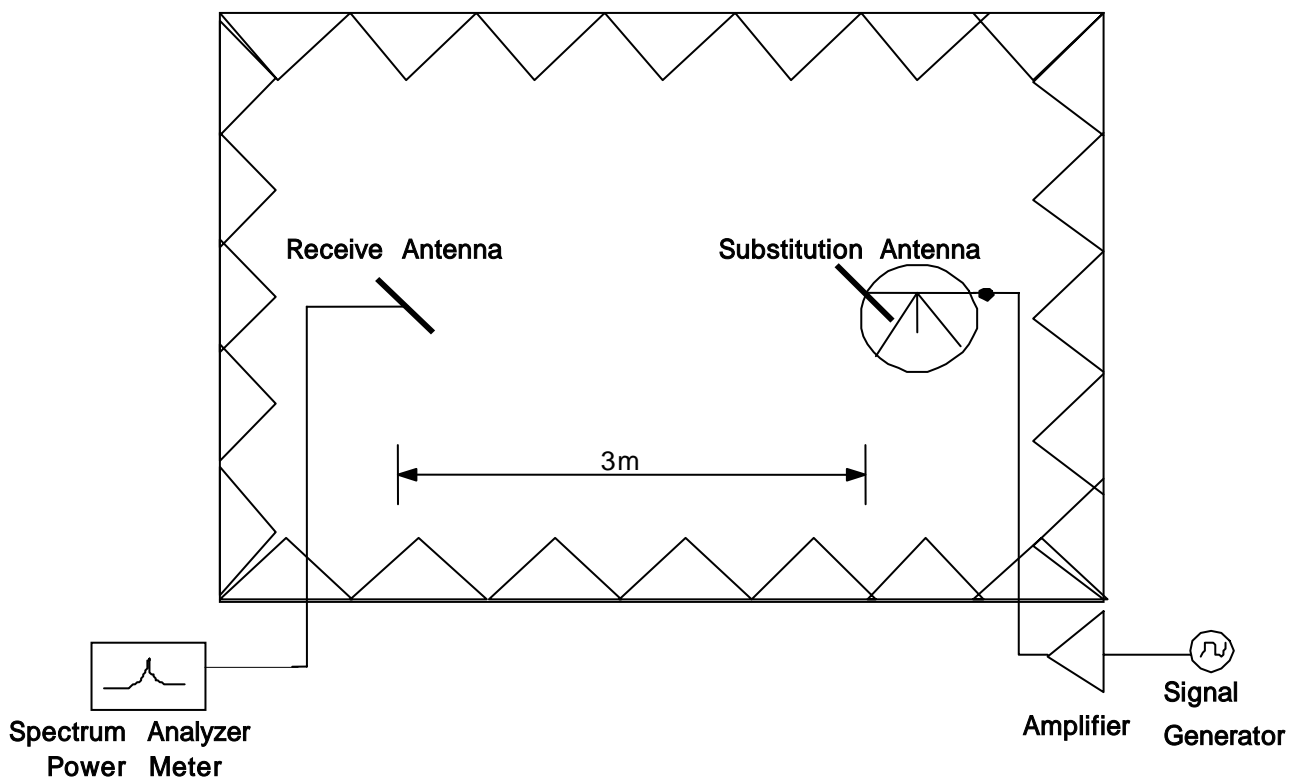


Figure 3. Diagram of ERP/EIRP test Set-up

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

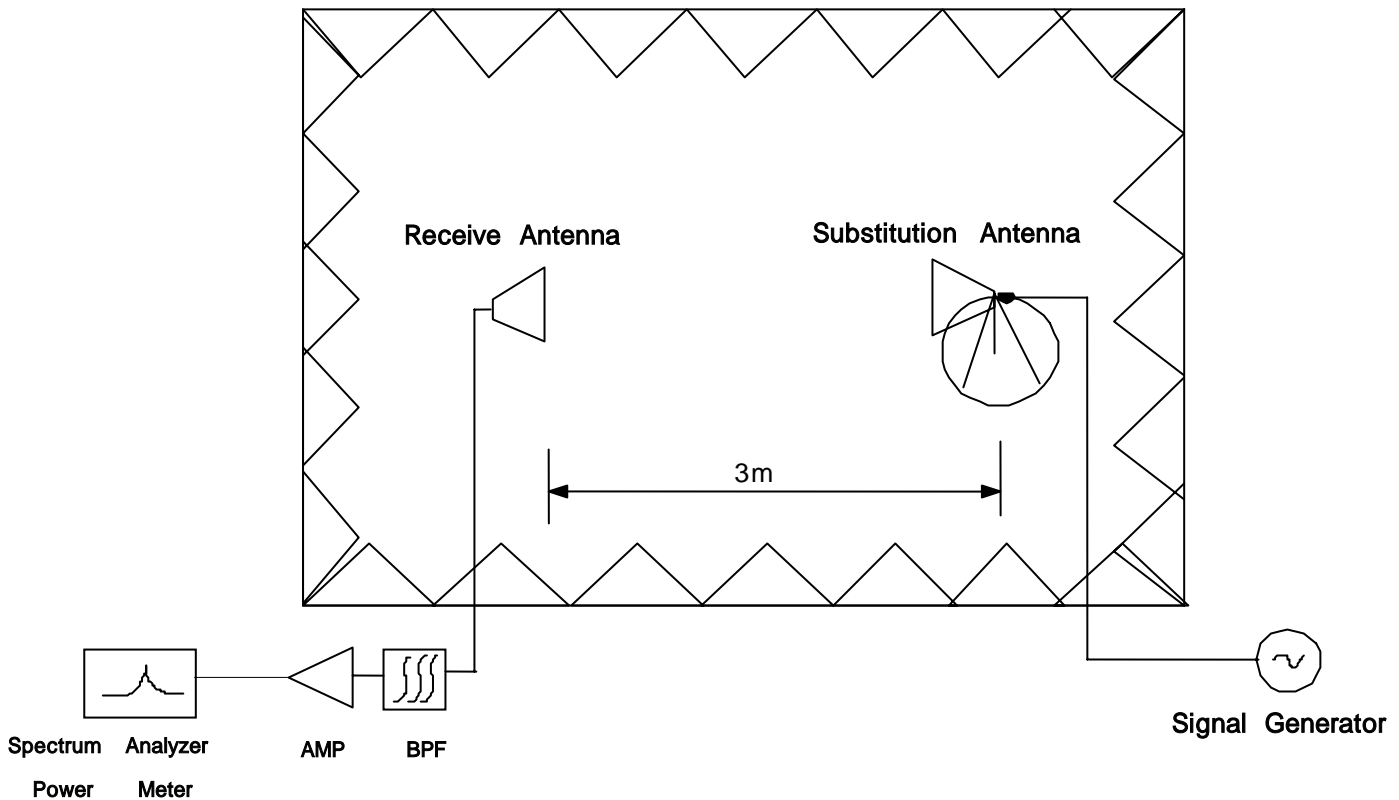


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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.



<b>BLOCK</b>	<b>Freq. Range (MHz) Transmitter (Tx)</b>	<b>Freq. Range (MHz) Receiver (Rx)</b>
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**

<b>BLOCK</b>	<b>Freq. Range (MHz) Transmitter (Tx)</b>	<b>Freq. Range (MHz) Receiver (Rx)</b>
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.

$$43 + 10\log ( 0.998 \text{ W} ) = 42.99 \text{ dB}$$

$$29.99 \text{ dBm} - 42.99 \text{ dB} = -13 \text{ dBm}$$

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°C to +60°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 +60°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 (MHz)	Output (dBm)	Polarization (H/V)	S/A (dBm)	Ant gain (dBi)	Ref level (dBm)
824.20	28.00	H	-8.39	-0.67	-7.72
		V	-8.64	-0.67	-7.97
836.60	29.00	H	-9.59	-0.73	-8.86
		V	-8.33	-0.73	-7.60
848.80	30.00	H	-11.95	-0.79	-11.16
		V	-9.10	-0.79	-8.31

#### Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-7.43	H	286/86	28.29	0.675	Standard
836.60	-9.14	H	296/98	28.72	0.745	Standard
848.80	-11.17	H	284/92	29.99	0.998	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	26.00	H	-12.41	9.70	-22.11
		V	-12.45	9.70	-22.15
1880.00	27.00	H	-11.71	9.70	-21.41
		V	-11.43	9.70	-21.13
1909.80	30.00	H	-8.80	9.70	-18.52
		V	-8.42	9.70	-18.12

### Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-21.83	H	292/0	26.28	0.425	Standard
1880.00	-21.10	H	268/0	27.31	0.538	Standard
1909.80	-18.93	H	284/0	29.59	0.910	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 : 29.99 dBm = 0.998 W

Modulation Signal : GSM850

Limit :  $43 + 10\log_{10}(P) = 42.99$  dBc

#### Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
128	2	1648.40	-64.67	84.02	H
	3	2472.60	-61.15	75.63	H
	4	3296.80	-62.24	72.49	V
	5	4121.00	-66.20	73.96	H
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-67.29	86.09	V
	3	2509.80	-62.50	76.67	V
	4	3346.40	-63.14	73.91	V
	5	4183.00	-66.05	74.05	V
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-67.25	85.60	V
	3	2546.40	-64.45	79.26	H
	4	3395.20	-61.56	72.14	V
	5	4244.00	-67.41	75.28	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 : 29.59 dBm = 0.910 W

Modulation Signal : GSM1900

Limit :  $43 + 10\log_{10}(P) = 42.59$  dBc

### Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
512	2	3700.40	-51.29	56.40	H
	3	5550.60	-57.00	57.83	H
	4	7400.80	-61.06	58.62	V
	5	9251.00	-69.89	63.03	H
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-53.84	58.79	H
	3	5640.00	-56.05	57.23	H
	4	7520.00	-56.68	54.37	V
	5	9400.00	-69.52	62.49	H
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-54.56	59.92	H
	3	5729.40	-54.79	54.70	H
	4	7639.20	-57.95	55.46	H
	5	9549.00	-69.90	62.97	H
	6	11458.80	-	-	-
	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. 20

Test Engineer : JH WOO

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

CH	Har	Frequency (MHz)	Tx C/L dB	Tx Horn Gain dBi	Tx Level dBm	ESI Level : H dBm	ESI Level : V dBm	Tested EUT Level : H dBm	Tested EUT Level : H dBm	Result EUT : H (dBc)	Result EUT : V (dBc)
128	2	1648.40	-7.44	9.50	-15.10	-25.78	-25.24	-64.67	-66.99	84.02	86.88
	3	2472.60	-9.40	10.70	-14.30	-30.65	-30.96	-61.15	-62.59	75.63	76.76
	4	3296.80	-10.62	12.30	-14.70	-34.30	-34.88	-65.67	-62.24	76.50	72.49
	5	4121.00	-12.18	12.50	-13.30	-37.37	-37.16	-66.20	-66.50	73.96	74.47
	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	-67.41	-67.29	86.09	86.27
	3	2509.80	-9.52	10.70	-14.20	-30.90	-30.96	-64.87	-62.50	79.10	76.67
	4	3346.40	-10.72	12.30	-14.60	-34.28	-34.36	-66.09	-63.14	76.94	73.91
	5	4183.00	-12.46	12.50	-13.00	-36.90	-37.13	-69.20	-66.05	77.43	74.05
	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	-67.48	-67.25	85.97	85.60
	3	2546.40	-9.56	10.70	-14.10	-30.32	-30.81	-64.45	-66.83	79.26	81.15
	4	3395.20	-10.77	12.30	-14.50	-34.25	-34.55	-64.84	-61.56	75.72	72.14
	5	4244.00	-12.36	12.50	-13.10	-37.07	-37.26	-68.07	-67.41	76.13	75.28
	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. 20

Test Engineer : JH WOO

Tx Cable loss  
 Tx Horn Ant Gain  
 Tx Level to radiate - 13dBm  
 ESI Level received from Tx with - 13dBm  
 Tested Level from EUT  
 = EIRP - ( - 13 +     )

CH	Har	Frequency (MHz)	Tx C/L dB	Tx Horn Gain dBi	Tx Level dBm	ESI Level : H dBm	ESI Level : V dBm	Tested EUT Level : H dBm	Tested EUT Level : H dBm	Result EUT : H (dBc)	Result EUT : V (dBc)
512	2	3700.40	-11.22	12.40	-14.20	-37.48	12.40	-51.29	-51.59	56.40	56.88
	3	5550.60	-14.53	12.90	-11.40	-41.76	12.90	-57.00	-57.96	57.83	58.83
	4	7400.80	-17.53	10.50	-6.00	-45.31	10.50	-62.19	-61.06	59.47	58.62
	5	9251.00	-20.07	11.20	-4.10	-49.28	11.20	-69.89	-69.93	63.20	63.03
	6	11101.20	-22.36	11.60	-2.20	-53.59	11.60	-	-	-	-
	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	-53.84	-63.88	58.79
3		5640.00	-14.83	12.90	-11.10	-41.41	12.90	-56.05	-61.18	57.23	62.01
4		7520.00	-17.89	10.60	-5.70	-44.71	10.60	-56.78	-56.68	54.66	54.37
5		9400.00	-20.33	11.60	-4.30	-49.48	11.60	-69.52	-69.52	62.63	62.49
6		11280.00	-22.49	12.10	-2.60	-54.00	12.10	-	-	-	-
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	-54.56	-55.70	59.92
	3	5729.40	-14.73	13.00	-11.30	-42.68	13.00	-54.79	-60.30	54.70	60.62
	4	7639.20	-18.21	11.20	-6.00	-45.08	11.20	-57.95	-59.12	55.46	56.60
	5	9549.00	-21.01	11.70	-3.70	-49.52	11.70	-69.90	-69.95	62.97	63.26
	6	11458.80	-22.20	11.70	-2.50	-54.59	11.70	-	-	-	-
	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

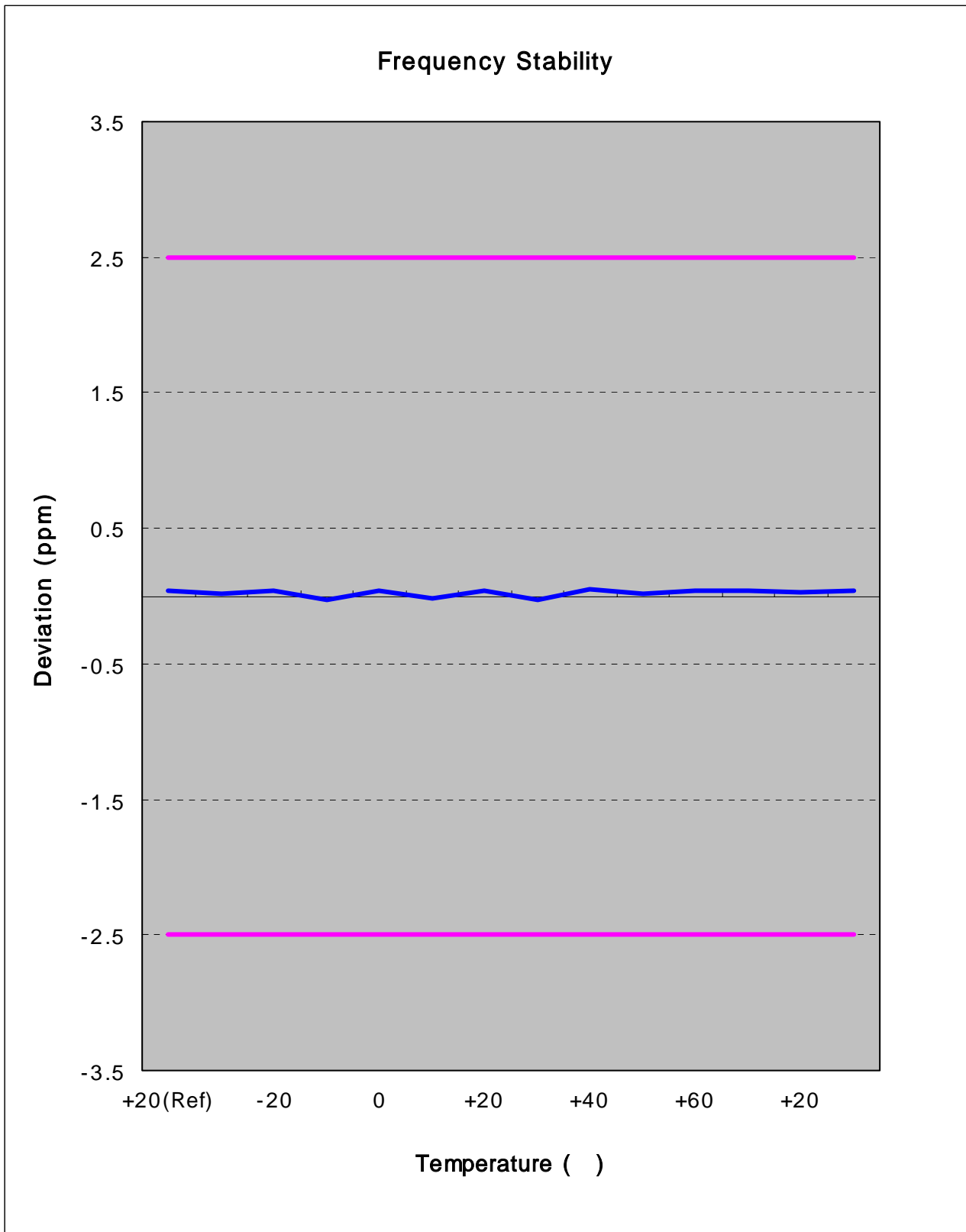
**Deviation Limit :  $\pm 0.00025$  % or 2.5ppm**

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	30.69	836,600,031	0.000004	0.037
100%		-30	15.54	836,600,016	0.000002	0.019
100%		-20	29.35	836,600,029	0.000004	0.035
100%		-10	-20.65	836,599,979	-0.000002	-0.025
100%		0	30.59	836,600,031	0.000004	0.037
100%		+10	-16.69	836,599,983	-0.000002	-0.020
100%		+20	30.69	836,600,031	0.000004	0.037
100%		+30	-20.55	836,599,979	-0.000002	-0.025
100%		+40	40.15	836,600,040	0.000005	0.048
100%		+50	10.45	836,600,010	0.000001	0.012
100%		+60	30.56	836,600,031	0.000004	0.037
85%		3.35	+20	30.33	836,600,030	0.000004
115%	4.26	+20	23.56	836,600,024	0.000003	0.028
Batt.Endpoint	3.35	+20	30.33	836,600,030	0.000004	0.036

