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FCC CFR47 PART 22 & 24 SUBPART CERTIFICATION REPORT

Model Tested : SGH-A157
FCC ID (Requested) : A3LSGHA157
Report No : FJ-003-R1
Job No : FJ-003
Date issued : February 7, 2012

- Abstract -

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

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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 : A3LSGHA157
- Model : SGH-A157
- Quantity : Quantity production is planned
- Emission Designators : 253KGXW(GSM850), 245KG7W(GSM850 EDGE)
253KGXW(GSM1900), 247KG7W(GSM1900 EDGE)
- Tx Freq. Range : 824.2 - 848.8MHz (GSM850)
1850.2MHz - 1909.8MHz (GSM1900)
- Rx Freq. Range : 869.2 - 893.8 MHz (GSM850)
1930.2MHz - 1989.8MHz (GSM1900)
- Max. Power Rating : 0.729 W ERP GSM850 (28.63 dBm)
0.813 W EIRP GSM1900 (29.10 dBm)
0.330 W ERP GSM850 EDGE(25.19 dBm)
0.516 W EIRP GSM1900 EDGE(27.13 dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 GSM/GPRS/EDGE and WCDMA/HSDPA Phone
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : January 16-17, 2012
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FJ-003-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 a Non-conducted turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. 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 test antenna shall be raised and lowered, if necessary, to ensure that the maximum signal is still being received. The signal generator, output level, shall be adjusted until an equal or a known related level to what was measured from the EUT is obtained in the spectrum analyzer. This level was recorded.

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.



Figure2. Photograph of 3m Fully-Anechoic Chamber



3. MEASURING INSTRUMENT CALIBRATION

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

4. TEST EQUIPMENT LIST

| Name Of Equipment | Model | Serial No. | Due Date |
|---------------------------------|---------------------|------------------|--------------|
| Spectrum Analyzer | ESI26 | 836119/010 | 2012-10-25 |
| | E4440A(3Hz~26.5GHz) | MY46187454 | 2012-03-08 |
| | E4440A(3Hz~26.5GHz) | MY41000236 | 2012-04-27 |
| Signal Generator | SMR20 | 835197/030 | 2012-12-01 |
| Network Analyzer | 8753E | JP38160590 | 2012-06-21 |
| Pre-Amplifier | 8449B | 3008A00691 | 2012-12-09 |
| Communication test set | 8960 | MY47510060 | 2012-03-08 |
| | 8960 | GB42360886 | 2012-09-02 |
| 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. 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

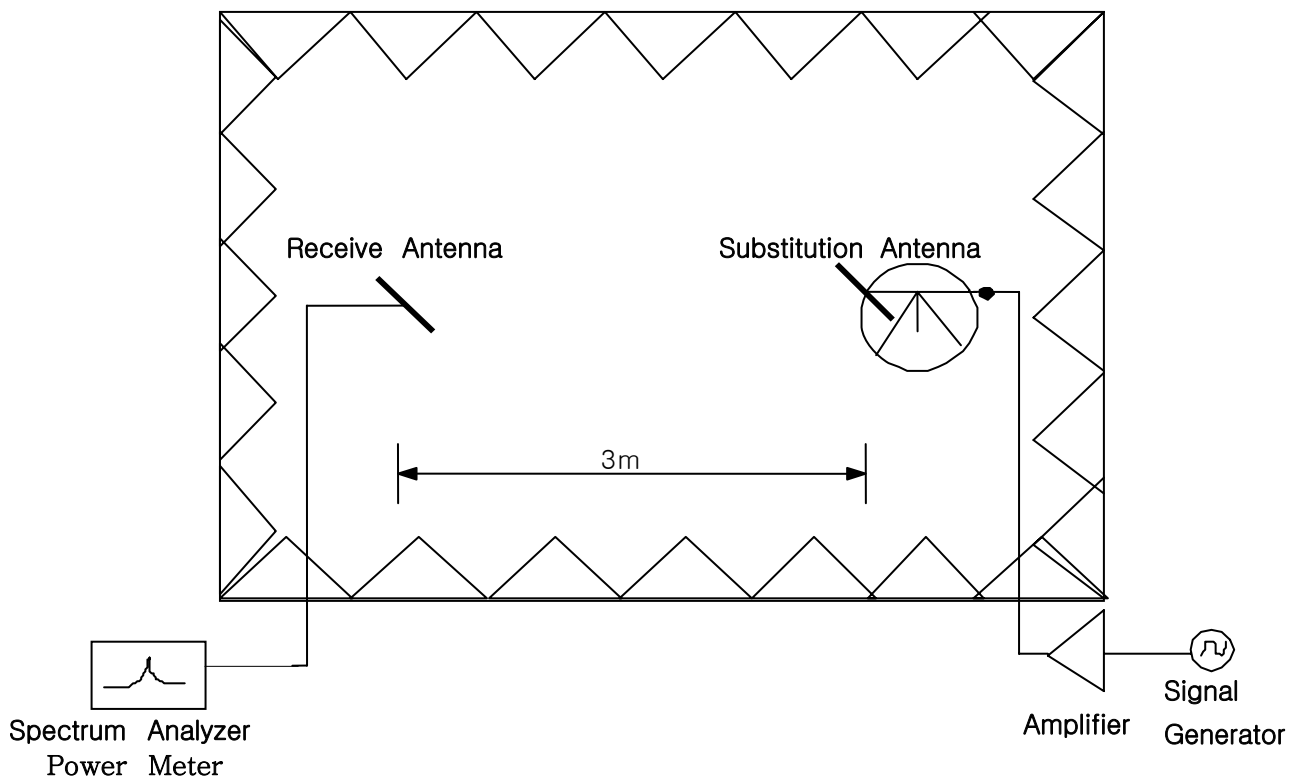


Figure 3. Diagram of ERP/EIRP test Set-up

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 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

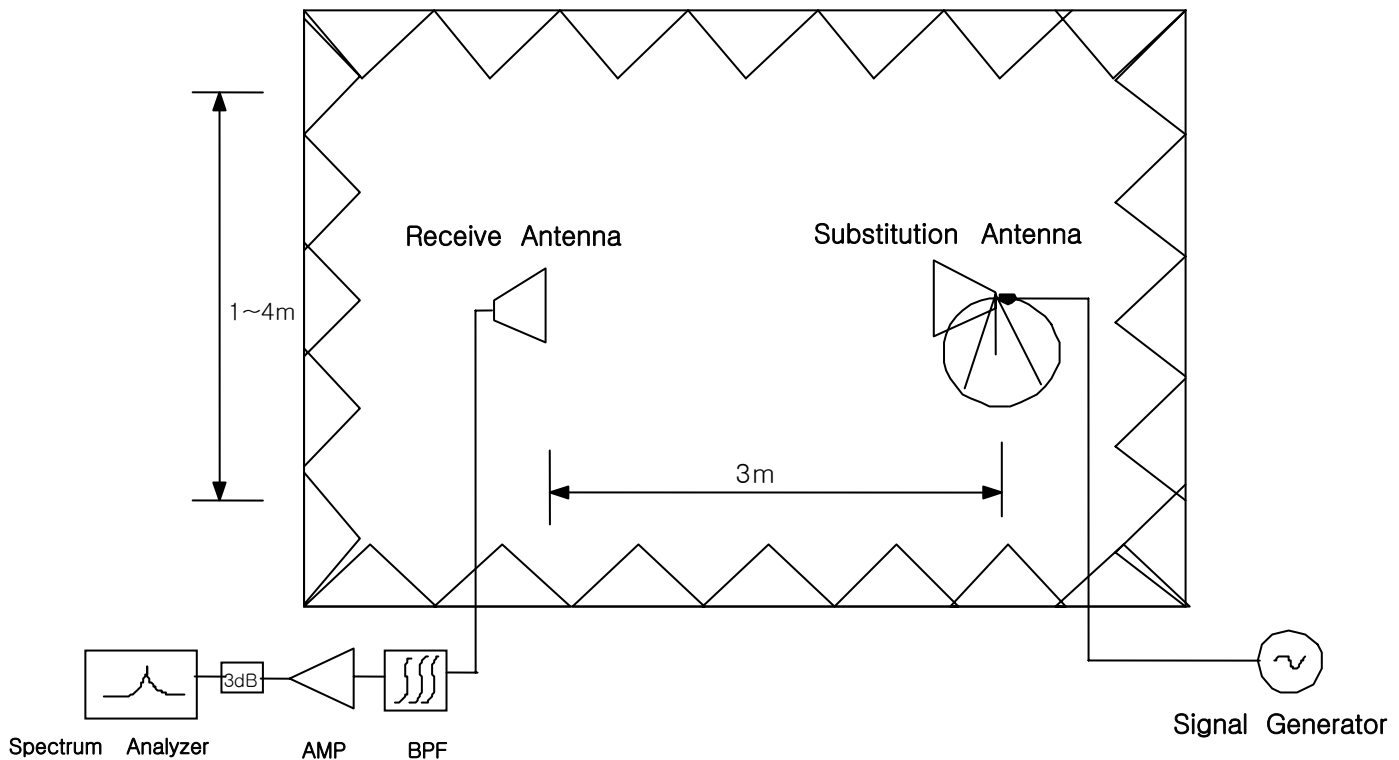


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna 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 10th 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 -81.0dBm . The gain of the substituted antenna is 8.1dBi . The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0dBm of the receive analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0dB at 3760.00MHz . So 6.1dB is added to the signal generator reading of -30.9dBm yielding -24.8dBm . The fundamental EIRP was 25.5dBm so this harmonic was $25.5\text{dBm} - (-24.8) = 50.3\text{dBc}$.

5.3. Peak-Average Ratio

A peak to average ratio measurement is performed at the conducted port of the EUT. An average and a peak trace are used on a spectrum analyzer to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth.

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 Emission 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.

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

Table 1. Broadband PCS Service Frequency Blocks

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

Table 2. Cellular Service Frequency Blocks

5.5.2. 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 -13dBm, calculation shown below.

$$43 + 10\log (0.729 \text{ W}) = 41.63 \text{ dB}$$

$$28.63 \text{ dBm} - 41.63 \text{ dB} = -13 \text{ dBm}$$

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.