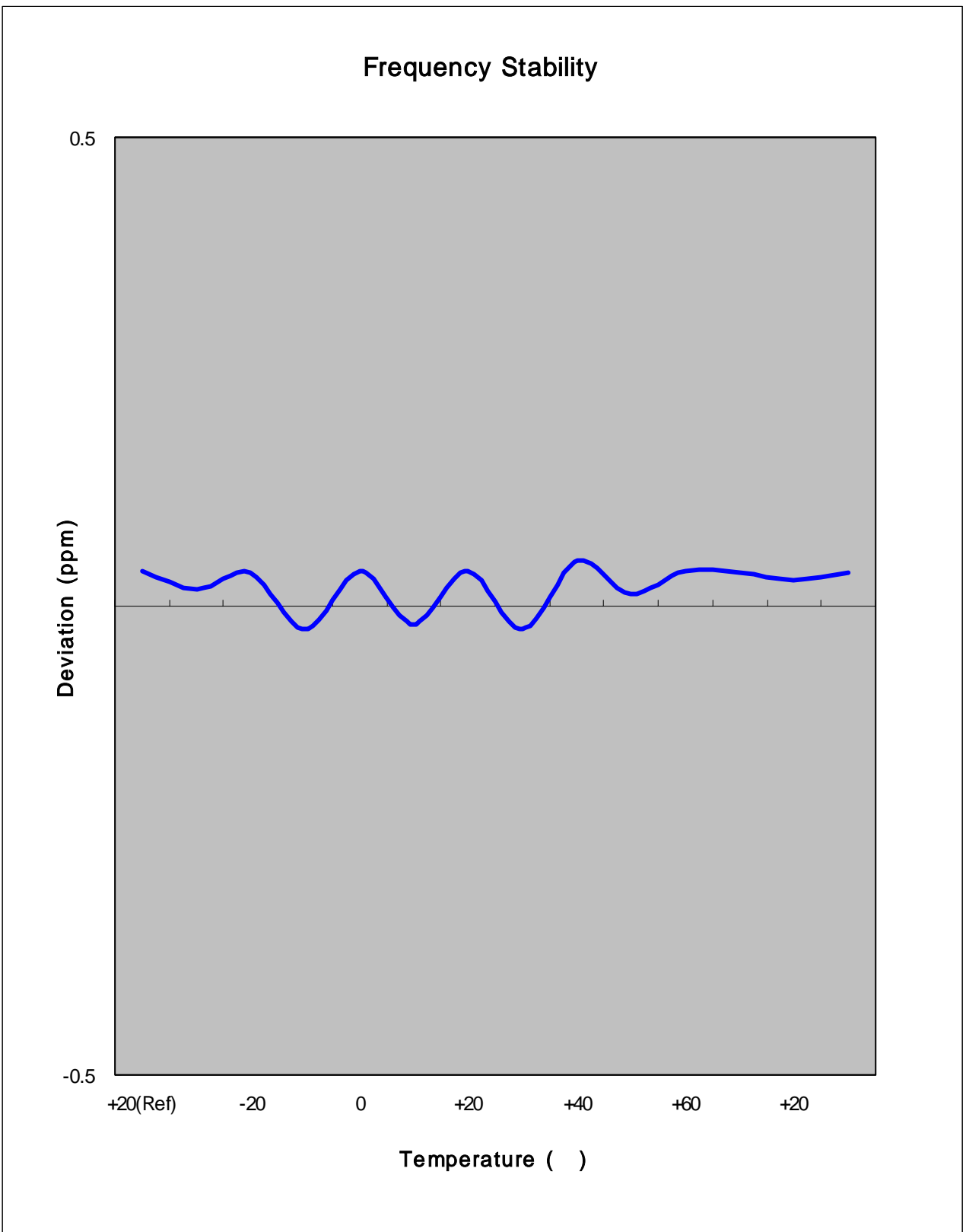
**Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.**

**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

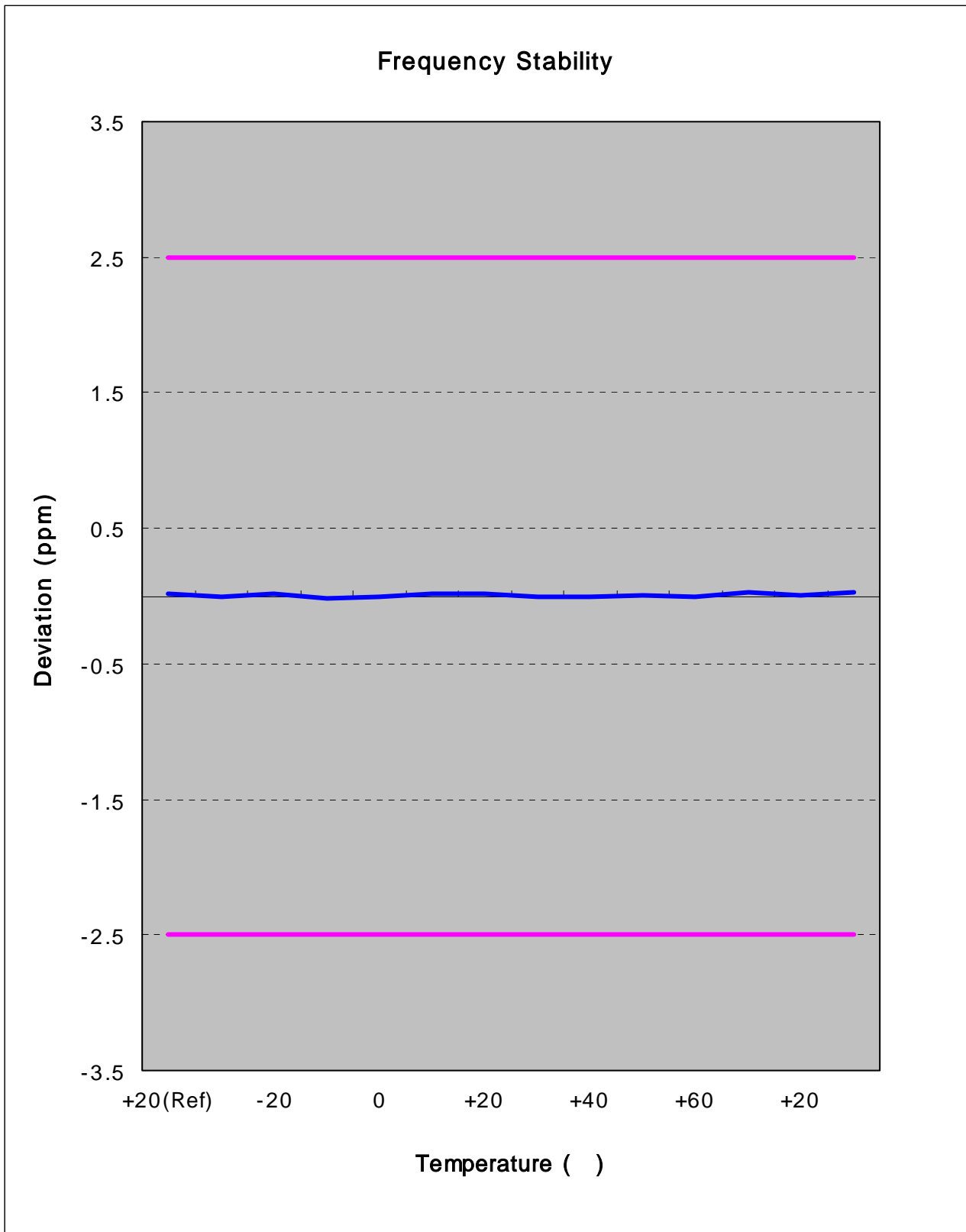
Deviation Limit :  $\pm 0.00025$  % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	31.17	1,880,000,031	0.000002	0.017
100%		-30	-12.33	1,879,999,988	-0.000001	-0.007
100%		-20	34.27	1,880,000,034	0.000002	0.018
100%		-10	-39.82	1,879,999,960	-0.000002	-0.021
100%		0	-14.60	1,879,999,985	-0.000001	-0.008
100%		+10	38.59	1,880,000,039	0.000002	0.021
100%		+20	31.17	1,880,000,031	0.000002	0.017
100%		+30	-14.24	1,879,999,986	-0.000001	-0.008
100%		+40	-19.98	1,879,999,980	-0.000001	-0.011
100%		+50	20.01	1,880,000,020	0.000001	0.011
100%		+60	-15.46	1,879,999,985	-0.000001	-0.008
85%		3.35	+20	54.67	1,880,000,055	0.000003
115%	4.26	+20	19.38	1,880,000,019	0.000001	0.010
Batt.Endpoint	3.35	+20	54.67	1,880,000,055	0.000003	0.029

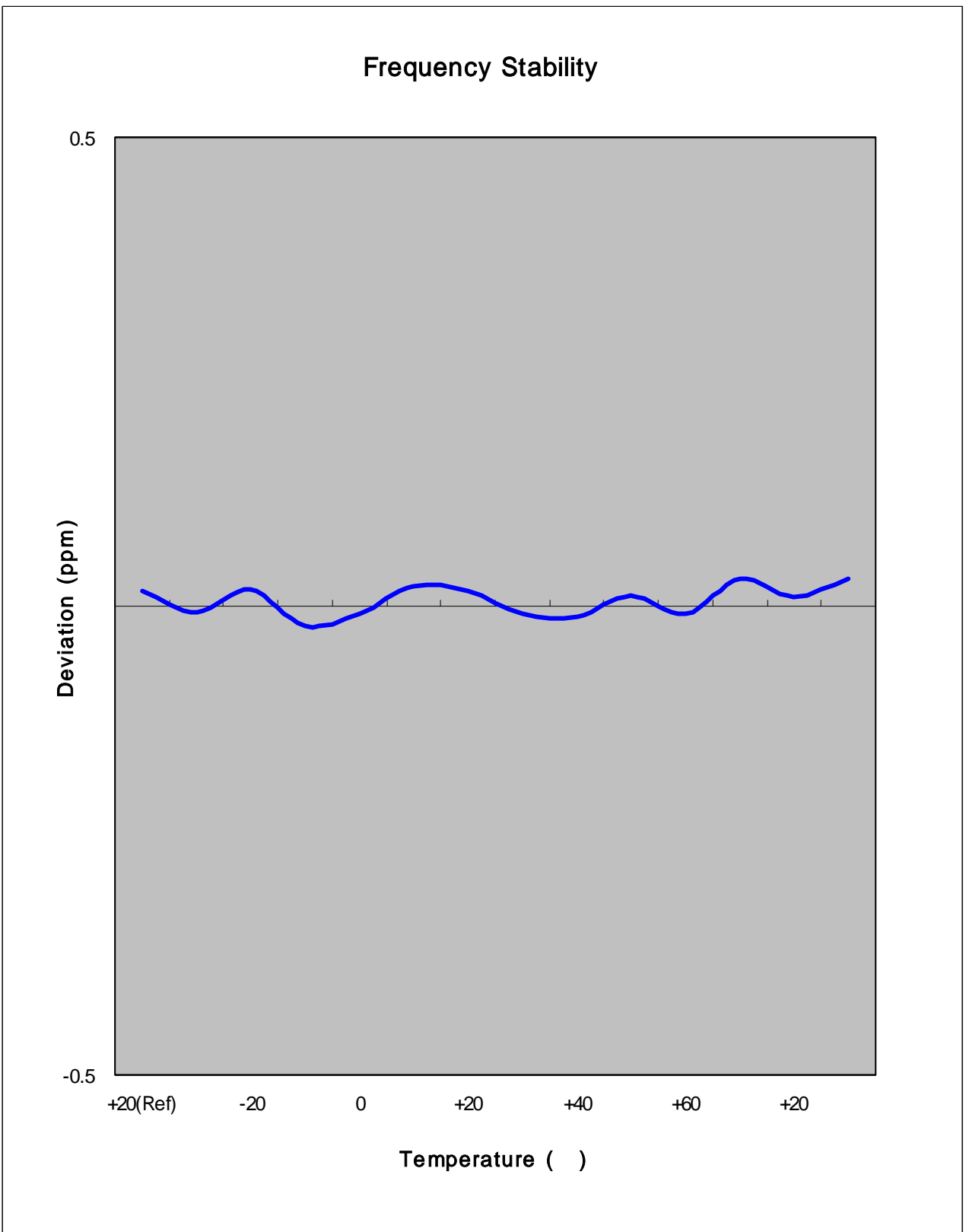
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

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 GSM850/1900 Phone.

FCC ID : A3LSGHM140L complies with all the requirements of Parts 2,22,24 of the FCC Rules.

## 8. TEST PLOTS

GSM850

Agilent

R T

**Ch Freq** 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHM140L 0BW Ch.128  
Ref 33 dBm Atten 40 dB

#Peak  
Log  
10  
dB/  
Offst  
7.73  
dB

Center 824.200 MHz Span 1 MHz  
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
250.8379 kHz	<b>x dB</b>	-26.00 dB
<b>Transmit Freq Error</b>	686.748 Hz	
<b>x dB Bandwidth</b>	309.863 kHz	

**Freq/Channel**

**Center Freq**  
824.200000 MHz

**Start Freq**  
823.700000 MHz

**Stop Freq**  
824.700000 MHz

**CF Step**  
100.000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

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

Agilent

R T

**Ch Freq** 836.6 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHM140L 0BW Ch.190  
Ref 33 dBm Atten 40 dB

#Peak  
Log  
10  
dB/  
Offst  
7.73  
dB

Center 836.600 MHz Span 1 MHz  
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
249.5395 kHz	<b>x dB</b>	-26.00 dB
<b>Transmit Freq Error</b>	721.278 Hz	
<b>x dB Bandwidth</b>	309.133 kHz	

**Freq/Channel**

**Center Freq**  
836.600000 MHz

**Start Freq**  
836.100000 MHz

**Stop Freq**  
837.100000 MHz

**CF Step**  
100.000000 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

Ch Freq 848.8 MHz Trig Free

Occupied Bandwidth

Center Freq  
848.800000 MHz

Start Freq  
848.300000 MHz

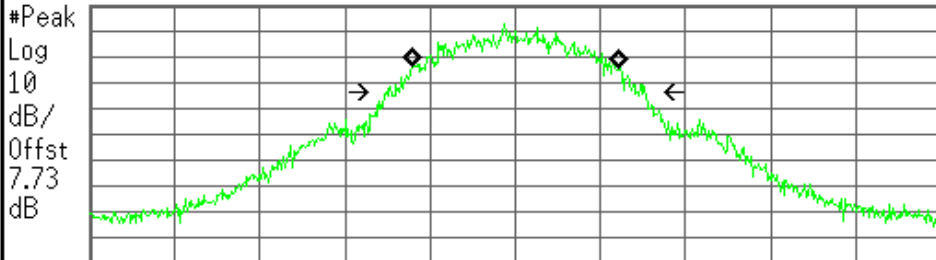
Stop Freq  
849.300000 MHz

CF Step  
100.000000 kHz  
Auto Man

Freq Offset  
0.00000000 Hz

Signal Track  
On Off

FCC ID:A3LSGHM140L 0BW Ch.251  
Ref 33 dBm Atten 40 dB



Center 848.800 MHz Span 1 MHz  
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
246.2355 kHz	<b>x dB</b>	-26.00 dB
<b>Transmit Freq Error</b>	523.496 Hz	
<b>x dB Bandwidth</b>	307.796 kHz	

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Rx Spurious Emission Mkr1 889.50 MHz  
Ref -50 dBm #Atten 0 dB -89.31 dBm

Center Freq  
881.500000 MHz

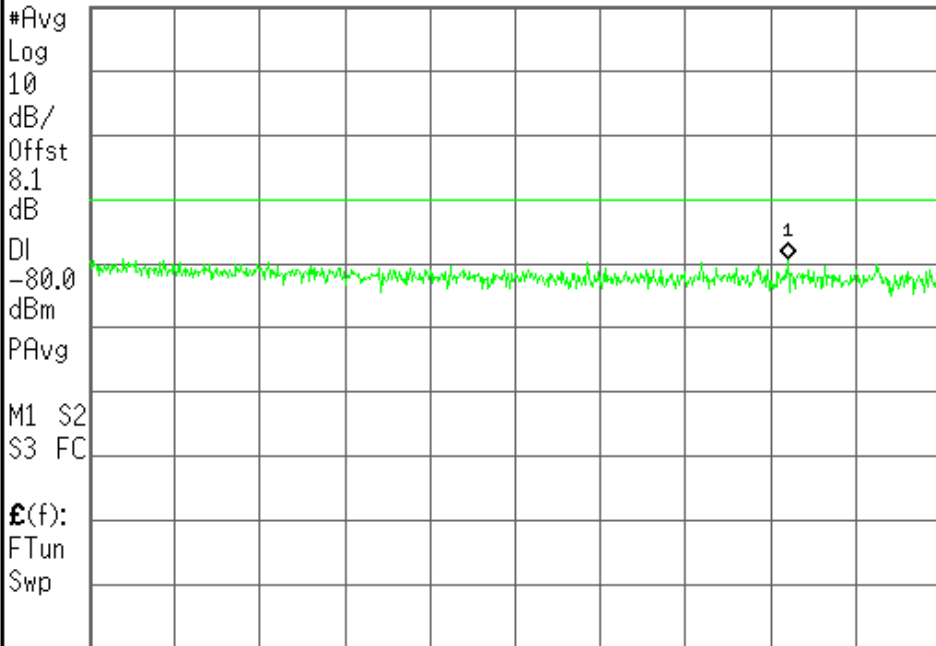
Start Freq  
869.000000 MHz

Stop Freq  
894.000000 MHz

CF Step  
2.50000000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

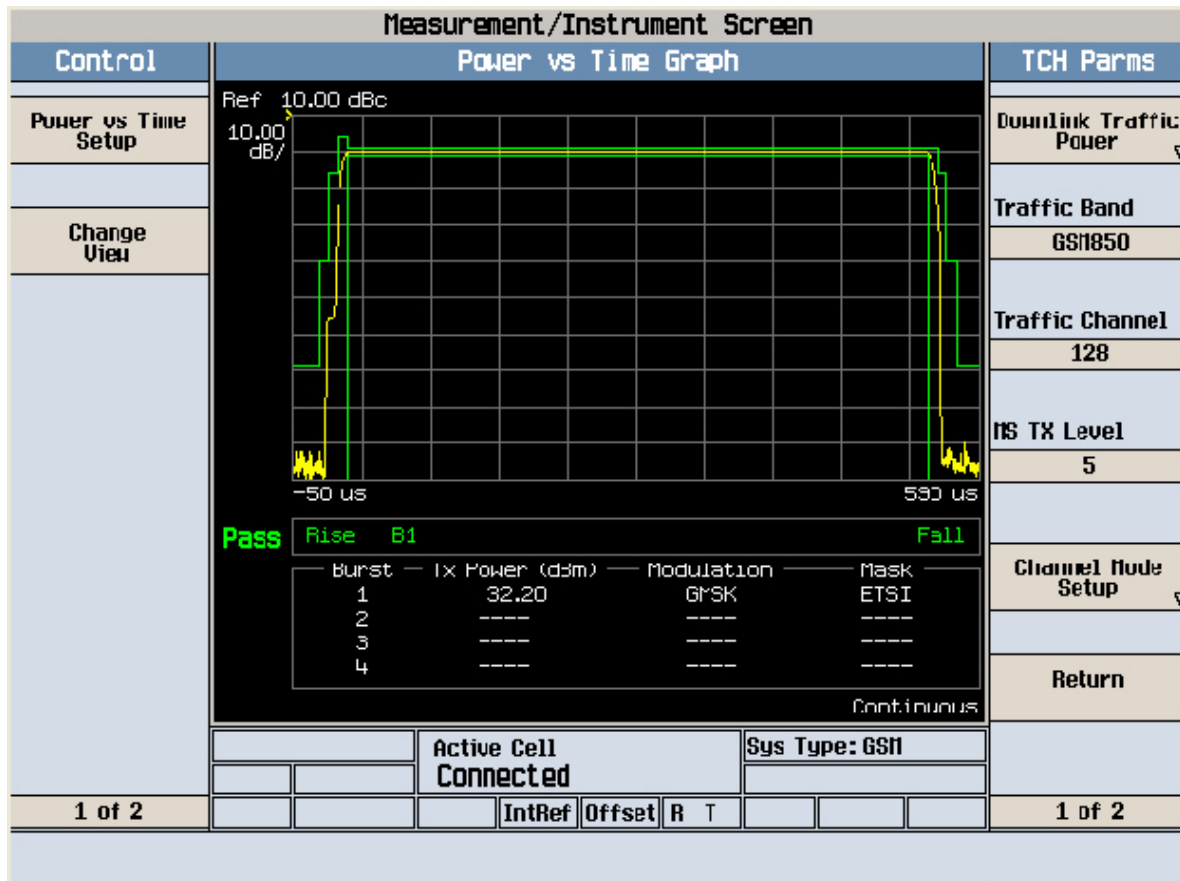
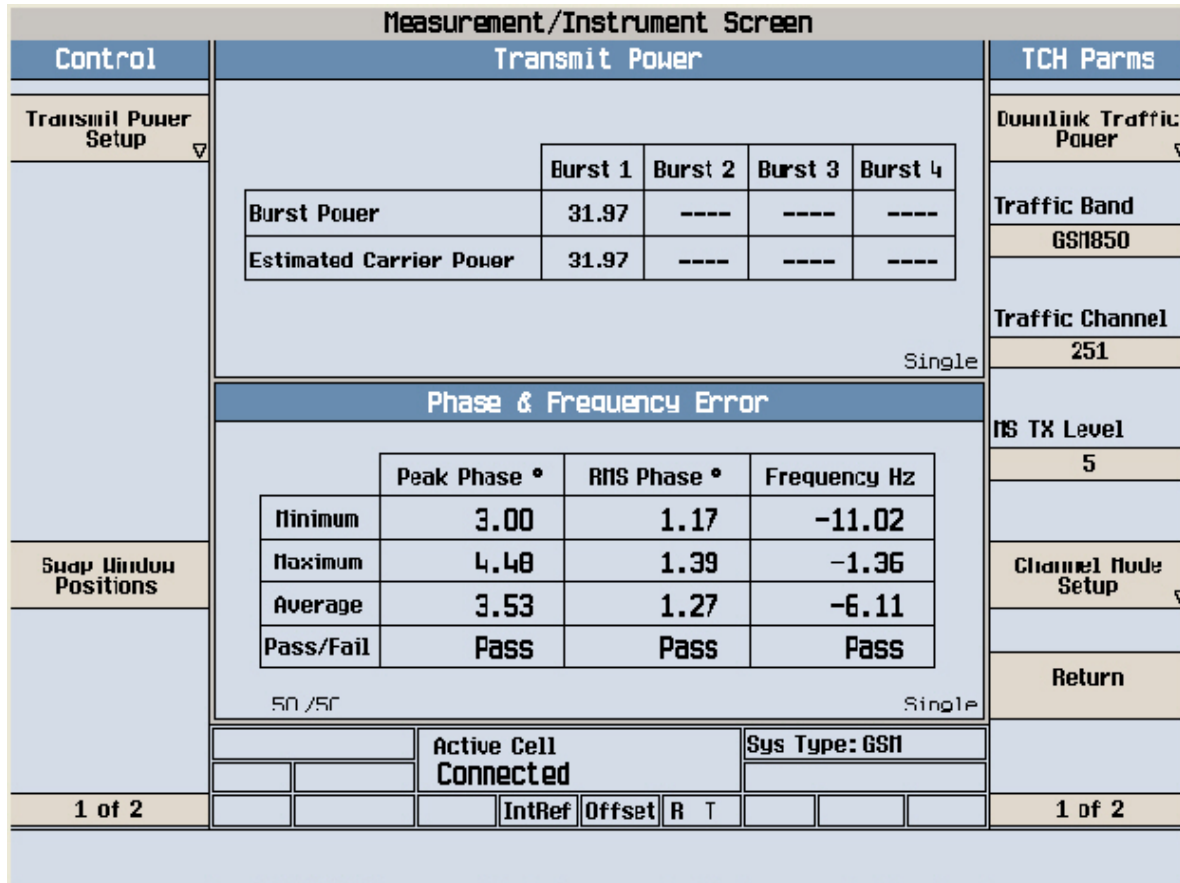
Signal Track  
On Off

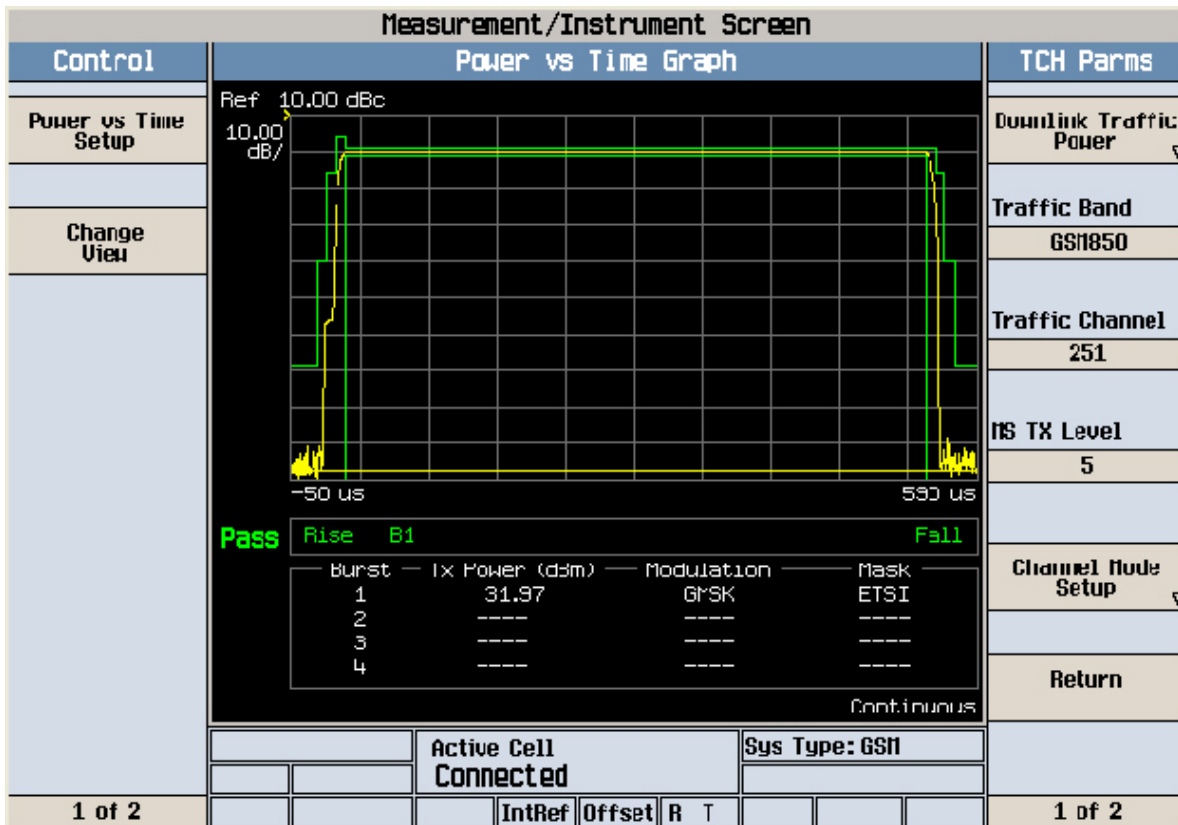
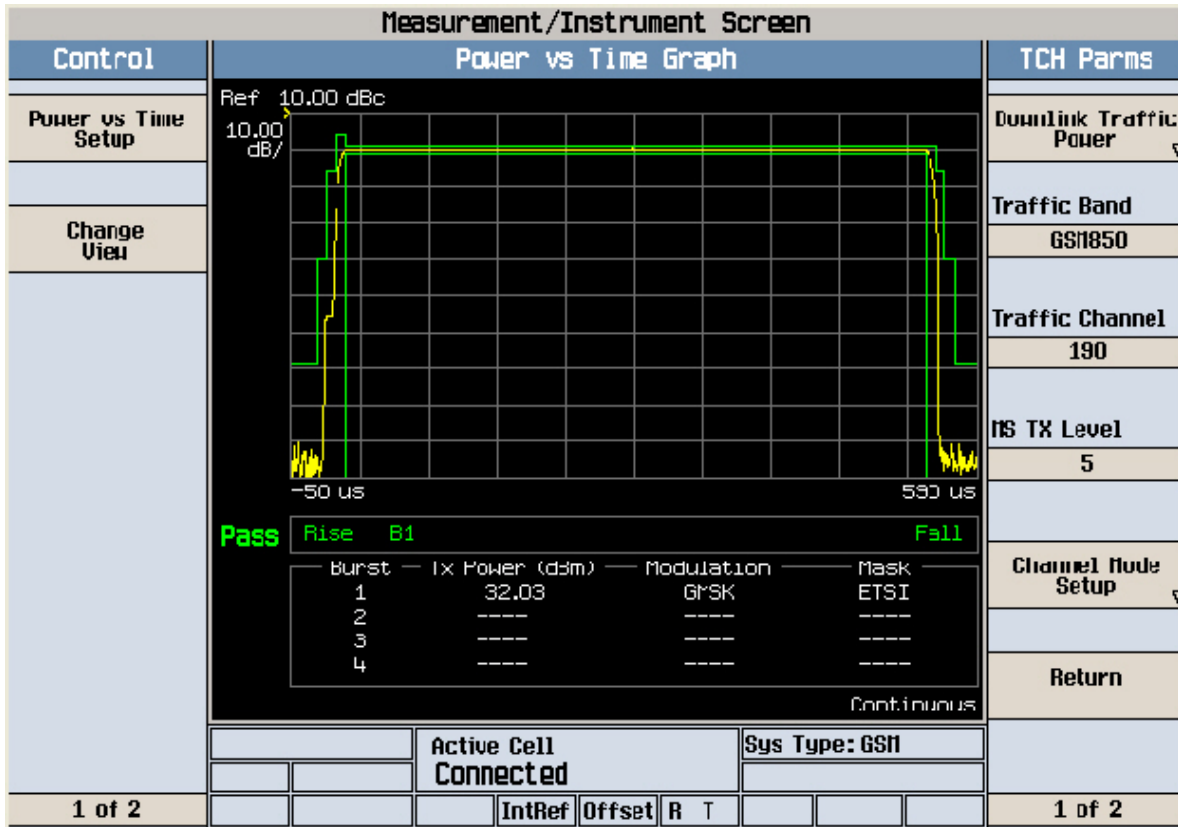


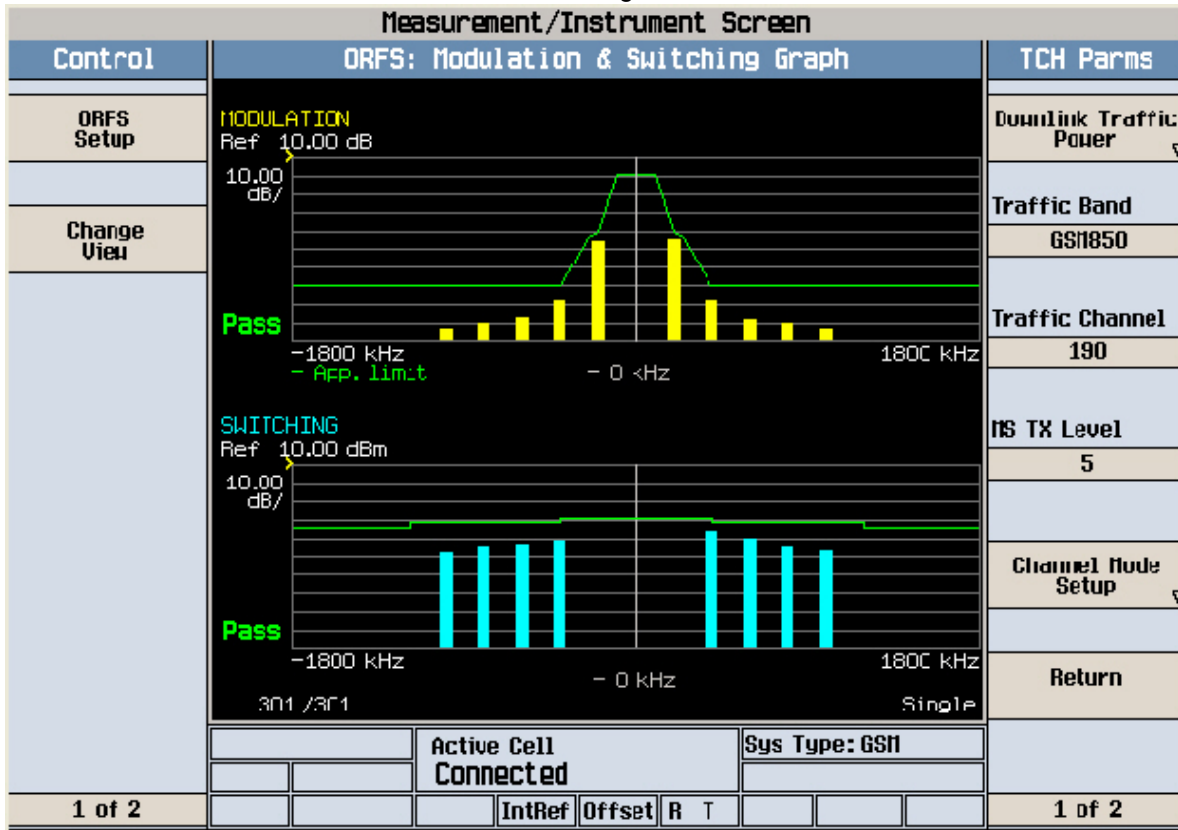
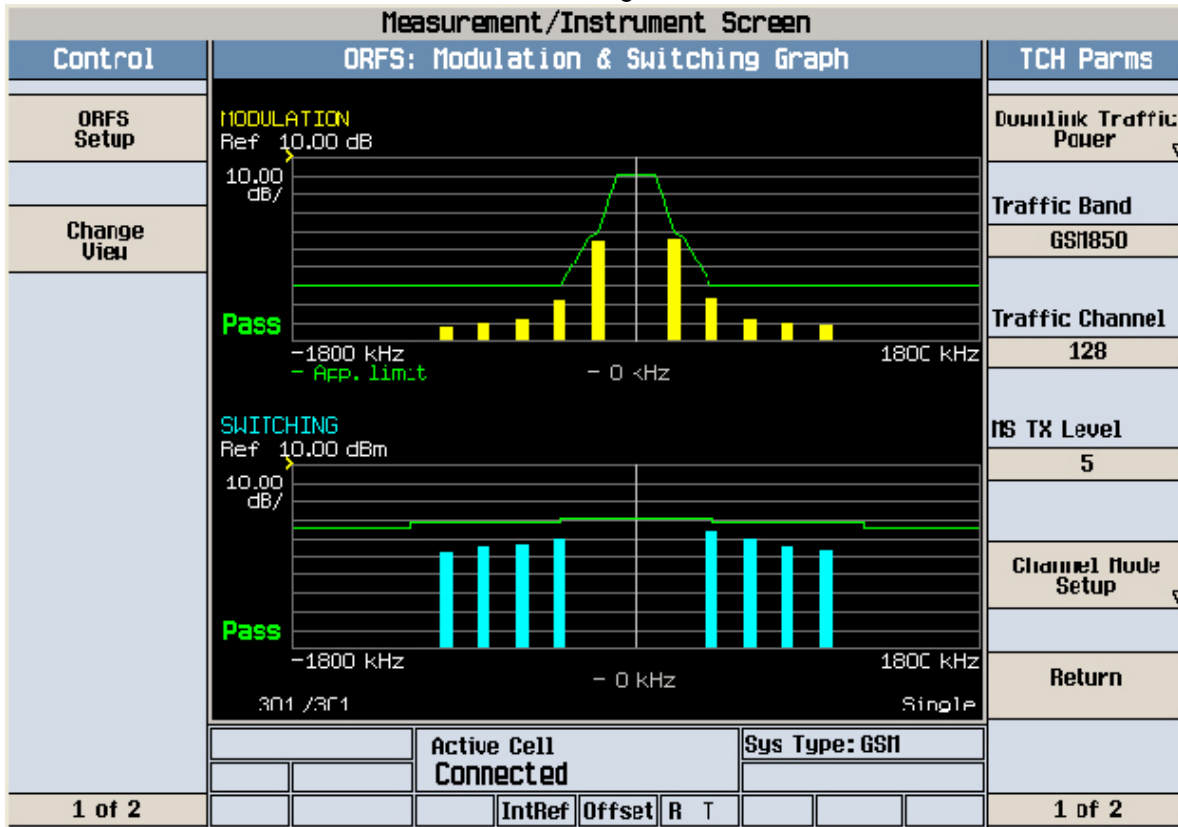
Center 881.50 MHz Span 25 MHz  
#Res BW 10 kHz #VBW 10 kHz #Sweep 1 s (601 pts)