Example)

$$\text{In case of GSM : } 0.01 * 273\text{KHz} = 2.73\text{KHz}$$

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.

5.6. Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

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

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

Time Period and Procedure:

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

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



6. TEST DATA

6.1. Conducted Output Power

A base station simulator was used to establish communication with the Samsung 850/1900 GSM/GPRS/EDGE and WCDMA/HSDPA Phone FCC ID: A3LSGHA157. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported in GSM mode and using a Power Control Level of "0" in the PCS BAND and "5" in the Cellular Band. The GSM conducted powers are reported below, respectively.

| BAND | Channel | RF Conducted Power Table | | | | |
|----------|---------|--------------------------|-----------|-----------|-----------|-----------|
| | | Voice | GPRS Data | | EDGE Data | |
| | | | 1 Tx Slot | 2 Tx Slot | 1 Tx Slot | 2 Tx Slot |
| PCS | 512 | 30.27 | 30.21 | 29.36 | 25.17 | 26.16 |
| | 661 | 30.2 | 30.15 | 29.27 | 24.91 | 25.33 |
| | 810 | 30.17 | 30.11 | 29.25 | 24.77 | 25.4 |
| Cellular | 128 | 32.87 | 32.84 | 30.13 | 25.98 | 26.12 |
| | 190 | 32.81 | 32.78 | 30.07 | 25.79 | 26.35 |
| | 251 | 32.78 | 32.75 | 30.03 | 25.49 | 26.13 |

Table 6-1 GSM Conducted Output Powers



6.2. 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 (dBd) | Ref level (dBm) |
|-----------------|--------------|--------------------|-----------|----------------|-----------------|
| 824.20 | 28.00 | H | -9.48 | -0.67 | -8.81 |
| | | V | -10.30 | -0.67 | -9.63 |
| 836.60 | 28.00 | H | -9.97 | -0.73 | -9.24 |
| | | V | -10.24 | -0.73 | -9.51 |
| 848.80 | 29.00 | H | -11.10 | -0.79 | -10.31 |
| | | V | -10.30 | -0.79 | -9.51 |

Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | ERP (dBm) | ERP (W) | Battery |
|-----------------|--------------------|--------------------|-----------------|-----------|---------|----------|
| 824.20 | -9.20 | H | 286/135 | 27.61 | 0.577 | Standard |
| 836.60 | -9.45 | H | 289/135 | 27.79 | 0.601 | Standard |
| 848.80 | -10.68 | H | 70/0 | 28.63 | 0.729 | Standard |

EDGE Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | ERP (dBm) | ERP (W) | Battery |
|-----------------|--------------------|--------------------|-----------------|-----------|---------|----------|
| 848.80 | -14.12 | H | 70/0 | 25.19 | 0.330 | 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. Equivalent Isotropic Radiated Power (E.I.R.P.)

Supply Voltage : 3.7VDC

Modulation : PCS 1900

Reference level

| Frequency (MHz) | Output (dBm) | Polarization (H/V) | S/A (dBm) | Ant gain (dBi) | Ref level (dBm) |
|-----------------|--------------|--------------------|-----------|----------------|-----------------|
| 1850.20 | 28.00 | H | -11.32 | 9.60 | -20.92 |
| | | V | -10.91 | 9.60 | -20.51 |
| 1880.00 | 29.00 | H | -9.95 | 9.60 | -19.55 |
| | | V | -10.32 | 9.60 | -19.92 |
| 1909.80 | 28.00 | H | -11.49 | 9.60 | -21.09 |
| | | V | -11.17 | 9.60 | -20.77 |

Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | EIRP (dBm) | EIRP (W) | Battery |
|-----------------|--------------------|--------------------|-----------------|------------|----------|----------|
| 1850.20 | -20.57 | H | 120/180 | 28.35 | 0.684 | Standard |
| 1880.00 | -19.45 | H | 130/0 | 29.10 | 0.813 | Standard |
| 1909.80 | -21.01 | V | 207/90 | 27.76 | 0.597 | Standard |

EDGE Result

| Frequency (MHz) | Tested level (dBm) | Polarization (H/V) | Azimuth (angle) | EIRP (dBm) | EIRP (W) | Battery |
|-----------------|--------------------|--------------------|-----------------|------------|----------|----------|
| 1880.00 | -21.42 | H | 130/0 | 27.13 | 0.516 | 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

6.4. GSM850 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 28.63 dBm = 0.729 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 41.63$ dBc

Result

| Channel | Harmonic | Frequency (MHz) | From EUT Tested level (dBm) | POL (H/V) | Result (dBc) |
|---------|----------|-----------------|-----------------------------|-----------|--------------|
| 128 | 2 | 1648.40 | -56.70 | H | 72.74 |
| | 3 | 2472.60 | -63.00 | V | 74.54 |
| | 4 | 3296.80 | -66.72 | V | 73.65 |
| | 5 | 4121.00 | - | - | - |
| | 6 | 4945.20 | - | - | - |
| | 7 | 5769.40 | - | - | - |
| 190 | 2 | 1673.20 | -57.43 | H | 73.22 |
| | 3 | 2509.80 | -62.54 | H | 73.13 |
| | 4 | 3346.40 | -66.38 | H | 74.06 |
| | 5 | 4183.00 | - | - | - |
| | 6 | 5019.60 | - | - | - |
| | 7 | 5856.20 | - | - | - |
| 251 | 2 | 1697.60 | -58.14 | H | 72.65 |
| | 3 | 2546.40 | -60.62 | V | 71.54 |
| | 4 | 3395.20 | -67.45 | V | 74.33 |
| | 5 | 4244.00 | - | - | - |
| | 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 10th 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. GSM1900 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 29.10 dBm = 0.813 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 42.1$ dBc

Result

| Channel | Harmonic | Frequency (MHz) | From EUT Tested level (dBm) | POL (H/V) | Result (dBc) |
|---------|----------|-----------------|-----------------------------|-----------|--------------|
| 512 | 2 | 3700.40 | -63.19 | H | 65.31 |
| | 3 | 5550.60 | -66.06 | V | 65.17 |
| | 4 | 7400.80 | -68.33 | H | 61.72 |
| | 5 | 9251.00 | - | - | - |
| | 6 | 11101.20 | - | - | - |
| | 7 | 12951.40 | - | - | - |
| 661 | 2 | 3760.00 | -64.16 | H | 66.37 |
| | 3 | 5640.00 | -67.58 | H | 65.94 |
| | 4 | 7520.00 | -67.92 | H | 61.26 |
| | 5 | 9400.00 | - | - | - |
| | 6 | 11280.00 | - | - | - |
| | 7 | 13160.00 | - | - | - |
| 810 | 2 | 3819.60 | -64.87 | H | 67.02 |
| | 3 | 5729.40 | -67.37 | H | 65.27 |
| | 4 | 7639.20 | -68.92 | H | 62.77 |
| | 5 | 9549.00 | - | - | - |
| | 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 10th 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



6.6. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : January 17, 2012

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 | ⑤Tested EUT Level : H dBm | ⑤Tested EUT Level : V dBm | ⑥ Result EUT : H (dBc) | ⑥ Result EUT : V (dBc) |
|-----|-----|-----------------|-------------|-------------------|---------------|---------------------|---------------------|---------------------------|---------------------------|------------------------|------------------------|
| 128 | 2 | 1648.40 | -8.77 | 9.40 | -13.60 | -27.73 | -27.03 | -56.70 | -56.47 | 72.74 | 73.21 |
| | 3 | 2472.60 | -11.12 | 10.60 | -12.50 | -32.97 | -32.23 | -67.85 | -63.00 | 78.65 | 74.54 |
| | 4 | 3296.80 | -12.19 | 12.00 | -12.80 | -36.08 | -36.84 | -66.69 | -66.72 | 74.38 | 73.65 |
| | 5 | 4121.00 | -13.85 | 12.60 | -11.80 | -39.75 | -39.33 | - | - | - | - |
| | 6 | 4945.20 | -15.03 | 12.70 | -10.70 | -42.44 | -42.28 | - | - | - | - |
| | 7 | 5769.40 | -17.11 | 13.10 | -9.00 | -44.12 | -44.43 | - | - | - | - |
| 190 | 2 | 1673.20 | -8.83 | 9.40 | -13.60 | -27.98 | -27.21 | -57.43 | -57.02 | 73.22 | 73.58 |
| | 3 | 2509.80 | -11.24 | 10.60 | -12.40 | -33.18 | -32.42 | -62.54 | -61.98 | 73.13 | 73.33 |
| | 4 | 3346.40 | -12.13 | 12.00 | -12.90 | -36.09 | -36.75 | -66.38 | -67.20 | 74.06 | 74.22 |
| | 5 | 4183.00 | -14.18 | 12.60 | -11.40 | -39.47 | -39.56 | - | - | - | - |
| | 6 | 5019.60 | -15.91 | 12.70 | -9.80 | -42.07 | -42.44 | - | - | - | - |
| | 7 | 5856.20 | -17.15 | 13.10 | -9.00 | -45.07 | -44.94 | - | - | - | - |
| 251 | 2 | 1697.60 | -8.88 | 9.40 | -13.50 | -29.26 | -28.45 | -58.14 | -58.70 | 72.65 | 74.02 |
| | 3 | 2546.40 | -11.22 | 10.60 | -12.40 | -32.63 | -32.85 | -60.60 | -60.62 | 71.74 | 71.54 |
| | 4 | 3395.20 | -12.28 | 12.00 | -12.70 | -36.60 | -36.89 | -68.06 | -67.45 | 75.23 | 74.33 |
| | 5 | 4244.00 | -14.15 | 12.60 | -11.50 | -39.36 | -39.77 | - | - | - | - |
| | 6 | 5092.80 | -16.16 | 12.70 | -9.50 | -42.73 | -42.38 | - | - | - | - |
| | 7 | 5941.60 | -17.34 | 13.10 | -8.80 | -45.37 | -45.34 | - | - | - | - |