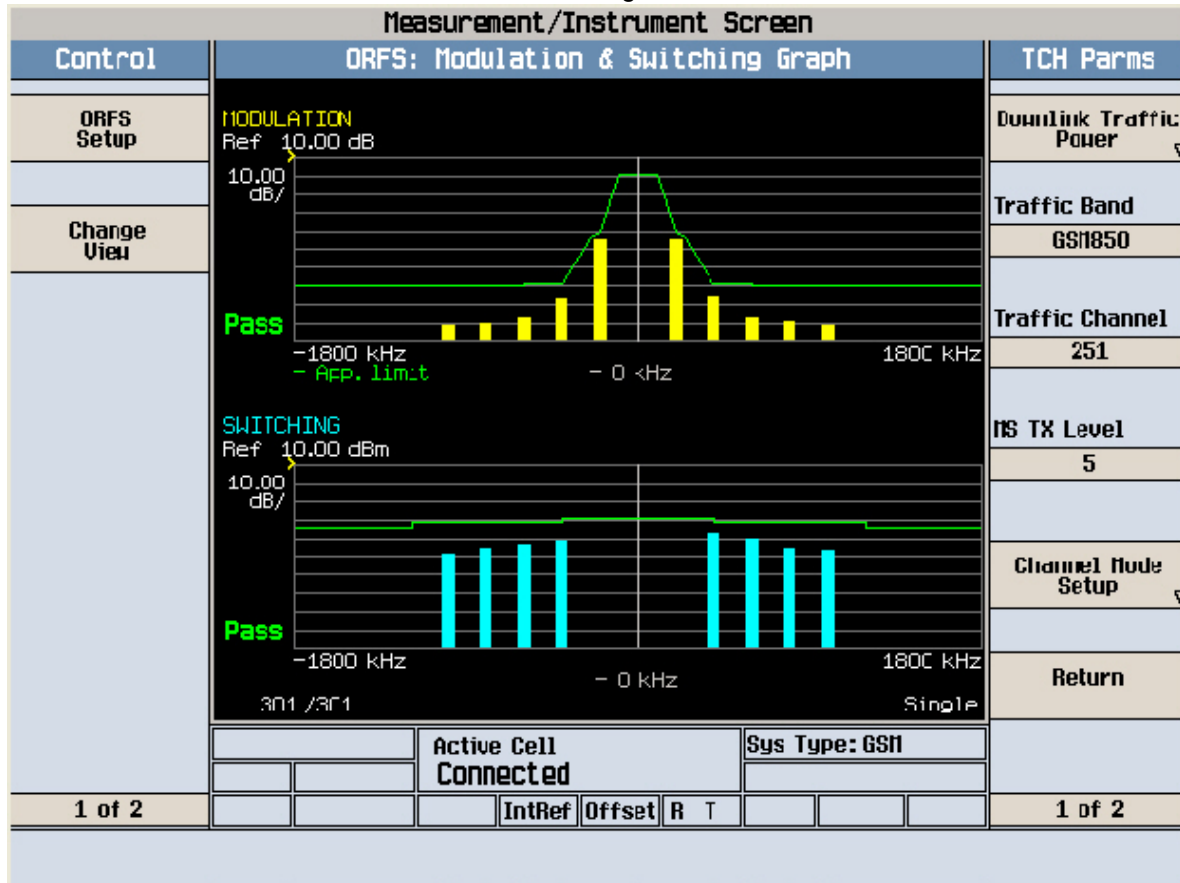
File Operation Status, C:\TEMP.GIF file saved











Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.128

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp



Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

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

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Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.128

Mkr1 817.9 MHz

Ref 33 dBm

Atten 40 dB

-23.93 dBm

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

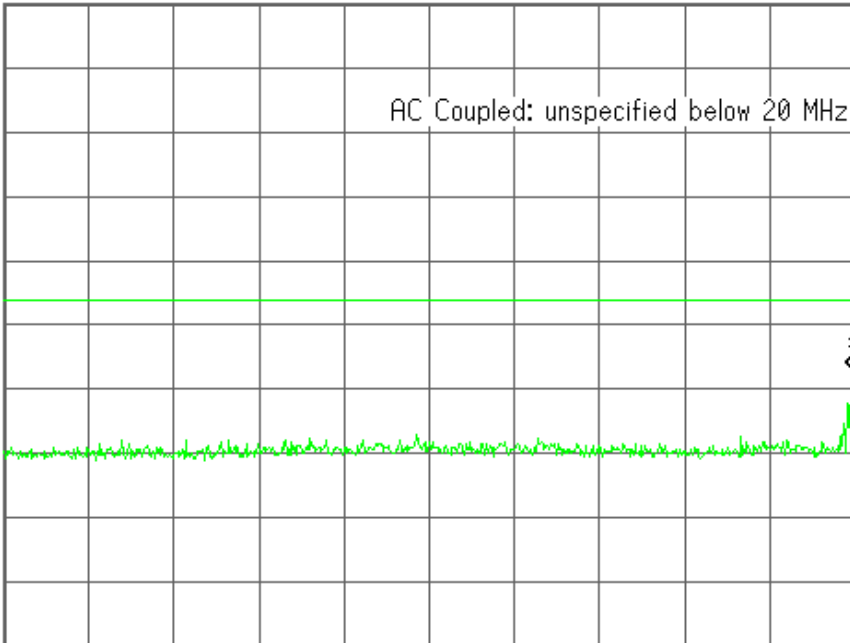
M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp



Center 414.6 MHz

Span 809.2 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.36 ms (601 pts)

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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.128

Mkr1 835 MHz

Ref 33 dBm

Atten 40 dB

-29.43 dBm

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

Ⓐ(f):

FTun

Swp

Center 1.665 GHz

Span 1.671 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 2.8 ms (601 pts)

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

FCC ID:A3LSGHM140L Cond Spur Ch.128

Mkr1 7.212 GHz

Ref 33 dBm

Atten 40 dB

-30.61 dBm

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

Ⓐ(f):

FTun

Swp

Center 6.250 GHz

Span 7.5 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 12.52 ms (601 pts)

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:A3LSGHM140L Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

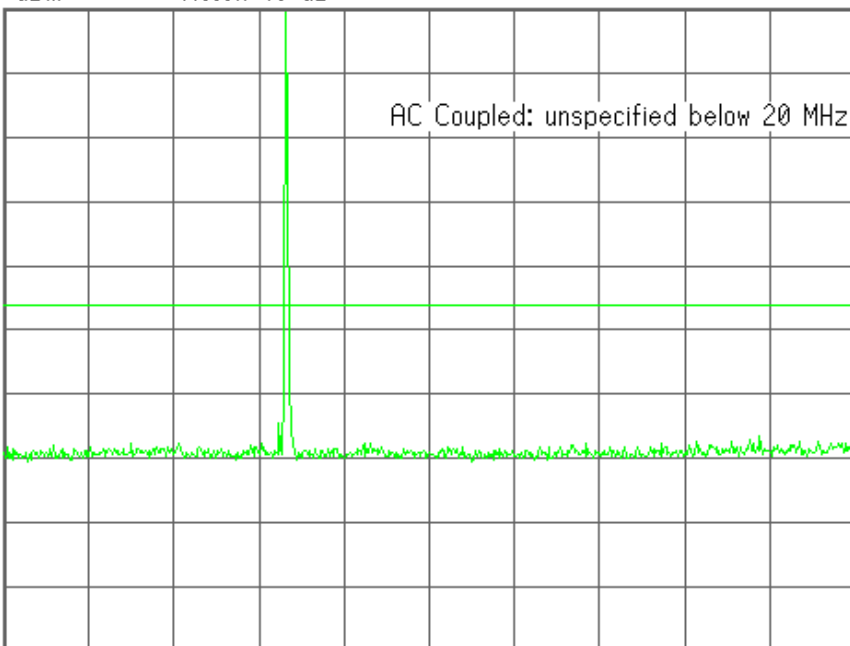
M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp



Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.190

Mkr1 225.0 MHz

Ref 33 dBm

Atten 40 dB

-34.48 dBm

#Peak

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

LgAv

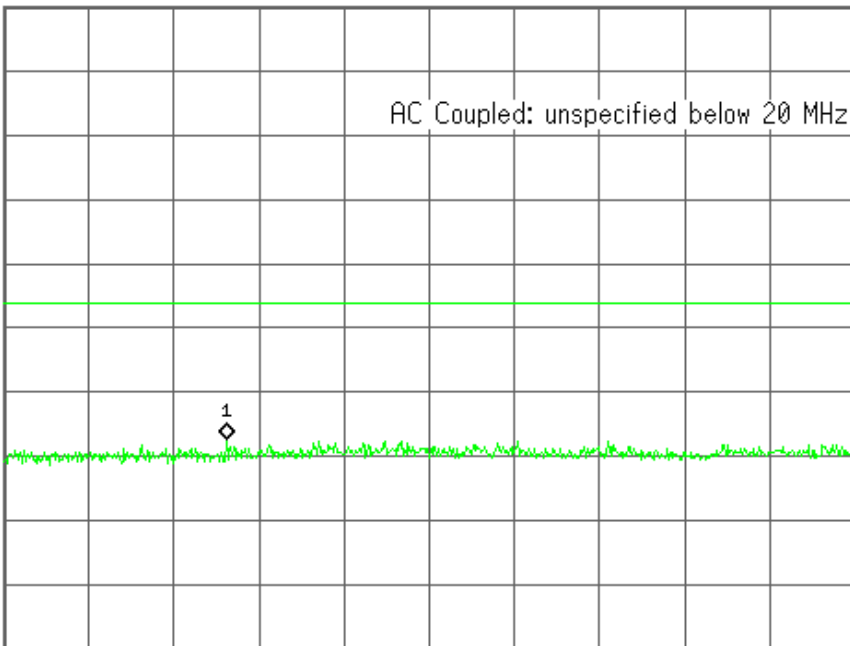
M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp



Center 420.8 MHz

Span 821.6 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.4 ms (601 pts)

Center Freq  
420.8000000 MHz

Start Freq  
10.00000000 MHz

Stop Freq  
831.6000000 MHz

CF Step  
82.16000000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

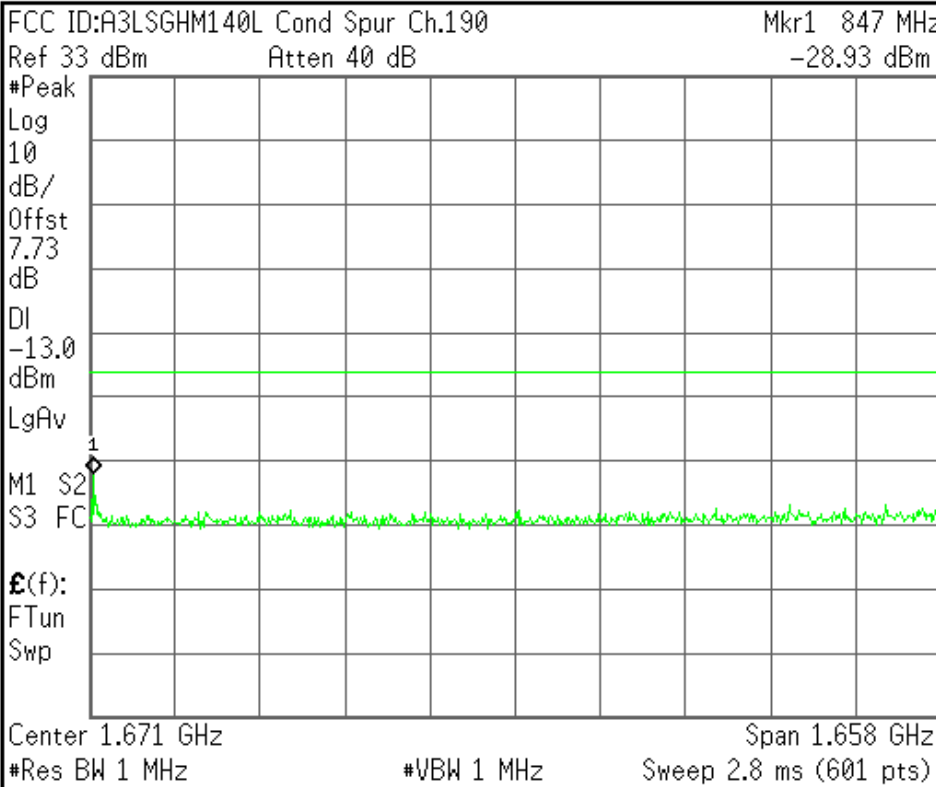
Signal Track  
On Off

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

Agilent

R T

Freq/Channel



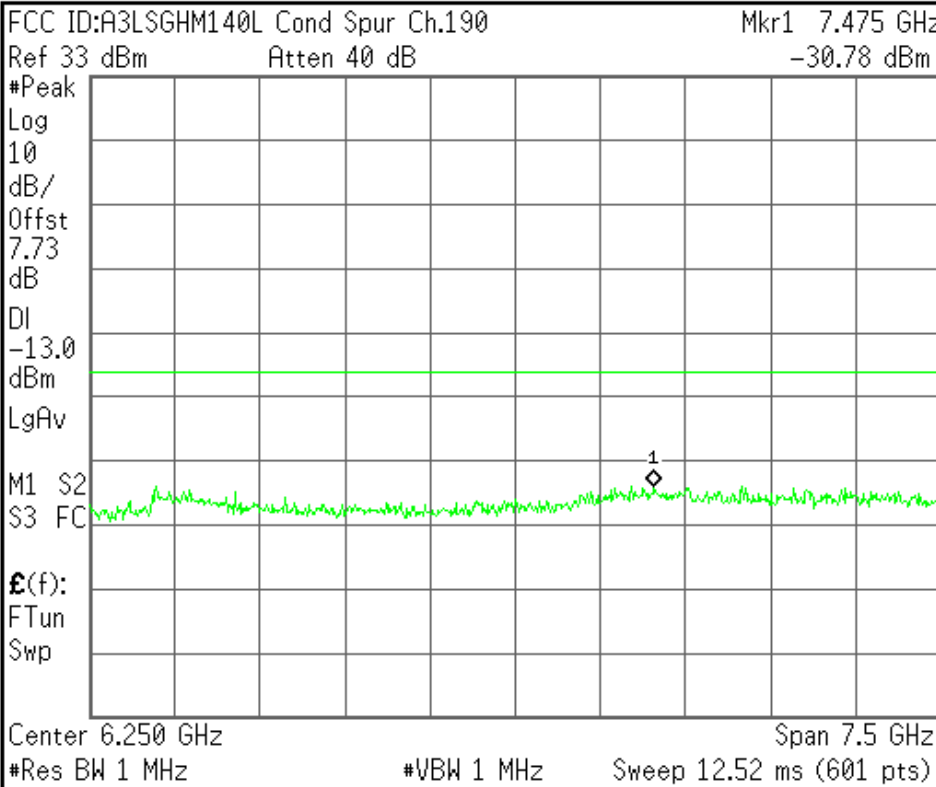
<b>Center Freq</b> 1.67080000 GHz
<b>Start Freq</b> 841.600000 MHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 165.840000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



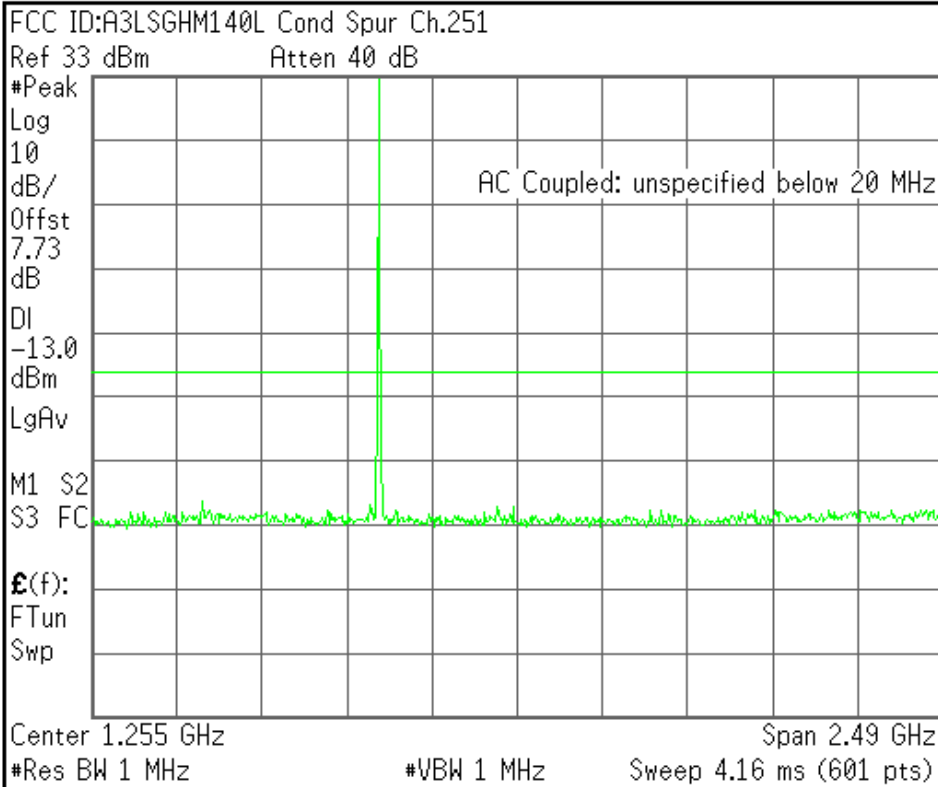
<b>Center Freq</b> 6.25000000 GHz
<b>Start Freq</b> 2.50000000 GHz
<b>Stop Freq</b> 10.00000000 GHz
<b>CF Step</b> 750.000000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



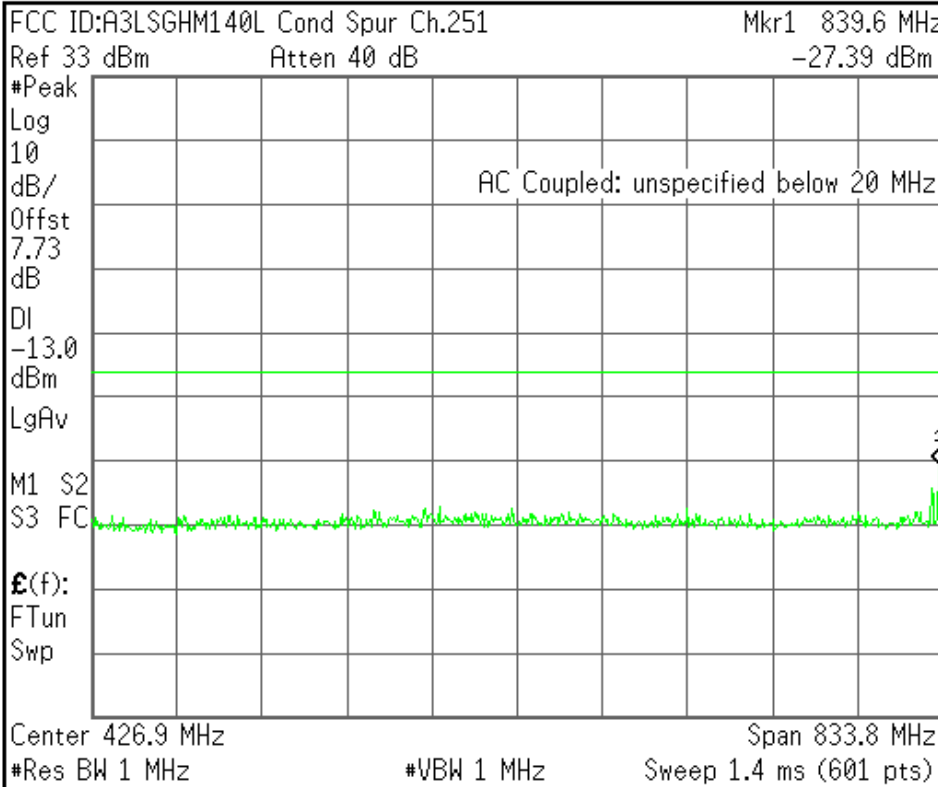
<b>Center Freq</b>	1.25500000 GHz
<b>Start Freq</b>	10.00000000 MHz
<b>Stop Freq</b>	2.50000000 GHz
<b>CF Step</b>	249.0000000 MHz Auto Man
<b>Freq Offset</b>	0.00000000 Hz
<b>Signal Track</b>	On Off

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

Agilent

R T

Freq/Channel



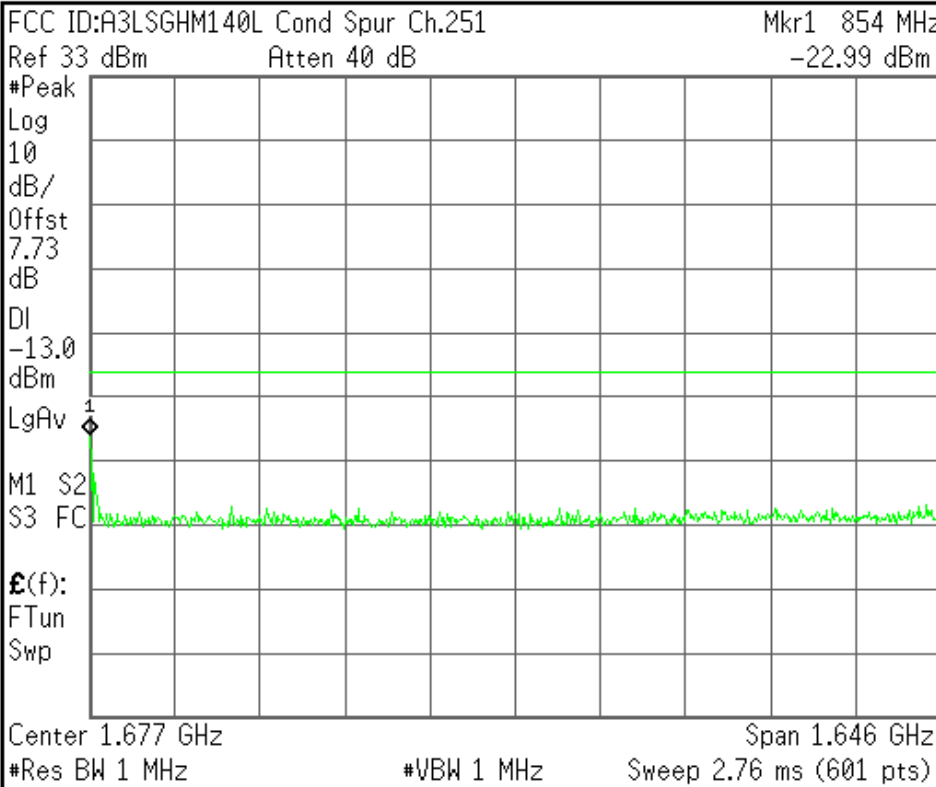
<b>Center Freq</b>	426.9000000 MHz
<b>Start Freq</b>	10.00000000 MHz
<b>Stop Freq</b>	843.8000000 MHz
<b>CF Step</b>	83.38000000 MHz Auto Man
<b>Freq Offset</b>	0.00000000 Hz
<b>Signal Track</b>	On Off

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

Agilent

R T

Freq/Channel



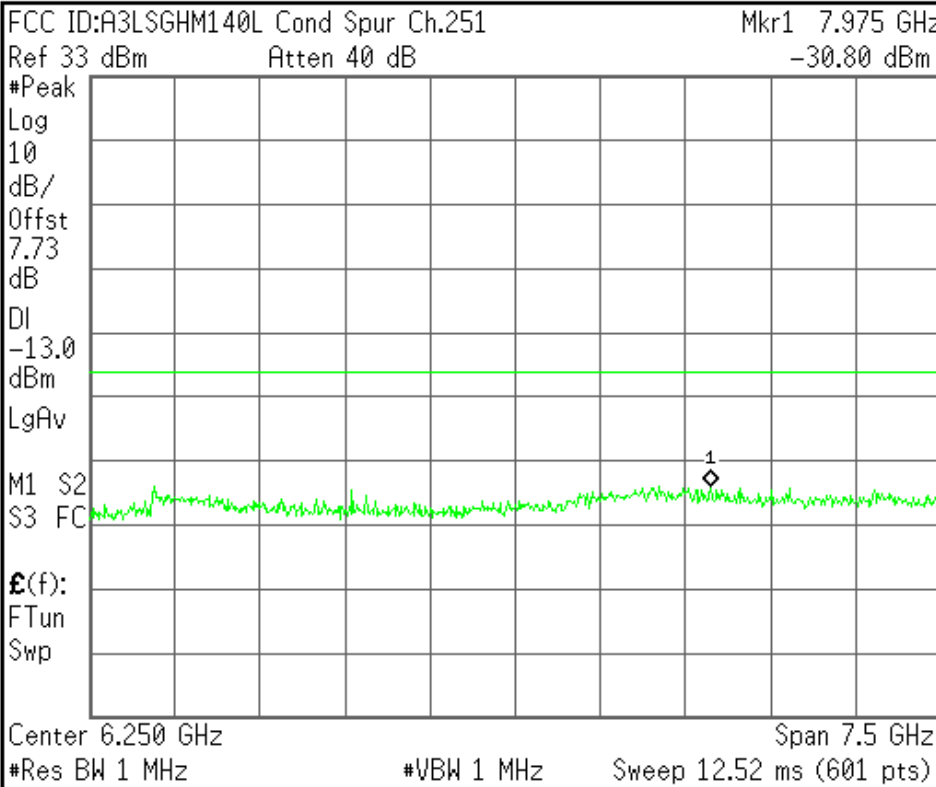
<b>Center Freq</b> 1.67690000 GHz
<b>Start Freq</b> 853.800000 MHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 164.620000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



<b>Center Freq</b> 6.25000000 GHz
<b>Start Freq</b> 2.50000000 GHz
<b>Stop Freq</b> 10.00000000 GHz
<b>CF Step</b> 750.000000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Band Edge Ch.128

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

PAvg

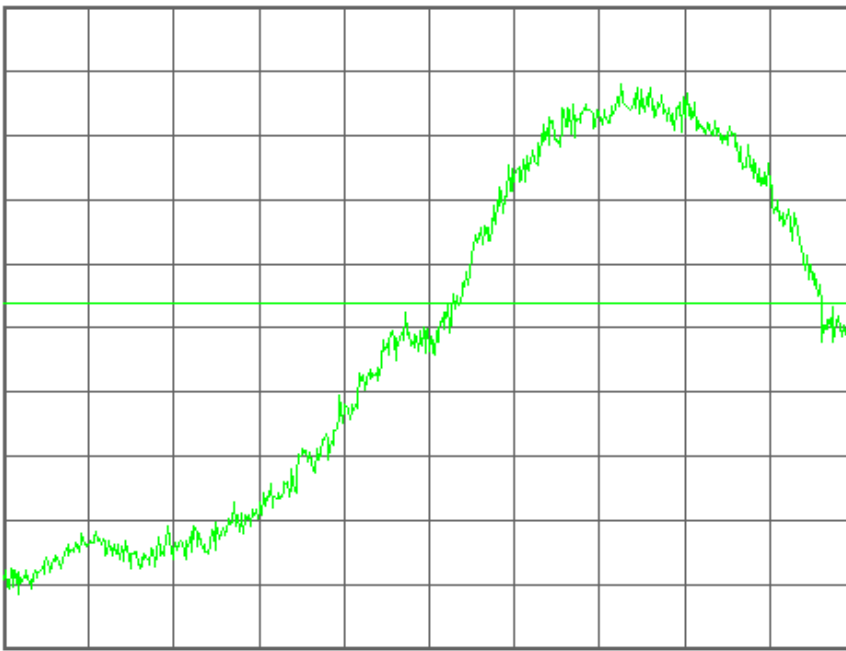
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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:A3LSGHM140L Band Edge Ch.128

Mkr1 823.996 0 MHz

Ref 33 dBm

Atten 40 dB

-14.90 dBm

#Avg

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

PAvg

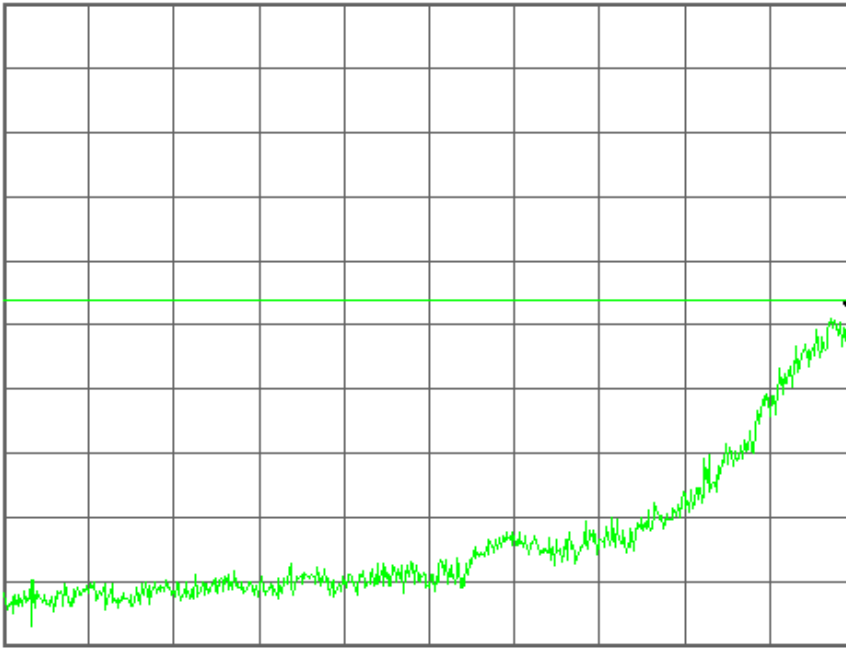
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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 L

Freq/Channel

FCC ID:A3LSGHM140L Band Edge Ch.251

Ref 33 dBm Atten 40 dB

#Avg

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

PAvg

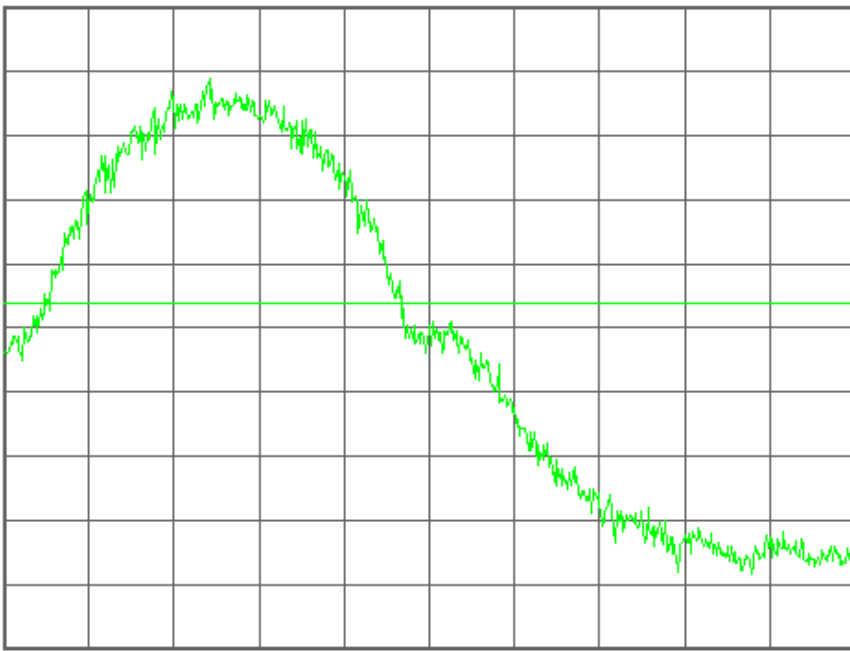
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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:A3LSGHM140L Band Edge Ch.251

Mkr1 849.016 0 MHz

Ref 33 dBm Atten 40 dB

-15.41 dBm

#Avg

Log

10

dB/

Offst

7.73

dB

DI

-13.0

dBm

PAvg

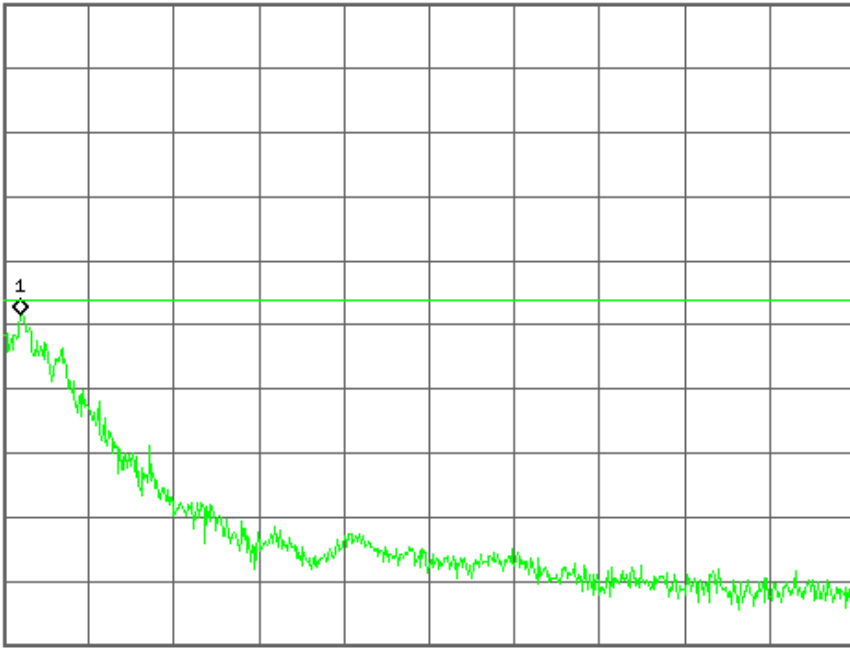
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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

**Ch Freq** 1.8502 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHM140L 0BW Ch.512  
Ref 30 dBm Atten 40 dB

Center 1.850 200 GHz Span 1 MHz  
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
247.1620 kHz	<b>x dB</b>	-26.00 dB
<b>Transmit Freq Error</b>		-7.597 Hz
<b>x dB Bandwidth</b>		317.888 kHz

**Freq/Channel**

**Center Freq**  
1.85020000 GHz

**Start Freq**  
1.84970000 GHz

**Stop Freq**  
1.85070000 GHz

**CF Step**  
100.000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

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

Agilent

R T

**Ch Freq** 1.88 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHM140L 0BW Ch.661  
Ref 30 dBm Atten 40 dB

Center 1.880 000 GHz Span 1 MHz  
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

<b>Occupied Bandwidth</b>	<b>Occ BW % Pwr</b>	99.00 %
247.2838 kHz	<b>x dB</b>	-26.00 dB
<b>Transmit Freq Error</b>		-377.139 Hz
<b>x dB Bandwidth</b>		314.353 kHz