6.7. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : January 17, 2012

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 = EIRP - (-13 + ⑤ - ④)

| CH | Har | Frequency (MHz) | ① Tx C/L dB | ②Tx Horn Gain dBi | ③Tx Level dBm | ④ ESI Level : H dBm | ④ ESI Level : V dBm | ⑤Tested EUT Level : H dBm | ⑤Tested EUT Level : V dBm | ⑥ Result EUT : H (dBc) | ⑥ Result EUT : V (dBc) |
|-----|-----|-----------------|-------------|-------------------|---------------|---------------------|---------------------|---------------------------|---------------------------|------------------------|------------------------|
| 512 | 2 | 3700.40 | -12.85 | 12.60 | -12.80 | -39.98 | -39.03 | -63.19 | -63.18 | 65.31 | 66.25 |
| | 3 | 5550.60 | -16.92 | 12.50 | -8.60 | -43.40 | -42.99 | -66.94 | -66.06 | 65.64 | 65.17 |
| | 4 | 7400.80 | -20.20 | 11.50 | -4.30 | -48.71 | -48.56 | -68.33 | -68.72 | 61.72 | 62.26 |
| | 5 | 9251.00 | -23.05 | 11.90 | -1.90 | -53.11 | -52.12 | - | - | - | - |
| | 6 | 11101.20 | -25.08 | 11.50 | 0.60 | -57.75 | -54.90 | - | - | - | - |
| | 7 | 12951.40 | -28.10 | 14.42 | 0.70 | -61.50 | -58.01 | - | - | - | - |
| 661 | 2 | 3760.00 | -13.35 | 12.60 | -12.30 | -39.89 | -39.16 | -64.16 | -64.40 | 66.37 | 67.34 |
| | 3 | 5640.00 | -17.07 | 12.50 | -8.40 | -43.74 | -43.42 | -67.58 | -67.35 | 65.94 | 66.03 |
| | 4 | 7520.00 | -20.60 | 11.50 | -3.90 | -48.76 | -48.06 | -67.92 | -68.44 | 61.26 | 62.48 |
| | 5 | 9400.00 | -23.50 | 11.90 | -1.40 | -52.65 | -51.24 | - | - | - | - |
| | 6 | 11280.00 | -26.24 | 11.50 | 1.70 | -56.66 | -54.54 | - | - | - | - |
| | 7 | 13160.00 | -28.79 | 14.42 | 1.40 | -61.01 | -57.76 | - | - | - | - |
| 810 | 2 | 3819.60 | -13.30 | 12.60 | -12.30 | -39.95 | -39.55 | -64.87 | -67.03 | 67.02 | 69.58 |
| | 3 | 5729.40 | -17.16 | 12.50 | -8.30 | -44.20 | -43.35 | -67.37 | -67.83 | 65.27 | 66.58 |
| | 4 | 7639.20 | -20.88 | 11.50 | -3.60 | -48.25 | -47.92 | -68.92 | -68.79 | 62.77 | 62.97 |
| | 5 | 9549.00 | -24.09 | 11.90 | -0.80 | -52.88 | -51.48 | - | - | - | - |
| | 6 | 11458.80 | -26.05 | 11.50 | 1.60 | -57.49 | -54.67 | - | - | - | - |
| | 7 | 13368.60 | -28.74 | 14.42 | 1.30 | -63.03 | -59.49 | - | - | - | - |

6.8. Frequency Stability

6.8.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

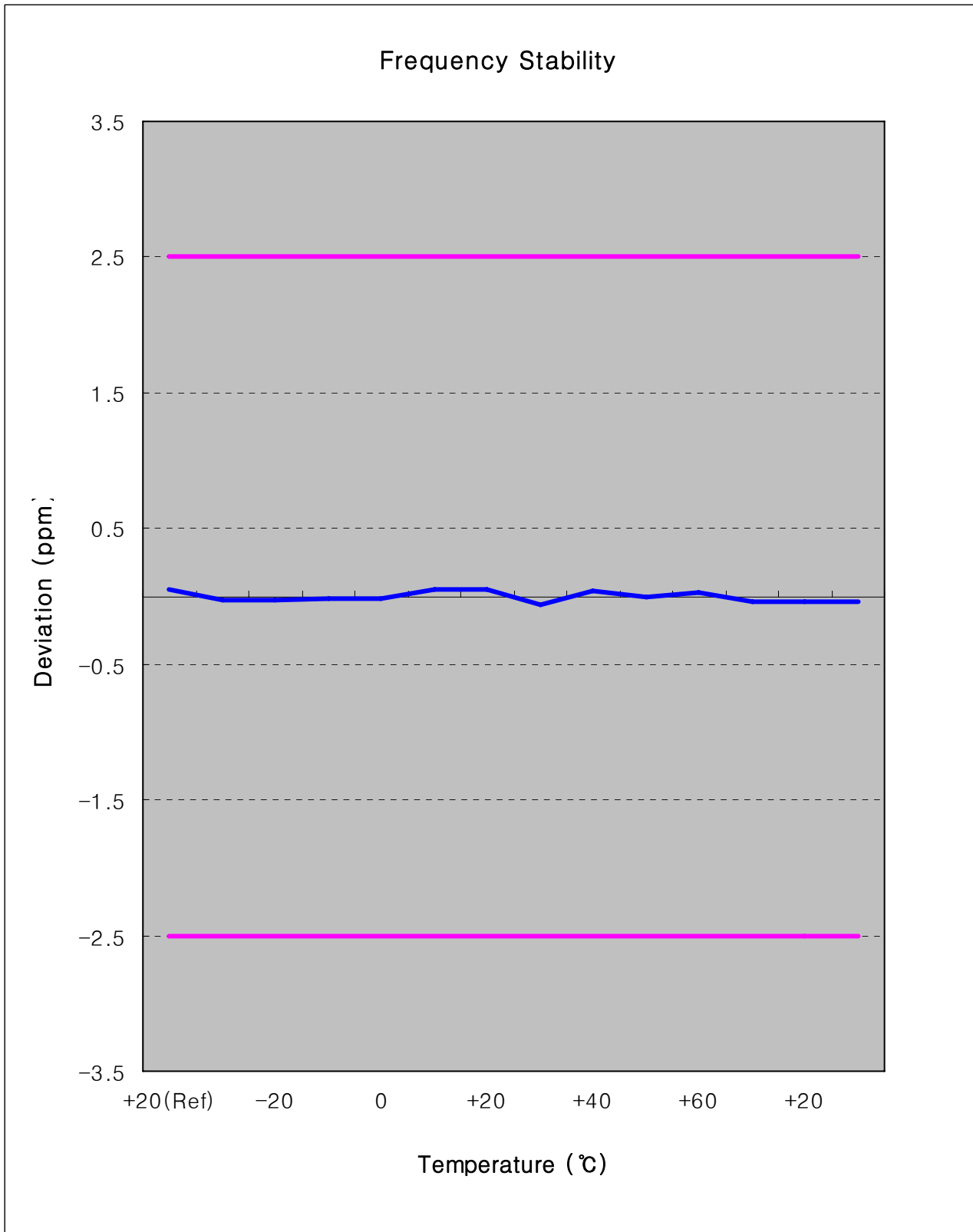
Deviation Limit : ± 0.00025 % or 2.5ppm

| Voltage (%) | Power (VDC) | Temp. (°C) | Frequency Error (Hz) | Frequency (Hz) | Deviation (%) | ppm |
|---------------|-------------|------------|----------------------|----------------|---------------|-----------|
| 100% | 3.70 | +20(Ref) | -20.60 | 836,599,979 | -0.000002 | -0.025 |
| 100% | | -30 | -48.40 | 836,599,952 | -0.000006 | -0.058 |
| 100% | | -20 | 5.50 | 836,600,006 | 0.000001 | 0.007 |
| 100% | | -10 | -9.20 | 836,599,991 | -0.000001 | -0.011 |
| 100% | | 0 | 26.80 | 836,600,027 | 0.000003 | 0.032 |
| 100% | | +10 | -11.80 | 836,599,988 | -0.000001 | -0.014 |
| 100% | | +20 | -20.60 | 836,599,979 | -0.000002 | -0.025 |
| 100% | | +30 | 33.40 | 836,600,033 | 0.000004 | 0.040 |
| 100% | | +40 | -12.10 | 836,599,988 | -0.000001 | -0.014 |
| 100% | | +50 | 32.50 | 836,600,033 | 0.000004 | 0.039 |
| 100% | | +60 | -33.90 | 836,599,966 | -0.000004 | -0.041 |
| 115% | | 4.26 | +20 | -20.80 | 836,599,979 | -0.000002 |
| Batt.Endpoint | 3.35 | +20 | 39.30 | 836,600,039 | 0.000005 | 0.047 |

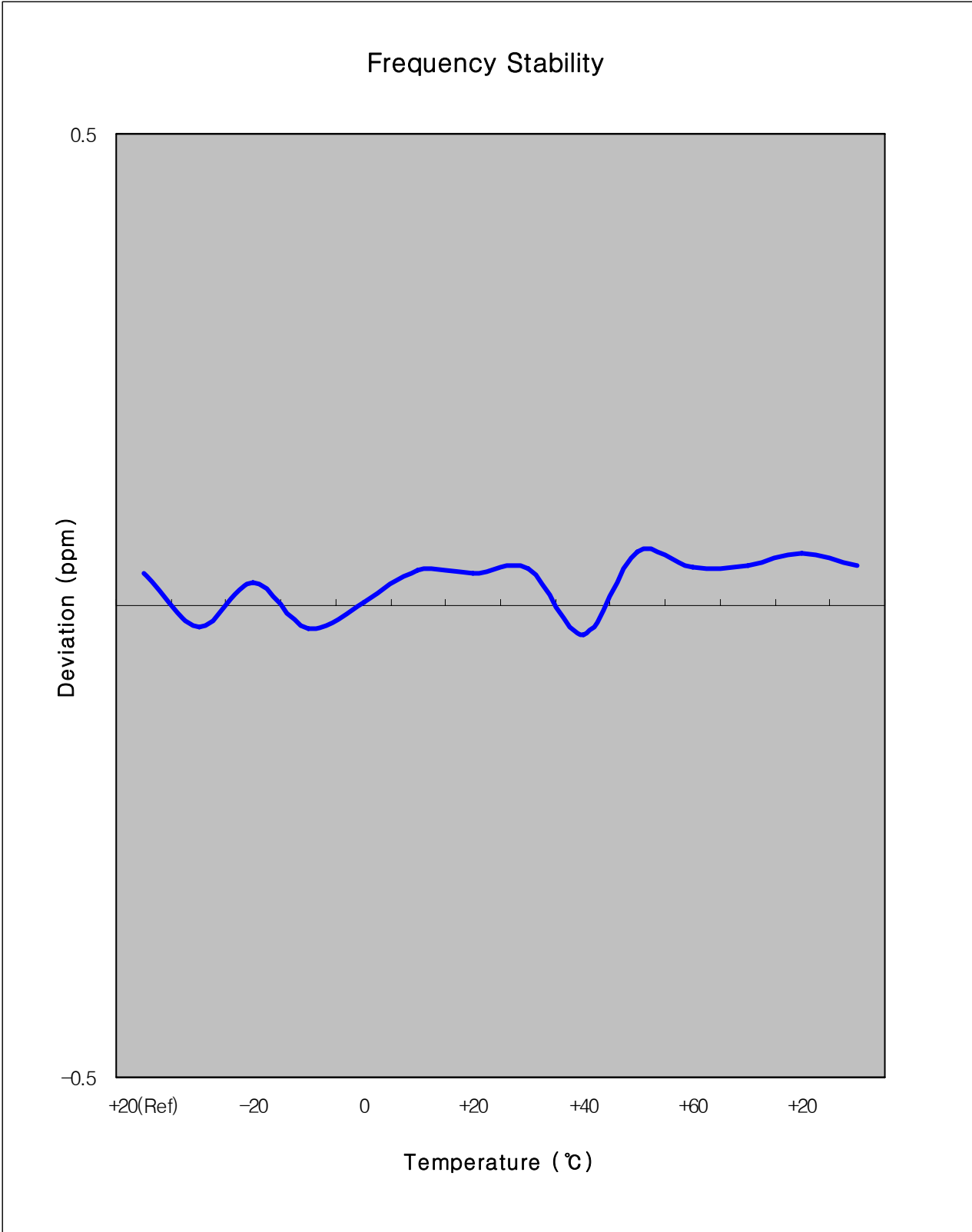
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.2. GSM850 Frequency Stability Graph



Zoom IN





6.8.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

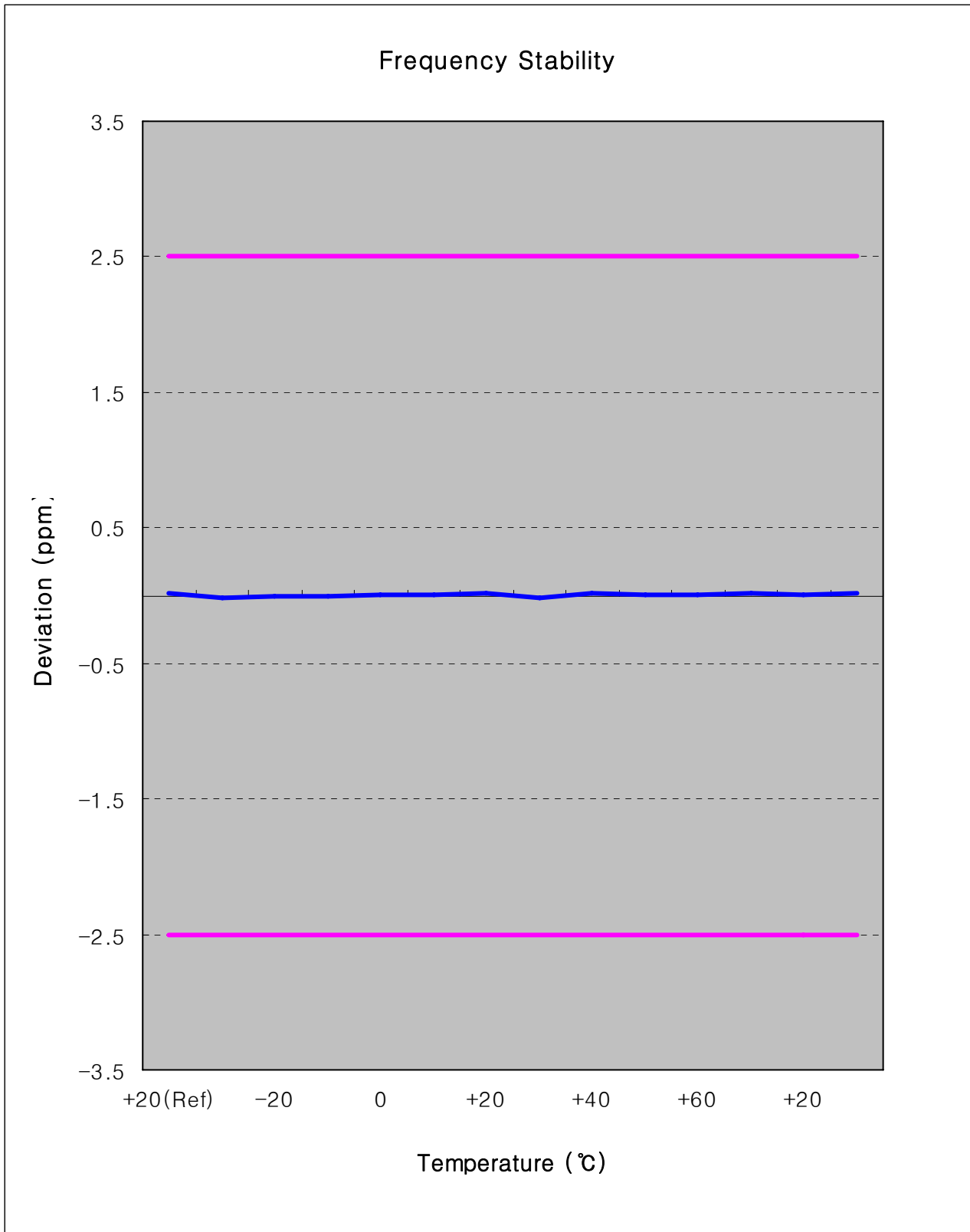
Deviation Limit : ± 0.00025 % or 2.5ppm

| Voltage (%) | Power (VDC) | Temp. (°C) | Frequency Error (Hz) | Frequency (Hz) | Deviation (%) | ppm |
|---------------|-------------|------------|----------------------|----------------|---------------|----------|
| 100% | 3.70 | +20(Ref) | -2.90 | 1,879,999,997 | 0.000000 | -0.002 |
| 100% | | -30 | 48.70 | 1,880,000,049 | 0.000003 | 0.026 |
| 100% | | -20 | 37.20 | 1,880,000,037 | 0.000002 | 0.020 |
| 100% | | -10 | 45.70 | 1,880,000,046 | 0.000002 | 0.024 |
| 100% | | 0 | -39.70 | 1,879,999,960 | -0.000002 | -0.021 |
| 100% | | +10 | 26.50 | 1,880,000,027 | 0.000001 | 0.014 |
| 100% | | +20 | -2.90 | 1,879,999,997 | 0.000000 | -0.002 |
| 100% | | +30 | 17.00 | 1,880,000,017 | 0.000001 | 0.009 |
| 100% | | +40 | 1.80 | 1,880,000,002 | 0.000000 | 0.001 |
| 100% | | +50 | -21.20 | 1,879,999,979 | -0.000001 | -0.011 |
| 100% | | +60 | 23.80 | 1,880,000,024 | 0.000001 | 0.013 |
| 115% | | 4.26 | +20 | 21.40 | 1,880,000,021 | 0.000001 |
| Batt.Endpoint | 3.35 | +20 | -36.70 | 1,879,999,963 | -0.000002 | -0.020 |

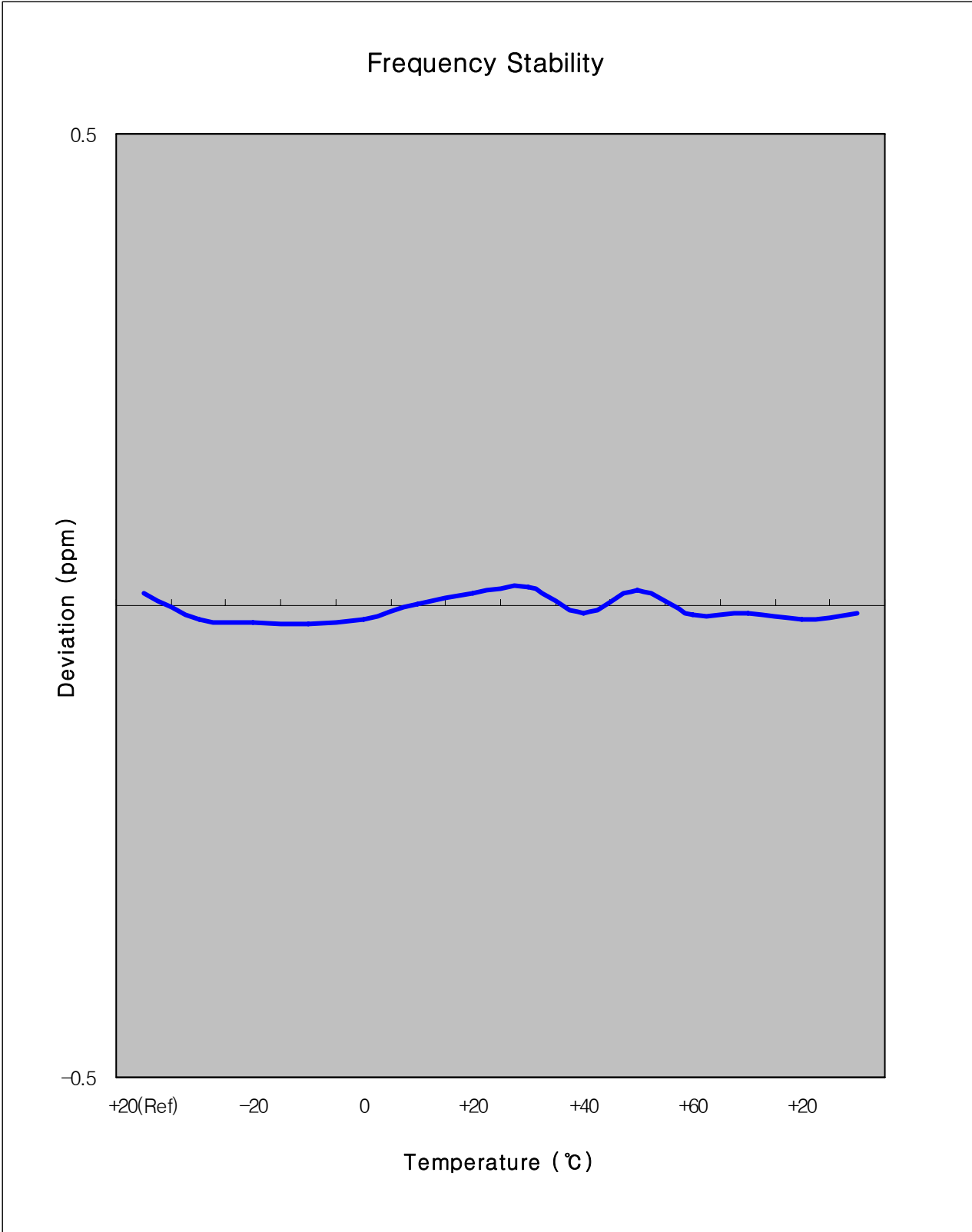
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