**Freq/Channel**

**Center Freq**  
1.88000000 GHz

**Start Freq**  
1.87950000 GHz

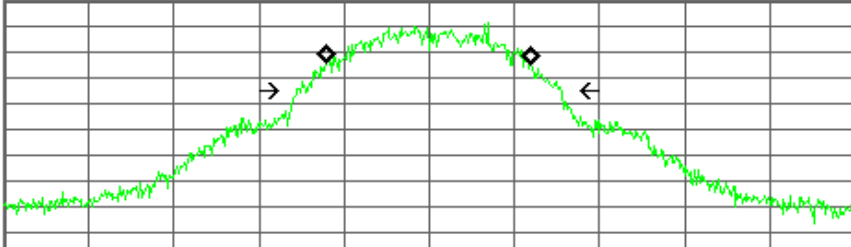
**Stop Freq**  
1.88050000 GHz

**CF Step**  
100.000000 kHz  
Auto Man

**Freq Offset**  
0.00000000 Hz

**Signal Track**  
On Off

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

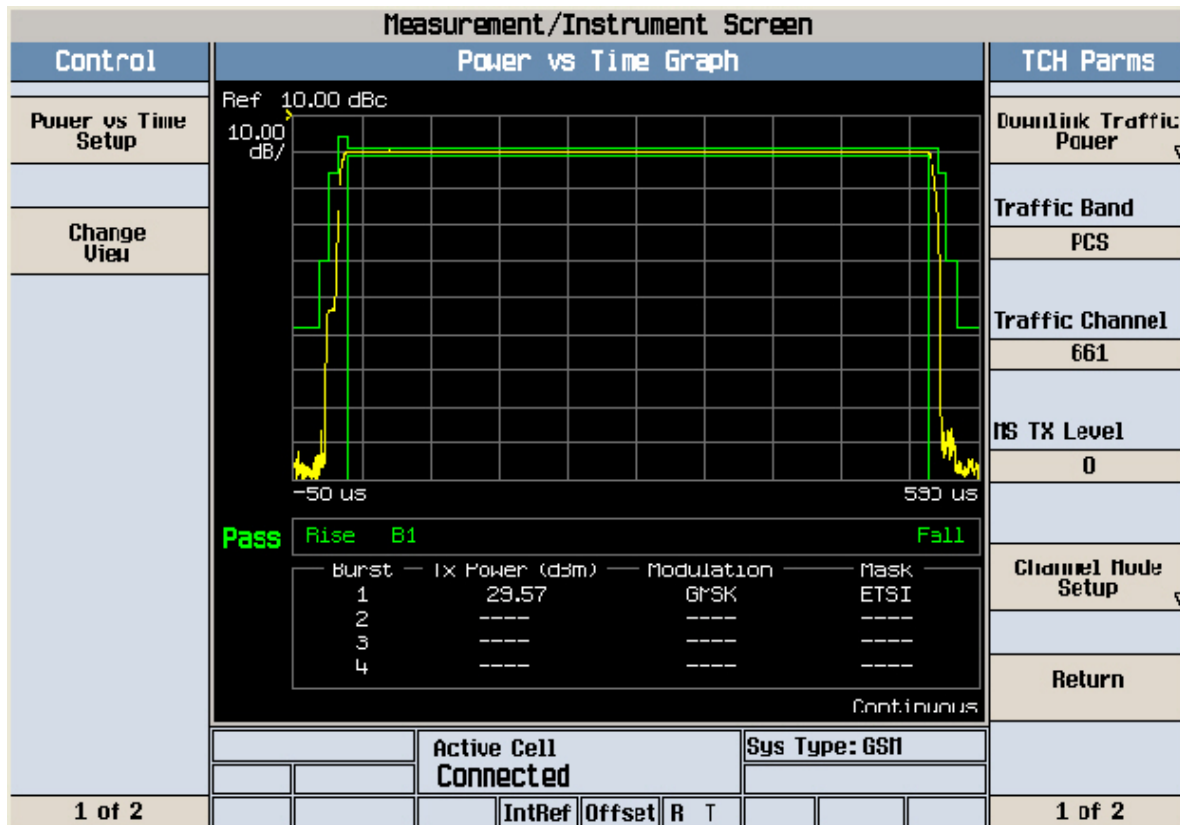
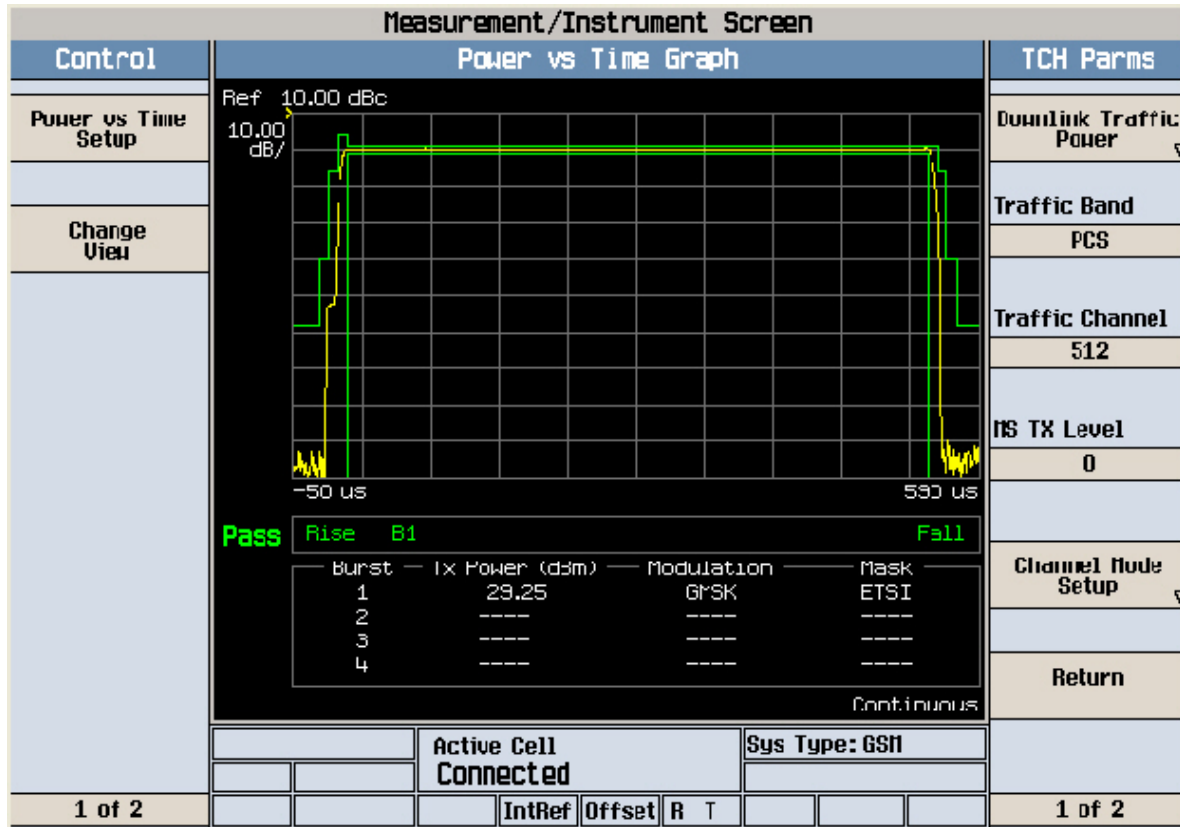
<p style="text-align: center;"><b>Ch Freq</b> 1.9098 GHz <span style="float: right;"><b>Trig</b> Free</span></p> <p>Occupied Bandwidth <span style="float: right;">[ ] [ ]</span></p> <hr/> <p>FCC ID:A3LSGHM140L 0BW Ch.810                  Ref 30 dBm      Atten 40 dB</p> <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;">                     #Peak Log 10 dB/ Offst 8.69 dB                 </div>  </div> <p style="font-size: small;">Center 1.909 800 GHz <span style="float: right;">Span 1 MHz</span>                  #Res BW 3 kHz      #VBW 3 kHz      #Sweep 1 s (601 pts)</p>	<p><b>Center Freq</b> 1.90980000 GHz</p> <hr/> <p><b>Start Freq</b> 1.90930000 GHz</p> <hr/> <p><b>Stop Freq</b> 1.91030000 GHz</p> <hr/> <p><b>CF Step</b> 100.000000 kHz Auto      Man</p> <hr/> <p><b>Freq Offset</b> 0.00000000 Hz</p> <hr/> <p><b>Signal Track</b> On      Off</p>
<p style="font-size: large; margin: 0;"><b>Occupied Bandwidth</b></p> <p style="font-size: x-large; margin: 0;">244.8922 kHz</p> <p style="font-size: small; margin: 5px 0 0 20px;">                 Occ BW % Pwr 99.00 %                  x dB -26.00 dB             </p> <p style="font-size: small; margin: 5px 0 0 20px;">                 Transmit Freq Error -1.107 kHz                  x dB Bandwidth 314.418 kHz             </p>	
<p><b>File Operation Status, C:\TEMP.GIF file saved</b></p>	

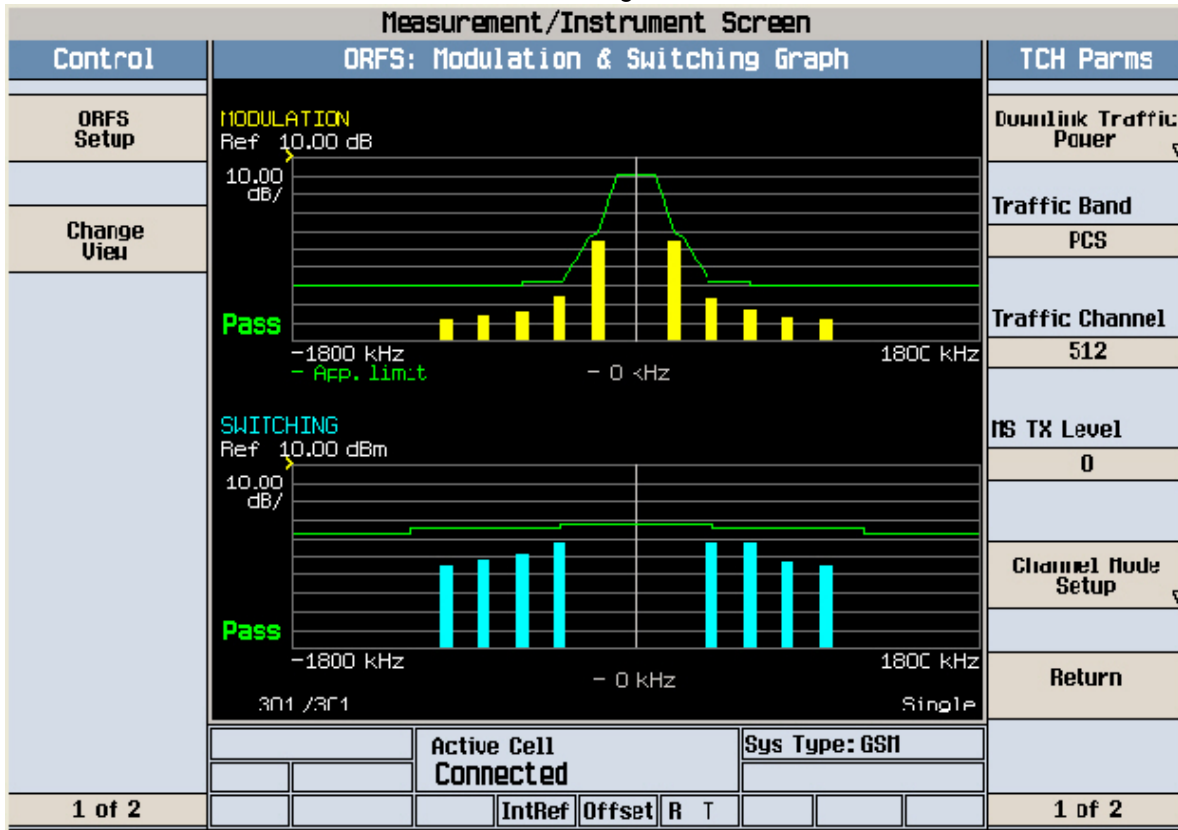
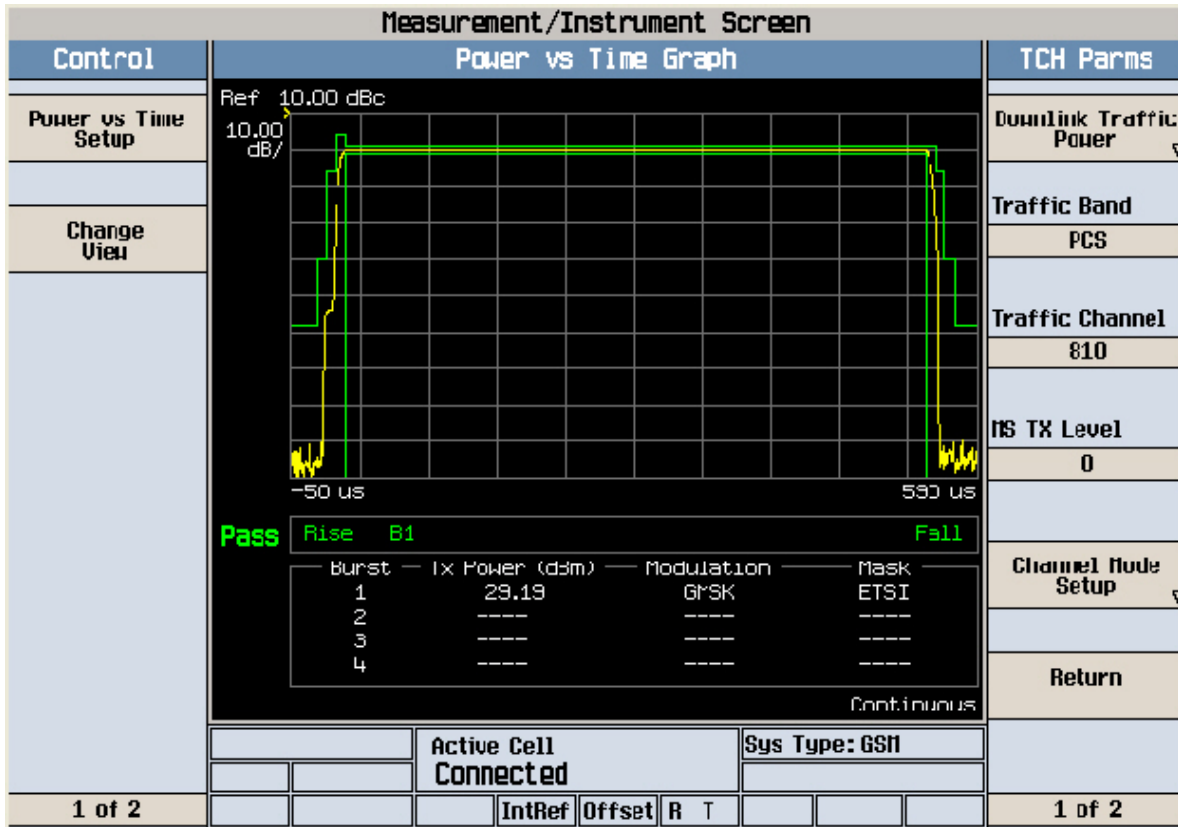
FCC ID : A3LSGHM140L Transmit Power 512CH

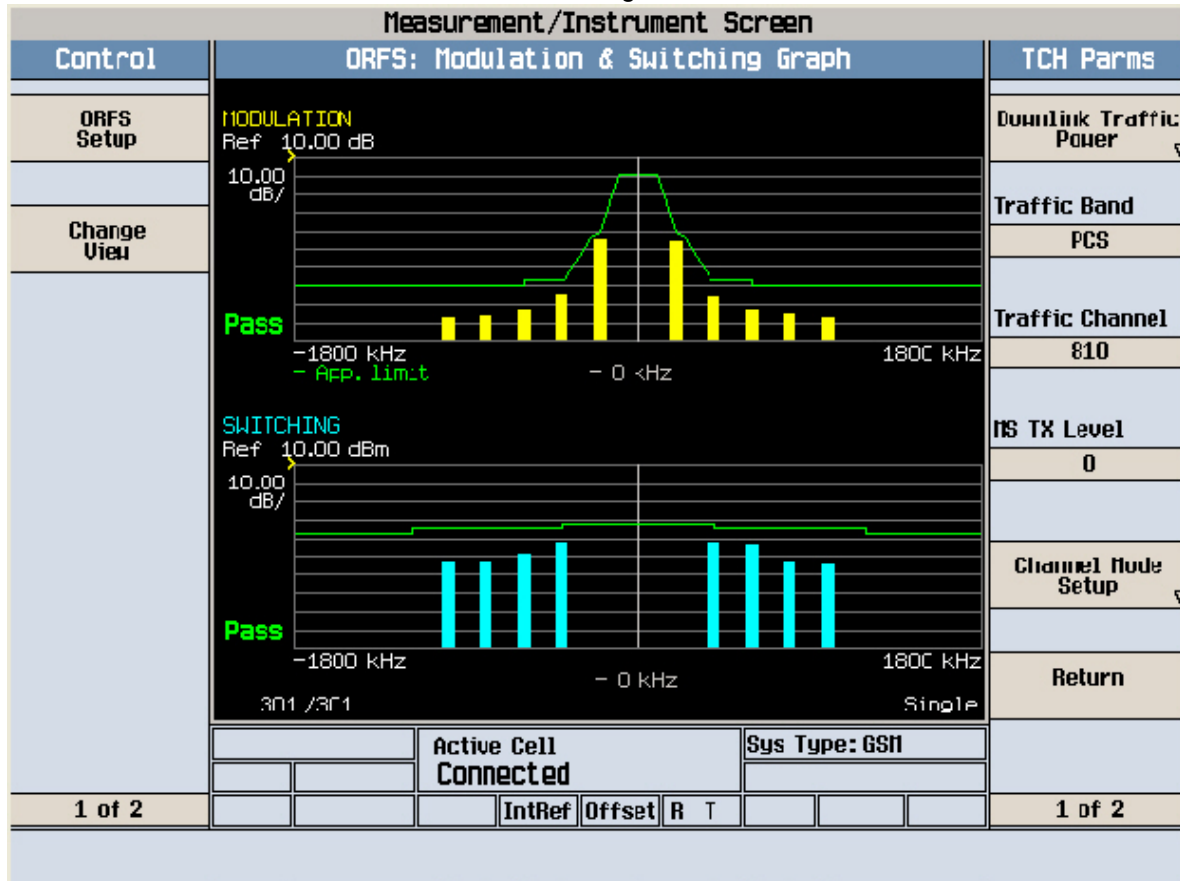
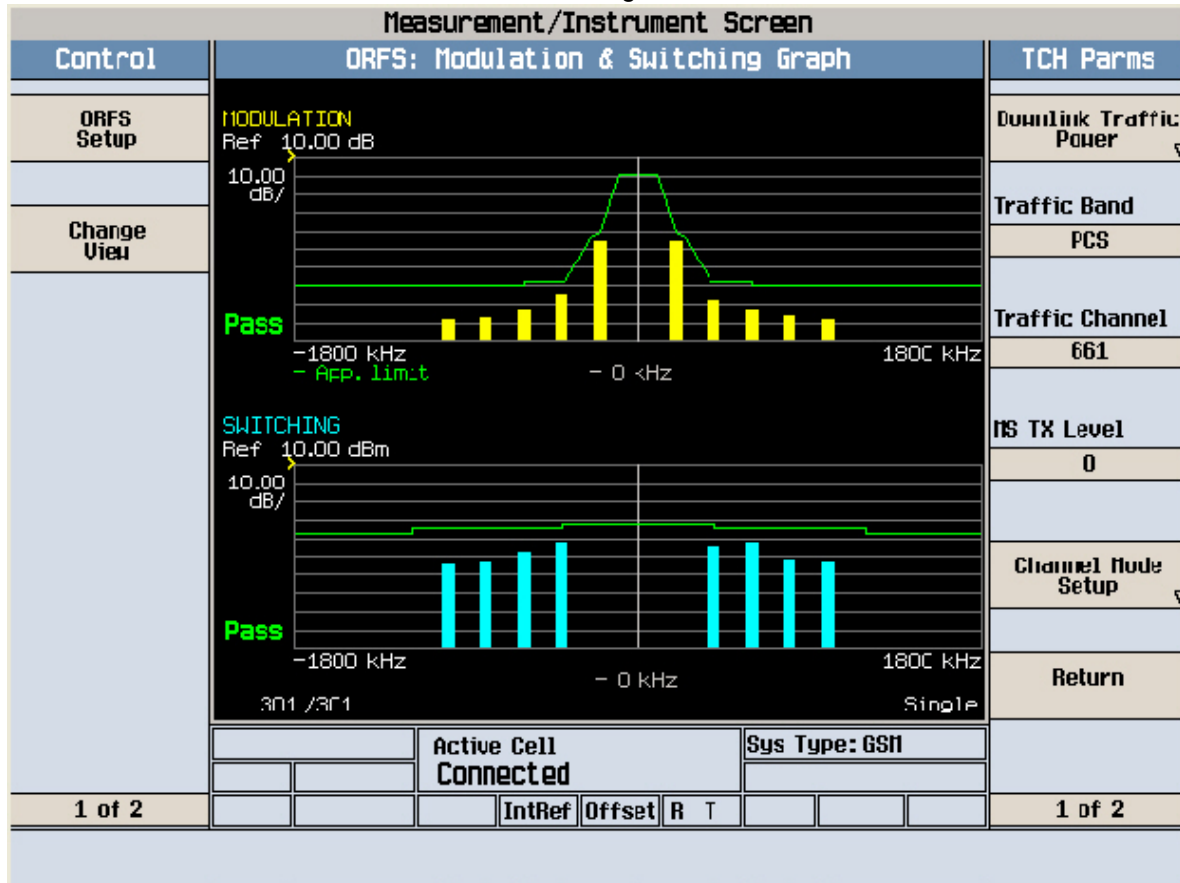
Measurement/Instrument Screen																																	
Control	Transmit Power						TCH Parms																										
<p>Transmit Power Setup ▾</p> <hr/> <p>Swap Window Positions</p> <hr/> <p>1 of 2</p>	<table border="1" style="width:100%; border-collapse: collapse; font-size: small;"> <thead> <tr style="background-color: #e0e0e0;"> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> </tr> </thead> <tbody> <tr> <td><b>Burst Power</b></td> <td>29.25</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td><b>Estimated Carrier Power</b></td> <td>29.25</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table> <p style="text-align: right; font-size: x-small;">Single</p>							Burst 1	Burst 2	Burst 3	Burst 4	<b>Burst Power</b>	29.25	----	----	----	<b>Estimated Carrier Power</b>	29.25	----	----	----	<p>Downlink Traffic Power ▾</p> <hr/> <p>Traffic Band PCS</p> <hr/> <p>Traffic Channel 512</p> <hr/> <p>MS TX Level 0</p> <hr/> <p>Channel Mode Setup ▾</p> <hr/> <p>Return</p>											
	Burst 1	Burst 2	Burst 3	Burst 4																													
<b>Burst Power</b>	29.25	----	----	----																													
<b>Estimated Carrier Power</b>	29.25	----	----	----																													
<table border="1" style="width:100%; border-collapse: collapse; font-size: small;"> <thead> <tr style="background-color: #e0e0e0;"> <th colspan="4" style="text-align: center;">Phase &amp; Frequency Error</th> </tr> <tr style="background-color: #e0e0e0;"> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>3.71</td> <td>1.36</td> <td>-30.58</td> </tr> <tr> <td>Maximum</td> <td>5.98</td> <td>1.72</td> <td>-11.72</td> </tr> <tr> <td>Average</td> <td>4.53</td> <td>1.56</td> <td>-20.97</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> <p style="text-align: right; font-size: x-small;">50 / 50      Single</p>										Phase & Frequency Error					Peak Phase °	RMS Phase °	Frequency Hz	Minimum	3.71	1.36	-30.58	Maximum	5.98	1.72	-11.72	Average	4.53	1.56	-20.97	Pass/Fail	Pass	Pass	Pass
Phase & Frequency Error																																	
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Average	4.53	1.56	-20.97																														
Pass/Fail	Pass	Pass	Pass																														
			<p>Active Cell Connected</p>			<p>Sys Type: GSM</p>																											
		IntRef		Offset		R T																											
					1 of 2																												

Measurement/Instrument Screen										
Control	Transmit Power							TCH Parms		
Transmit Power Setup ▾					Burst 1	Burst 2	Burst 3	Burst 4	Downlink Traffic Power ▾	
	Burst Power				29.58	----	----	----	Traffic Band	
Swap Window Positions	Estimated Carrier Power				29.58	----	----	----	PCS	
								Single	Traffic Channel	661
Phase & Frequency Error										
		Peak Phase °		RMS Phase °		Frequency Hz		MS TX Level		
Minimum		3.42		1.26		-20.11		0		
Maximum		5.76		1.94		4.73		Channel Mode Setup ▾		
Average		4.49		1.56		-8.36		Return		
Pass/Fail		Pass		Pass		Pass				
		50 / 50				Single				
		Active Cell Connected				Sys Type: GSM				
1 of 2				IntRef	Offset	R	T		1 of 2	

Measurement/Instrument Screen										
Control	Transmit Power							TCH Parms		
Transmit Power Setup ▾					Burst 1	Burst 2	Burst 3	Burst 4	Downlink Traffic Power ▾	
	Burst Power				29.20	----	----	----	Traffic Band	
Swap Window Positions	Estimated Carrier Power				29.20	----	----	----	PCS	
								Single	Traffic Channel	810
Phase & Frequency Error										
		Peak Phase °		RMS Phase °		Frequency Hz		MS TX Level		
Minimum		3.75		1.23		-43.13		0		
Maximum		6.13		1.74		-4.11		Channel Mode Setup ▾		
Average		4.56		1.53		-24.52		Return		
Pass/Fail		Pass		Pass		Pass				
		50 / 50				Single				
		Active Cell Connected				Sys Type: GSM				
1 of 2				IntRef	Offset	R	T		1 of 2	



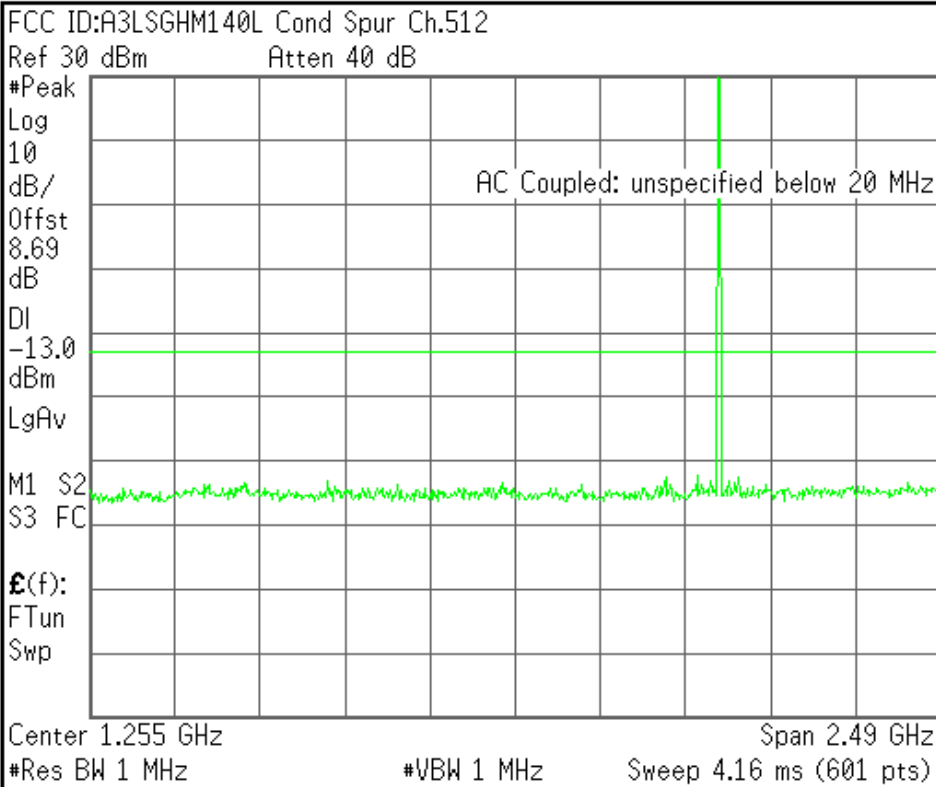




Agilent

R T

Freq/Channel



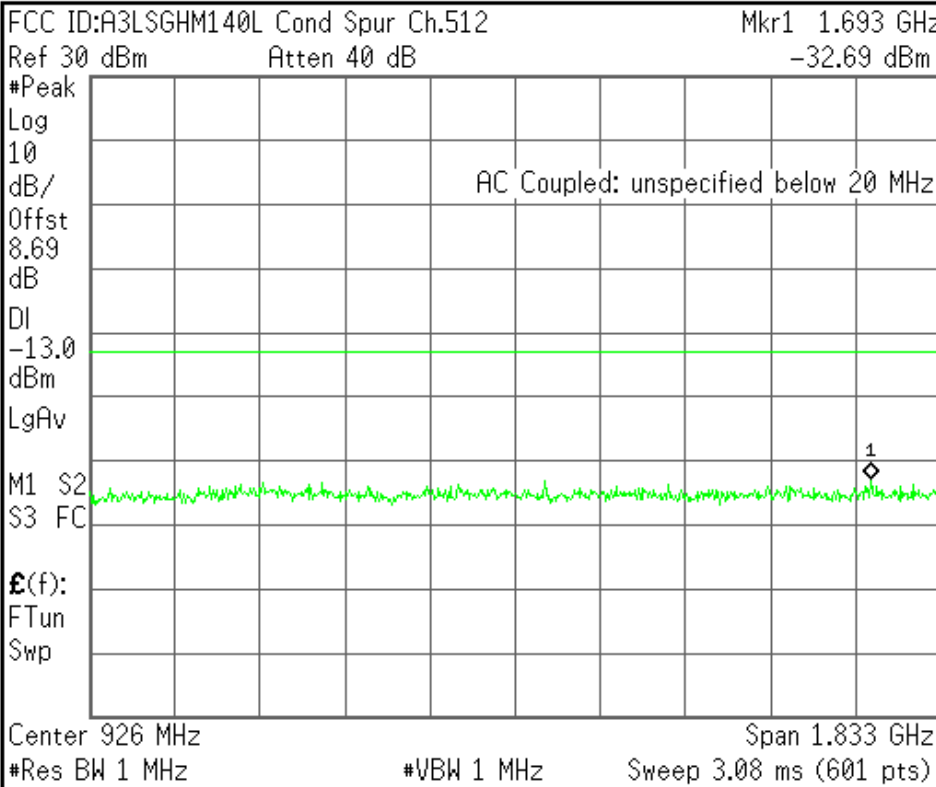
<b>Center Freq</b> 1.25500000 GHz
<b>Start Freq</b> 10.00000000 MHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 249.0000000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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Agilent

R T

Freq/Channel



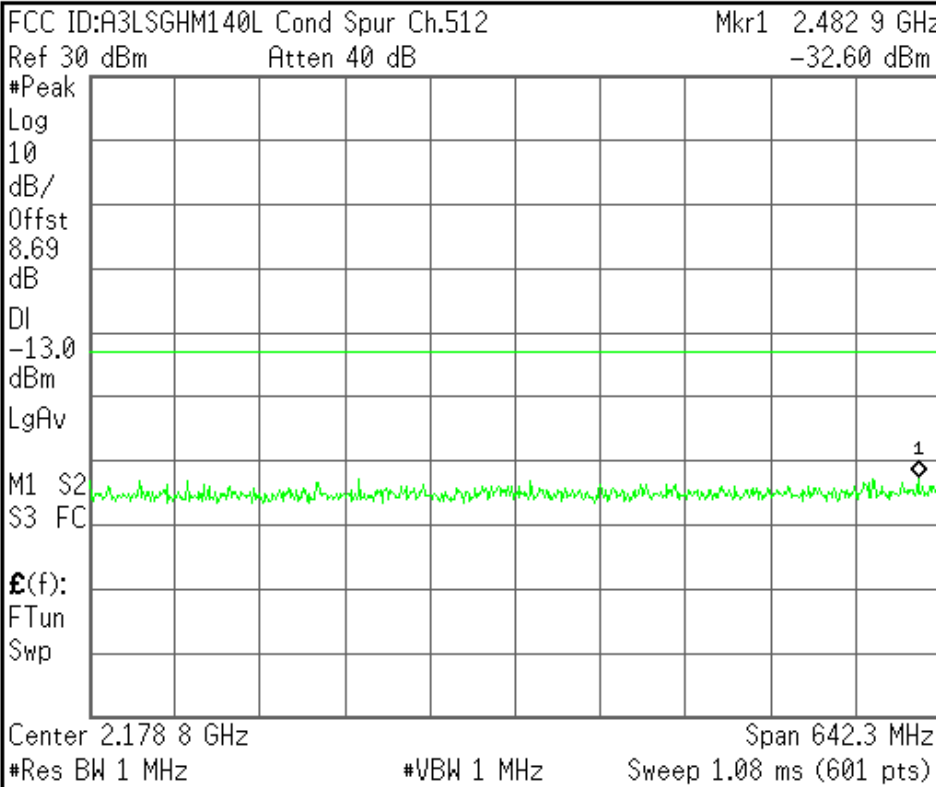
<b>Center Freq</b> 926.350000 MHz
<b>Start Freq</b> 10.00000000 MHz
<b>Stop Freq</b> 1.84270000 GHz
<b>CF Step</b> 183.270000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



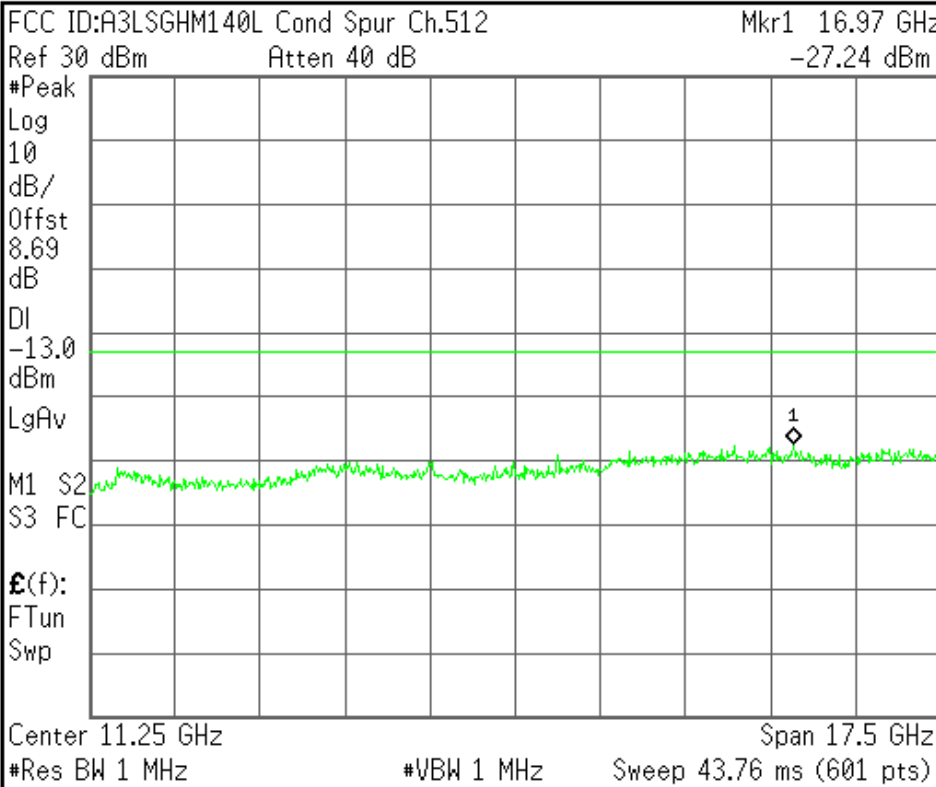
<b>Center Freq</b> 2.17885000 GHz
<b>Start Freq</b> 1.85770000 GHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 64.2300000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



<b>Center Freq</b> 11.2500000 GHz
<b>Start Freq</b> 2.50000000 GHz
<b>Stop Freq</b> 20.0000000 GHz
<b>CF Step</b> 1.75000000 GHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.661

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Cond Spur Ch.661

Mkr1 1.817 GHz

Ref 30 dBm

Atten 40 dB

-33.10 dBm

#Peak

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

$\mathcal{E}(f)$ :

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center 941 MHz

Span 1.863 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 3.12 ms (601 pts)

Center Freq  
941.250000 MHz

Start Freq  
10.00000000 MHz

Stop Freq  
1.87250000 GHz

CF Step  
186.250000 MHz  
Auto Man

Freq Offset  
0.00000000 Hz

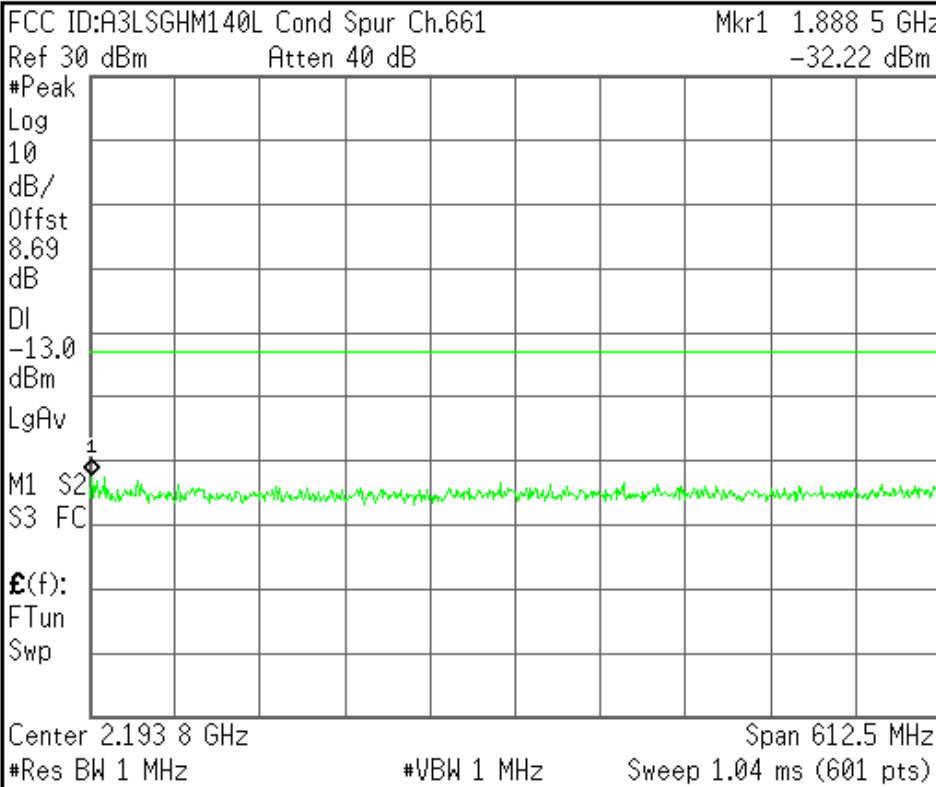
Signal Track  
On Off

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

Agilent

R T

Freq/Channel



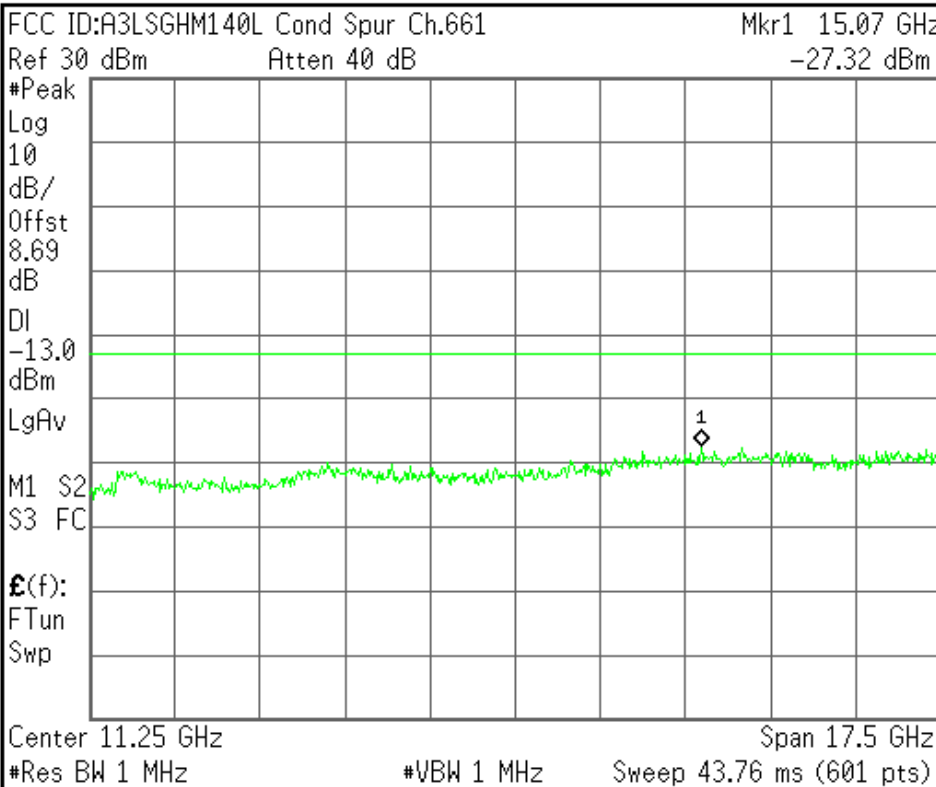
<b>Center Freq</b> 2.19375000 GHz
<b>Start Freq</b> 1.88750000 GHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 61.2500000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