The data collected shows that the SAMSUNG 850/1900 GSM/GPRS/EDGE and WCDMA/HSDPA Phone.

FCC ID : A3LSGHA157 complies with all the requirements of Parts 2,22,24 of the FCC Rules.



8. TEST PLOTS

Agilent

R T

Ch Freq 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHA157 0BW Ch.128
Ref 33 dBm Atten 40 dB

Center 824.200 0 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

| | | |
|----------------------------|---------------------|-----------|
| Occupied Bandwidth | Occ BW % Pwr | 99.00 % |
| 246.2649 kHz | x dB | -26.00 dB |
| Transmit Freq Error | 211.379 Hz | |
| x dB Bandwidth | 311.282 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:A3LSGHA157 0BW Ch.190
Ref 33 dBm Atten 40 dB

Center 836.600 0 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

| | | |
|----------------------------|---------------------|-----------|
| Occupied Bandwidth | Occ BW % Pwr | 99.00 % |
| 252.5507 kHz | x dB | -26.00 dB |
| Transmit Freq Error | -1.241 kHz | |
| x dB Bandwidth | 307.096 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

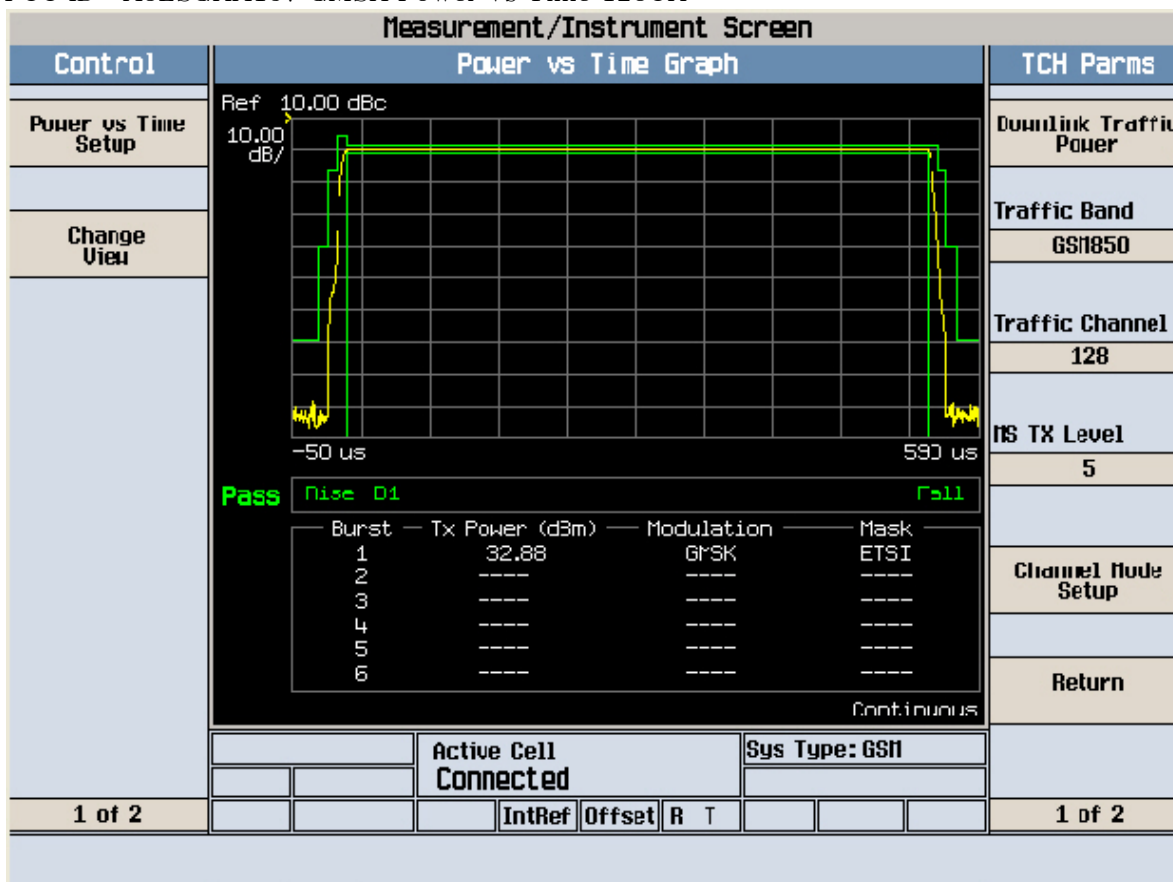
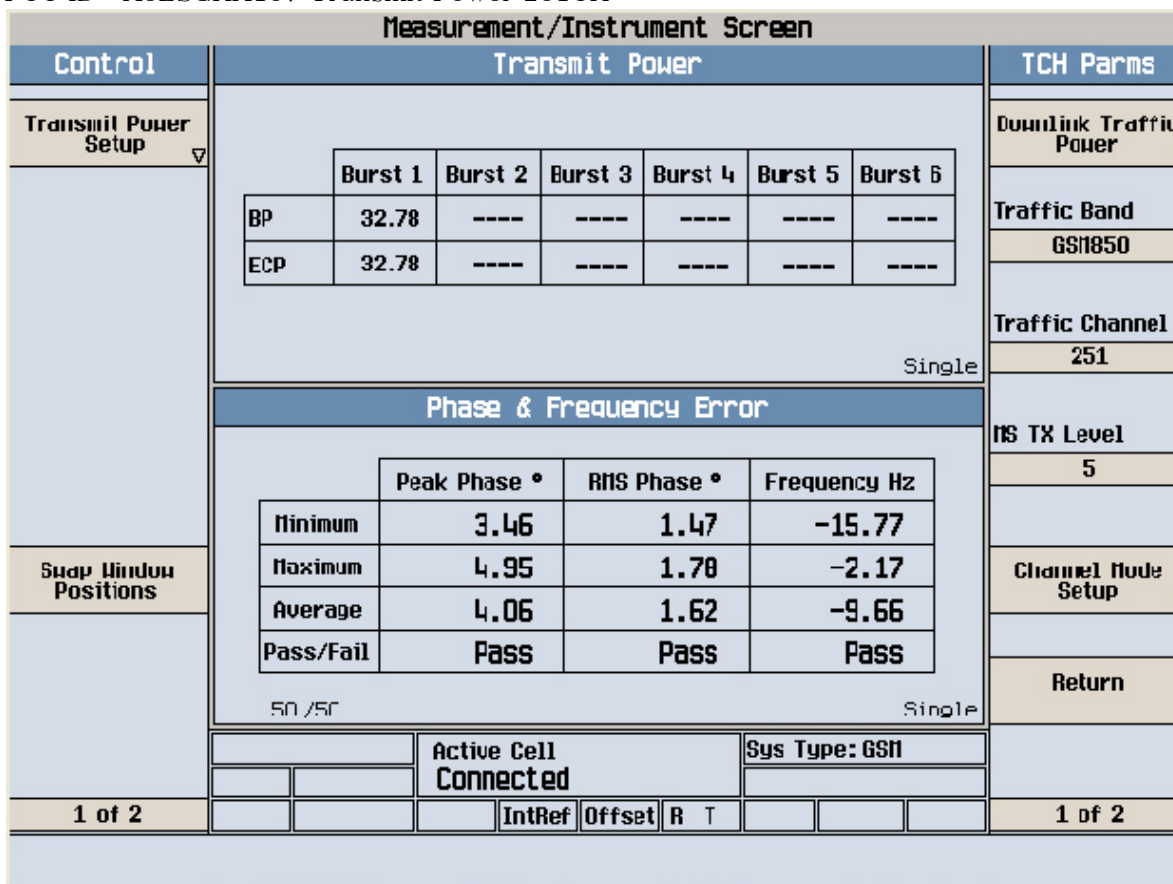
Signal Track
On Off

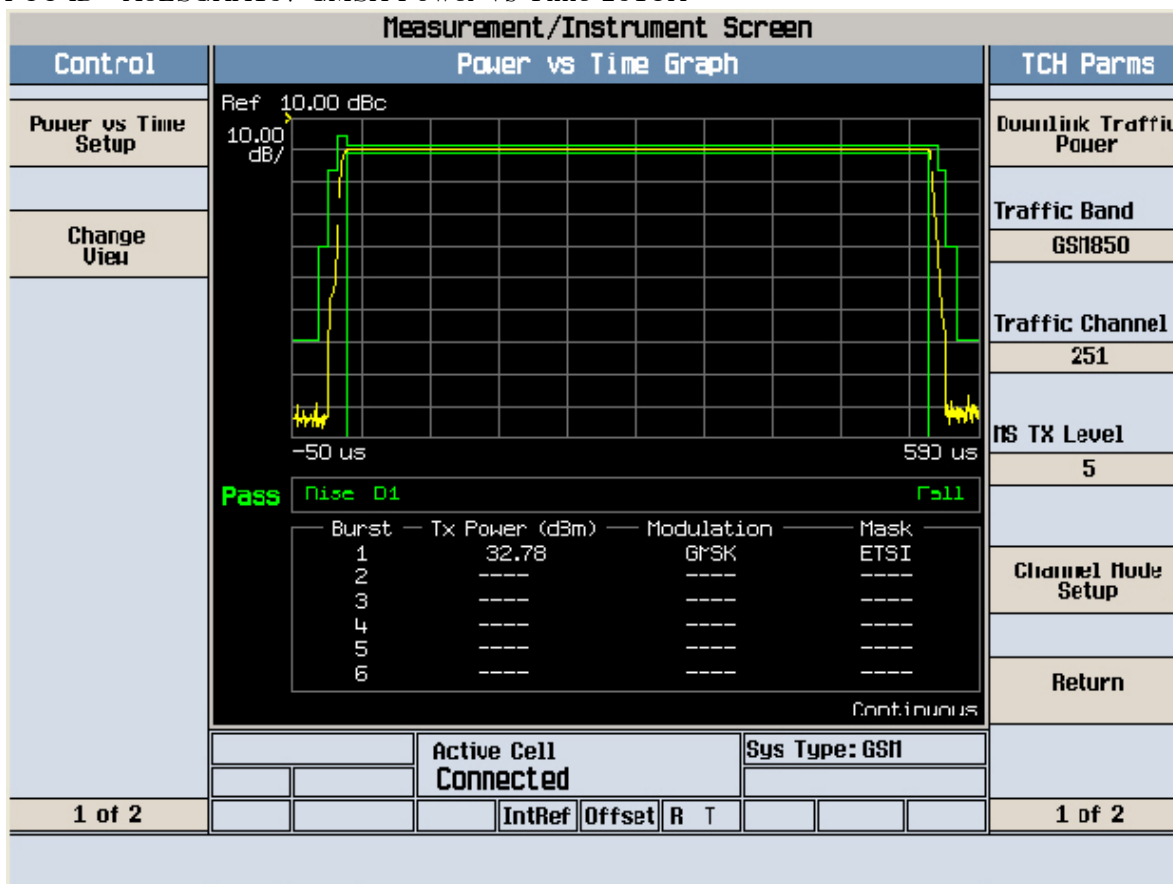
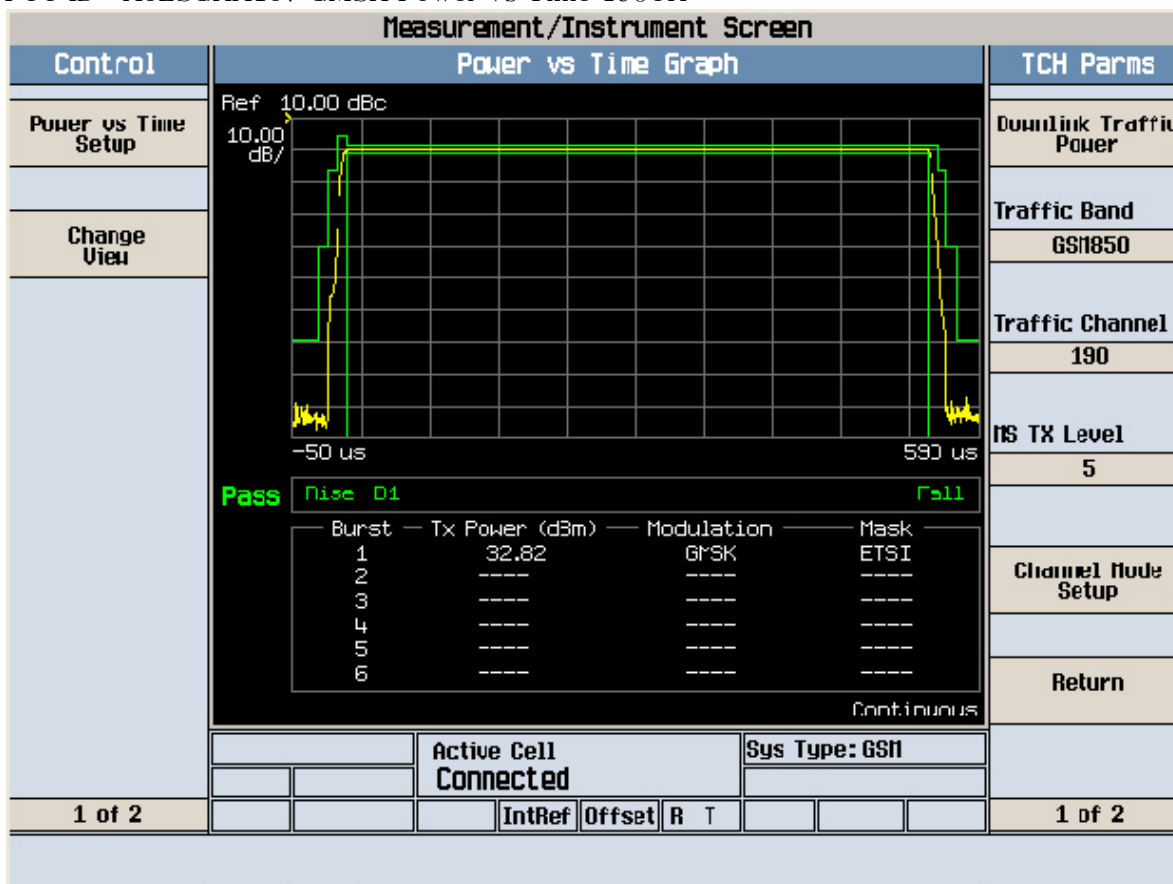
File Operation Status, C:\TEMP.GIF file saved

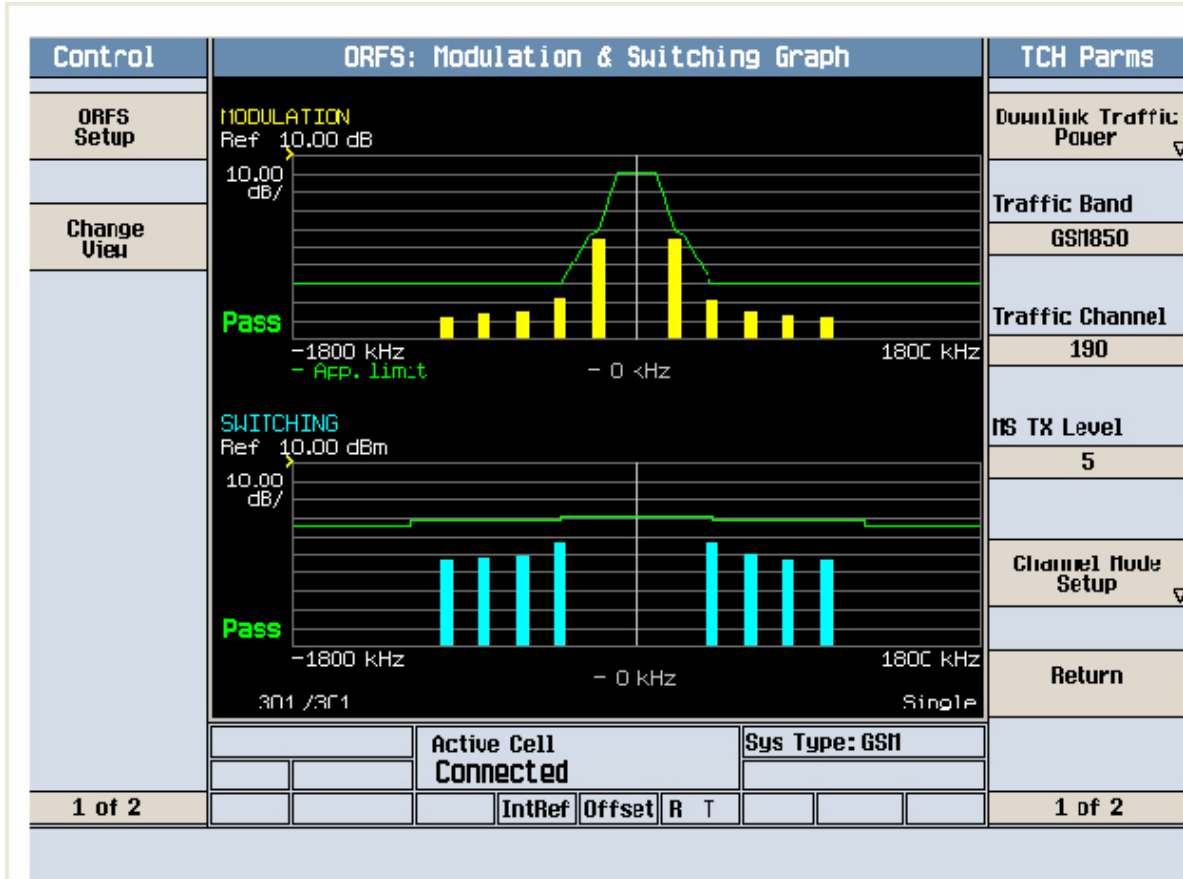
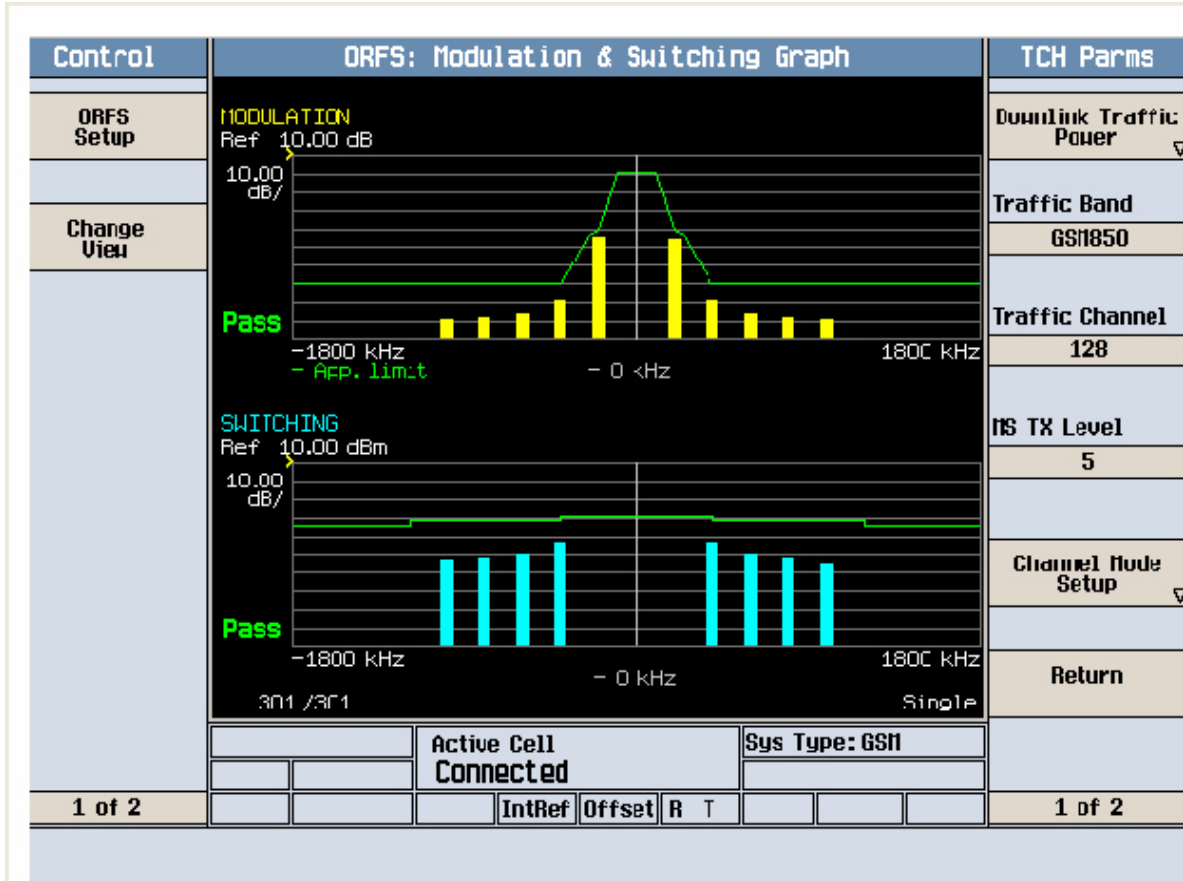
| | | | |
|---|--|--|--|
| Ch Freq 848.8 MHz Trig Free | | Freq/Channel | |
| Occupied Bandwidth | | Center Freq 848.800000 MHz | |
| FCC ID:A3LSGHA157 0BW Ch.251 Ref 33 dBm Atten 40 dB | | Start Freq 848.300000 MHz | |
| | | Stop Freq 849.300000 MHz | |
| | | CF Step 100.000000 kHz Auto Man | |
| Center 848.800 0 MHz Span 1 MHz #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts) | | Freq Offset 0.00000000 Hz | |
| Occupied Bandwidth Occ BW % Pwr 99.00 % 249.7338 kHz x dB -26.00 dB | | Signal Track On Off | |
| Transmit Freq Error 452.539 Hz x dB Bandwidth 307.493 kHz | | | |
| File Operation Status, C:\TEMP.GIF file saved | | | |