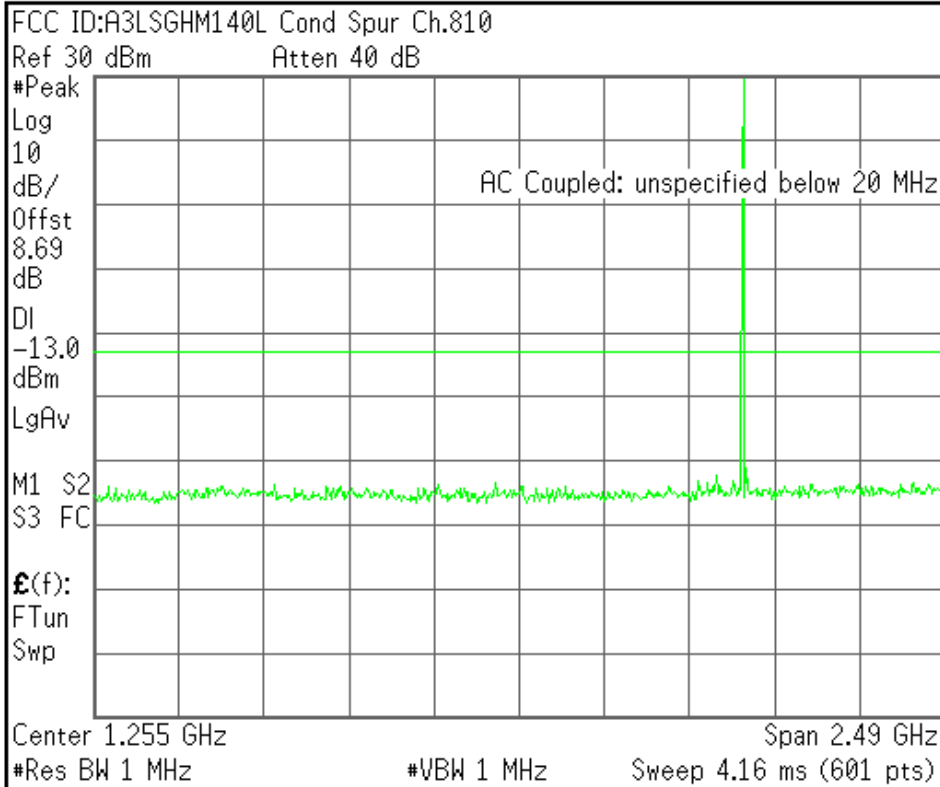
<b>Center Freq</b> 11.2500000 GHz
<b>Start Freq</b> 2.50000000 GHz
<b>Stop Freq</b> 20.0000000 GHz
<b>CF Step</b> 1.75000000 GHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



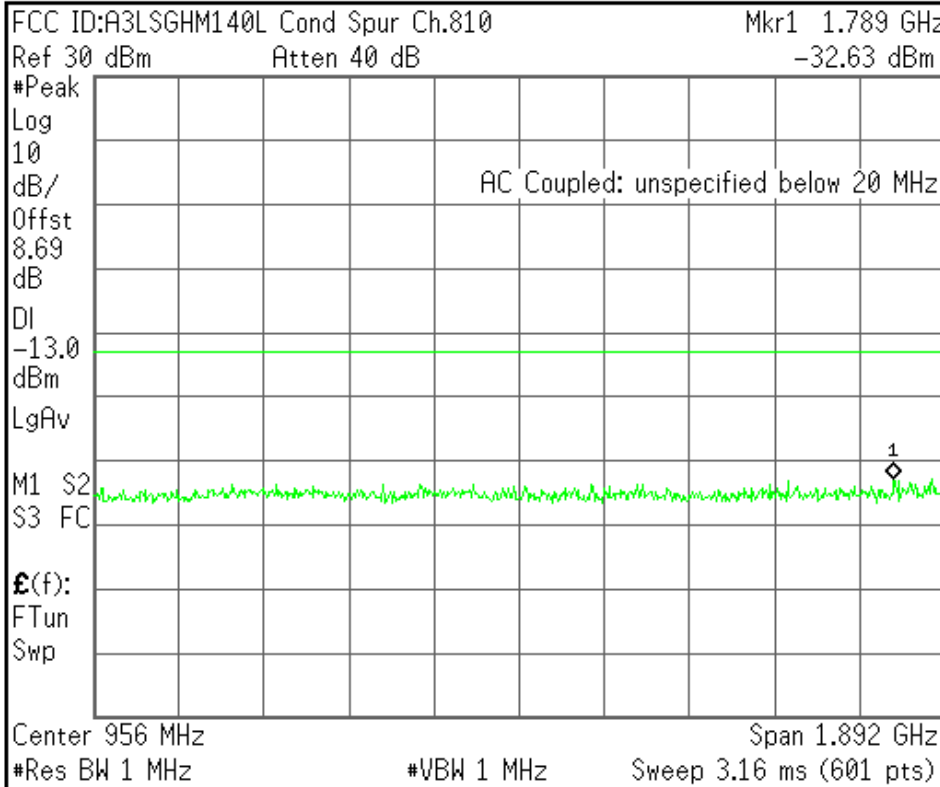
<b>Center Freq</b> 1.25500000 GHz
<b>Start Freq</b> 10.0000000 MHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 249.000000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



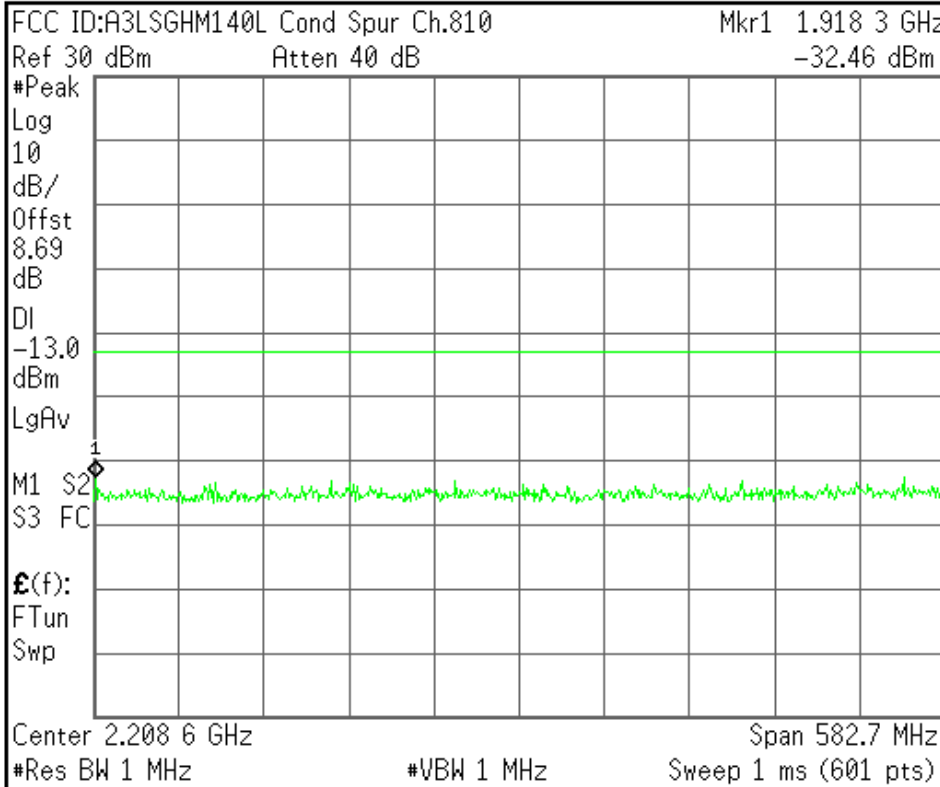
<b>Center Freq</b> 956.150000 MHz
<b>Start Freq</b> 10.0000000 MHz
<b>Stop Freq</b> 1.90230000 GHz
<b>CF Step</b> 189.230000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



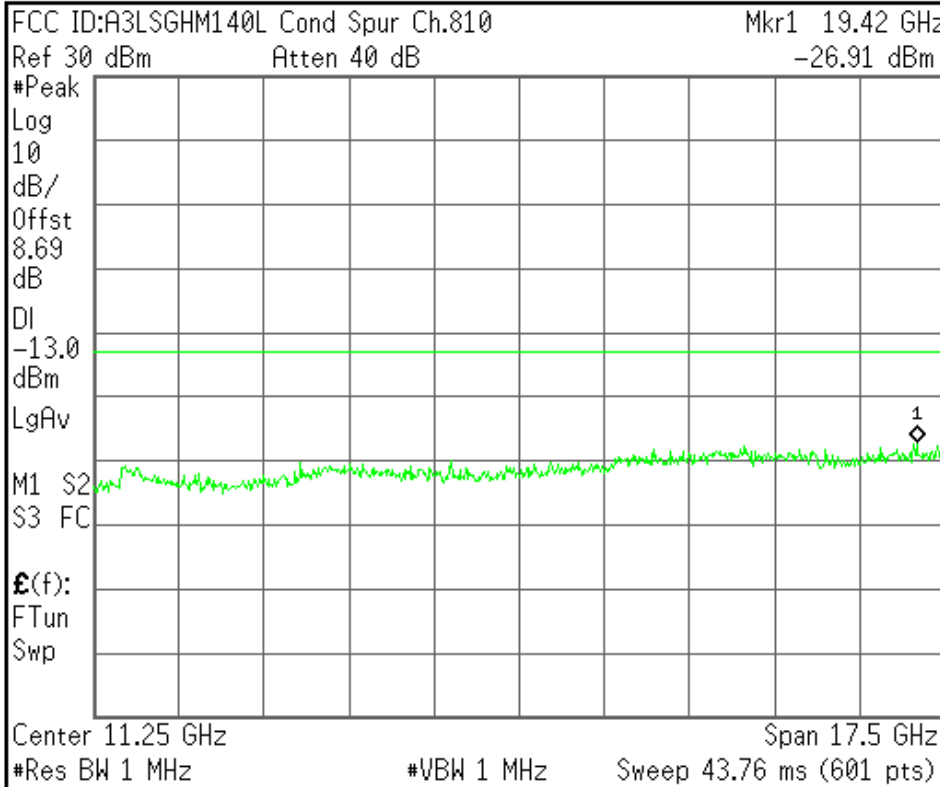
<b>Center Freq</b> 2.20865000 GHz
<b>Start Freq</b> 1.91730000 GHz
<b>Stop Freq</b> 2.50000000 GHz
<b>CF Step</b> 58.27000000 MHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel



<b>Center Freq</b> 11.25000000 GHz
<b>Start Freq</b> 2.50000000 GHz
<b>Stop Freq</b> 20.00000000 GHz
<b>CF Step</b> 1.75000000 GHz Auto Man
<b>Freq Offset</b> 0.00000000 Hz
<b>Signal Track</b> On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHM140L Band Edge Ch.512

Ref 30 dBm Atten 40 dB

#Avg

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

PAvg

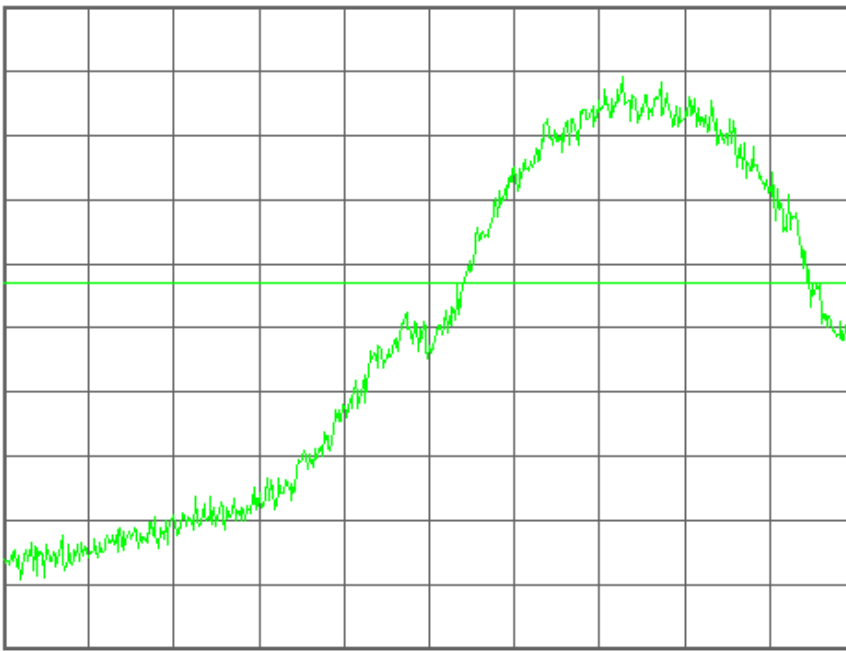
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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:A3LSGHM140L Band Edge Ch.512

Mkr1 1.849 973 3 GHz

Ref 30 dBm Atten 40 dB

-17.85 dBm

#Avg

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

PAvg

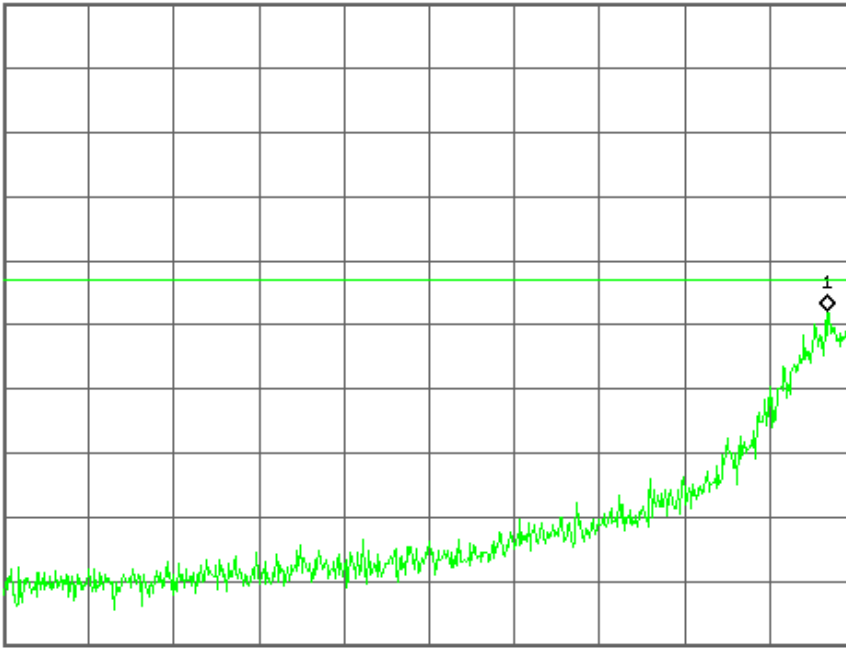
M1 S2

S3 FC

$\mathcal{E}(f)$ :

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:A3LSGHM140L Band Edge Ch.810

Ref 30 dBm Atten 40 dB

#Avg

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

PAvg

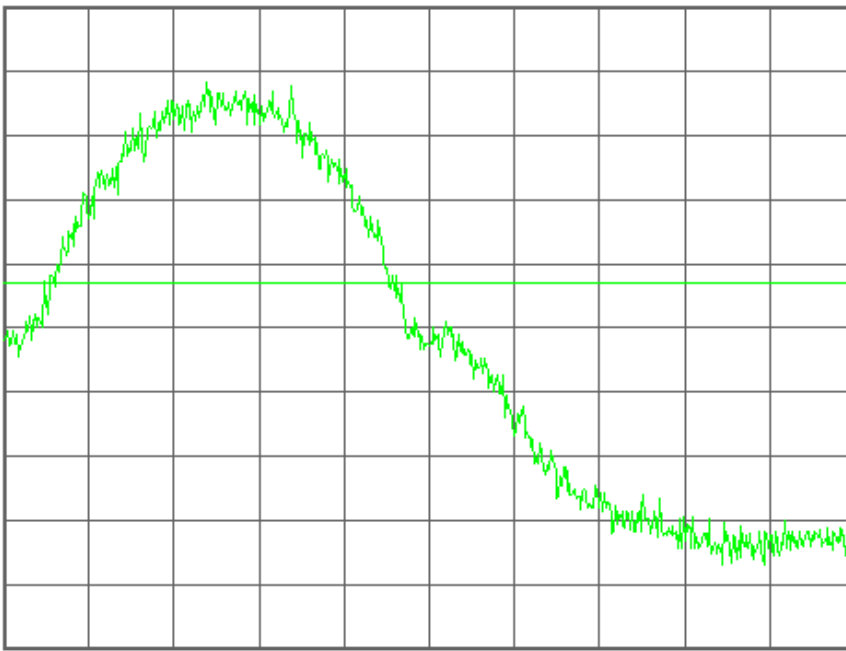
M1 S2

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:A3LSGHM140L Band Edge Ch.810

Mkr1 1.909 996 7 GHz

Ref 30 dBm

Atten 40 dB

-19.03 dBm

#Avg

Log

10

dB/

Offst

8.69

dB

DI

-13.0

dBm

PAvg

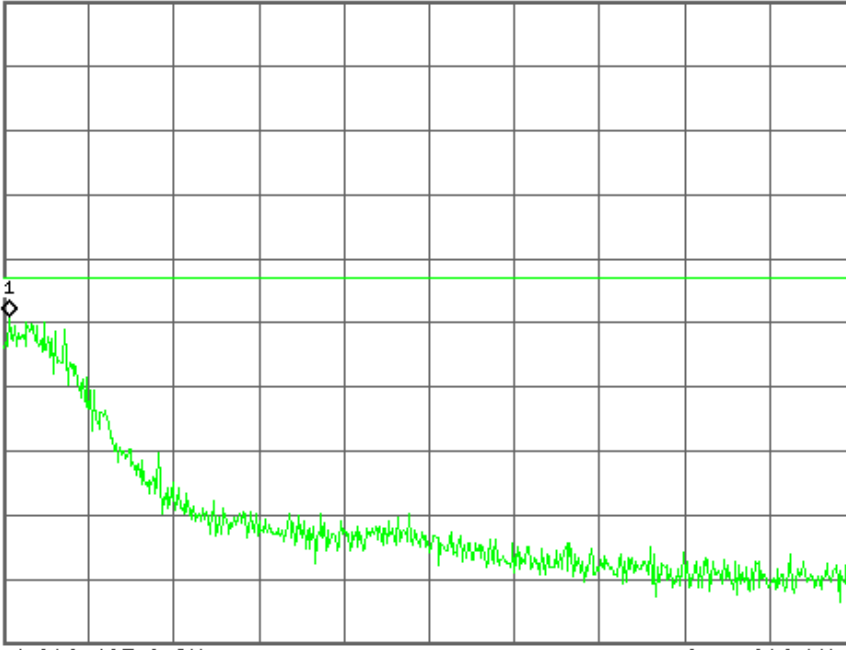
M1 S2

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