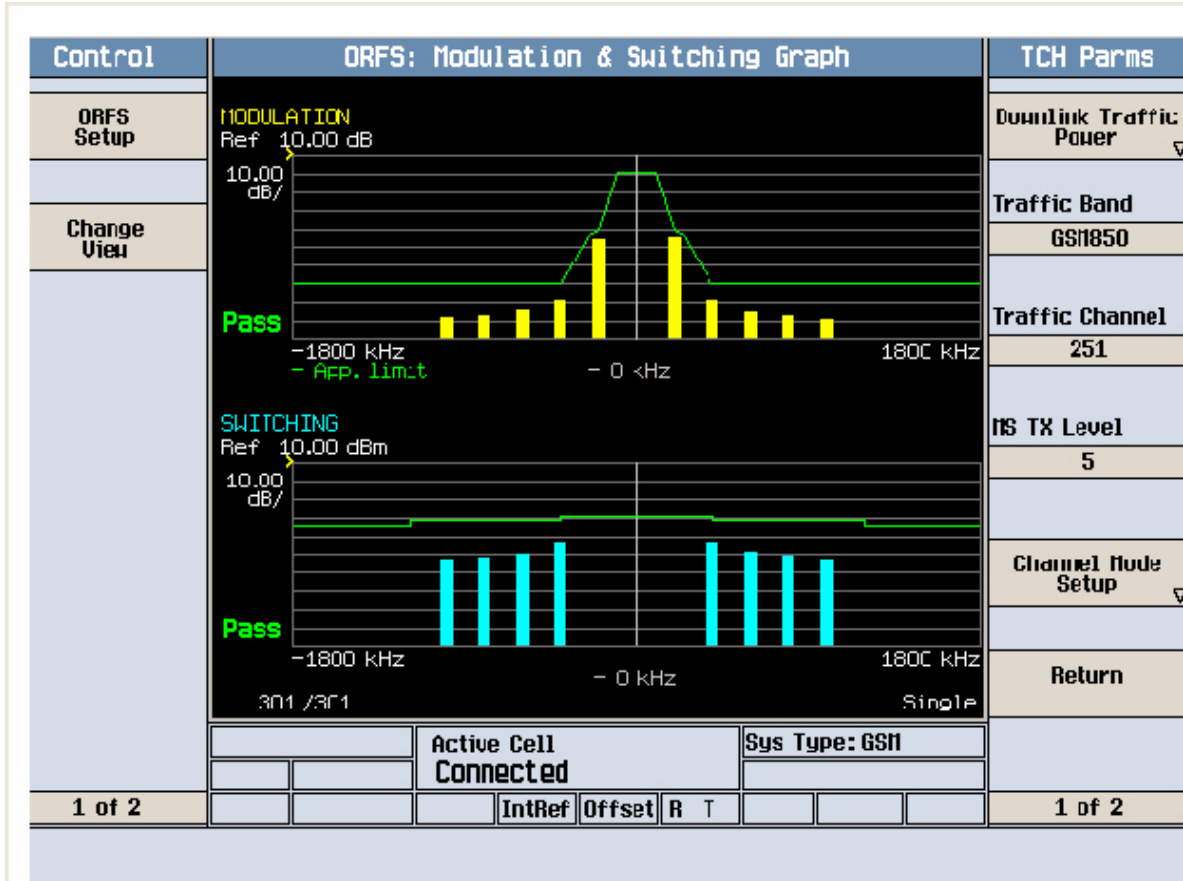
| Measurement/Instrument Screen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--------------|-------------|--------------|---------|---------|--------------------|-----------|--------------|-------------|--------------|---------|---------|---------|--------|---------|------|------|-------|---------|------|------|--------|-----------|------|------|------|-----------------|------------------------|--|
| Control | Transmit Power | | | | | | | TCH Parms | | | | | | | | | | | | | | | | | | | | | | |
| Transmit Power Setup | <table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>32.87</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>32.87</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table> | | | | | | | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | BP | 32.87 | ---- | ---- | ---- | ---- | ---- | ECP | 32.87 | ---- | ---- | ---- | ---- | ---- | Downlink Traffic Power | |
| | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | | | | | | | | | | | | | | | | | | | | | | | |
| BP | 32.87 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| ECP | 32.87 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| Swap Window Positions | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>3.59</td> <td>1.56</td> <td>-15.82</td> </tr> <tr> <td>Maximum</td> <td>5.11</td> <td>1.89</td> <td>-5.18</td> </tr> <tr> <td>Average</td> <td>4.22</td> <td>1.74</td> <td>-11.61</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 3.59 | 1.56 | -15.82 | Maximum | 5.11 | 1.89 | -5.18 | Average | 4.22 | 1.74 | -11.61 | Pass/Fail | Pass | Pass | Pass | Traffic Band | GSM850 | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 3.59 | 1.56 | -15.82 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 5.11 | 1.89 | -5.18 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 4.22 | 1.74 | -11.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>3.59</td> <td>1.56</td> <td>-15.82</td> </tr> <tr> <td>Maximum</td> <td>5.11</td> <td>1.89</td> <td>-5.18</td> </tr> <tr> <td>Average</td> <td>4.22</td> <td>1.74</td> <td>-11.61</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 3.59 | 1.56 | -15.82 | Maximum | 5.11 | 1.89 | -5.18 | Average | 4.22 | 1.74 | -11.61 | Pass/Fail | Pass | Pass | Pass | Traffic Channel | 128 | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 3.59 | 1.56 | -15.82 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 5.11 | 1.89 | -5.18 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 4.22 | 1.74 | -11.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | MS TX Level | | 5 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Channel Mode Setup | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Return | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 1 of 2 | | | | | | | | | | | | | | | | | | | | | | | |

| Measurement/Instrument Screen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--------------|-------------|--------------|---------|---------|--------------------|-----------|--------------|-------------|--------------|---------|---------|---------|--------|---------|------|------|------|---------|------|------|-------|-----------|------|------|------|-----------------|------------------------|--|
| Control | Transmit Power | | | | | | | TCH Parms | | | | | | | | | | | | | | | | | | | | | | |
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| | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | | | | | | | | | | | | | | | | | | | | | | | |
| BP | 32.81 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| ECP | 32.81 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 3.68 | 1.49 | -11.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 4.90 | 1.88 | 1.93 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 4.17 | 1.69 | -4.44 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>3.68</td> <td>1.49</td> <td>-11.11</td> </tr> <tr> <td>Maximum</td> <td>4.90</td> <td>1.88</td> <td>1.93</td> </tr> <tr> <td>Average</td> <td>4.17</td> <td>1.69</td> <td>-4.44</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 3.68 | 1.49 | -11.11 | Maximum | 4.90 | 1.88 | 1.93 | Average | 4.17 | 1.69 | -4.44 | Pass/Fail | Pass | Pass | Pass | Traffic Channel | 190 | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 3.68 | 1.49 | -11.11 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 4.90 | 1.88 | 1.93 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 4.17 | 1.69 | -4.44 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | MS TX Level | | 5 | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Channel Mode Setup | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Return | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 1 of 2 | | | | | | | | | | | | | | | | | | | | | | | |









Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.128

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

#LgAv

M1 S2

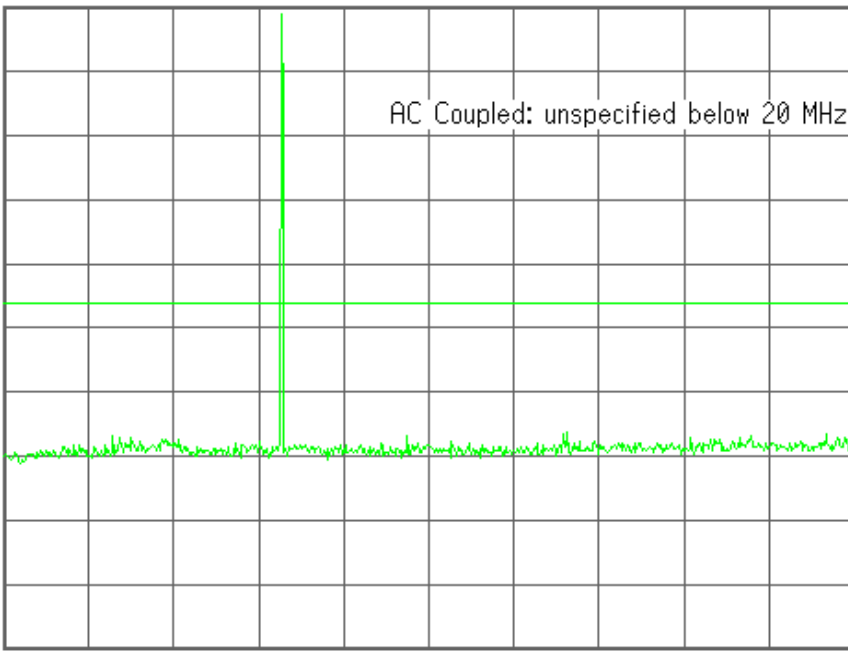
S3 FC

AA

£(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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.128

Mkr1 751.8 MHz

Ref 33 dBm

Atten 40 dB

-33.56 dBm

#Peak

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

#LgAv

V1 S2

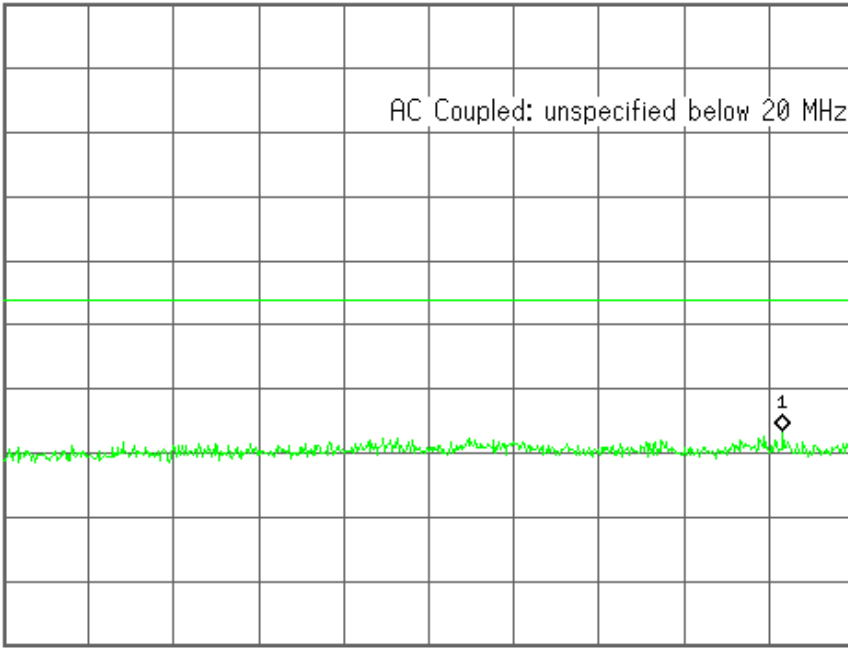
S3 FC

AA

£(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

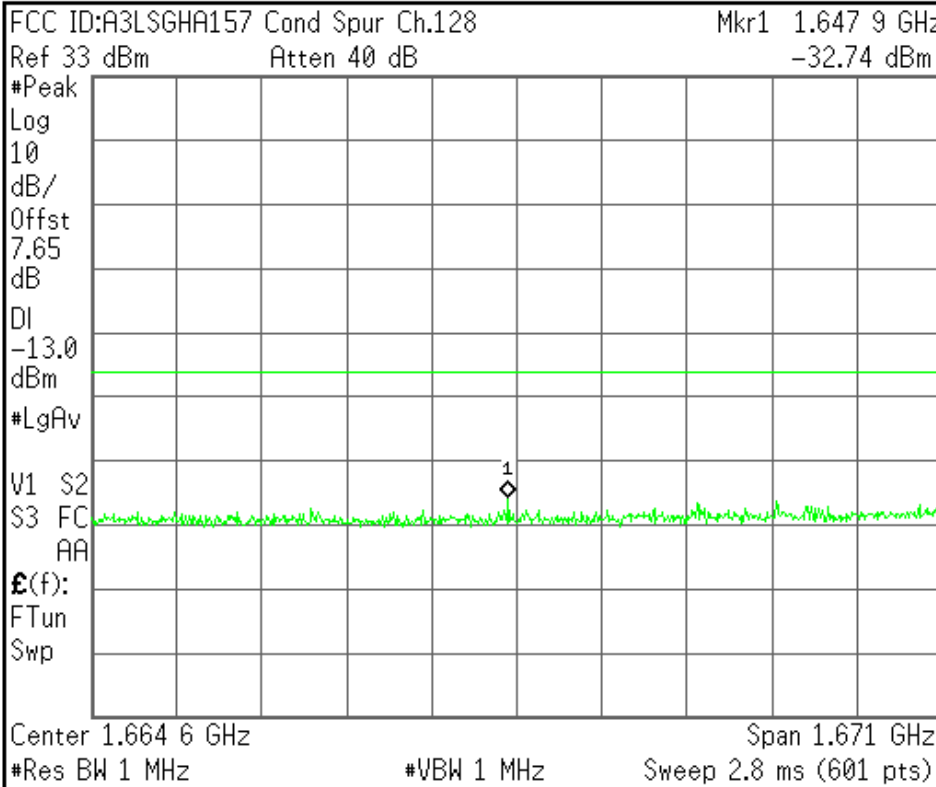
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
1.66460000 GHz

Start Freq
829.200000 MHz

Stop Freq
2.50000000 GHz

CF Step
167.080000 MHz
Auto Man

Freq Offset
0.00000000 Hz

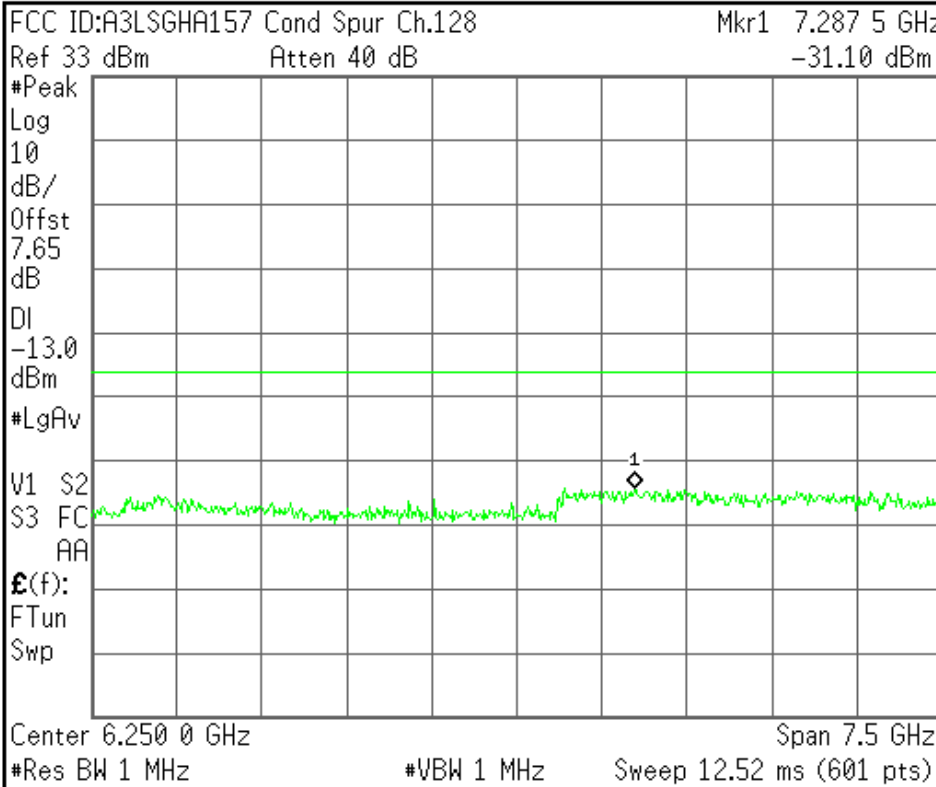
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
6.25000000 GHz

Start Freq
2.50000000 GHz

Stop Freq
10.00000000 GHz

CF Step
750.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

#LgAv

M1 S2

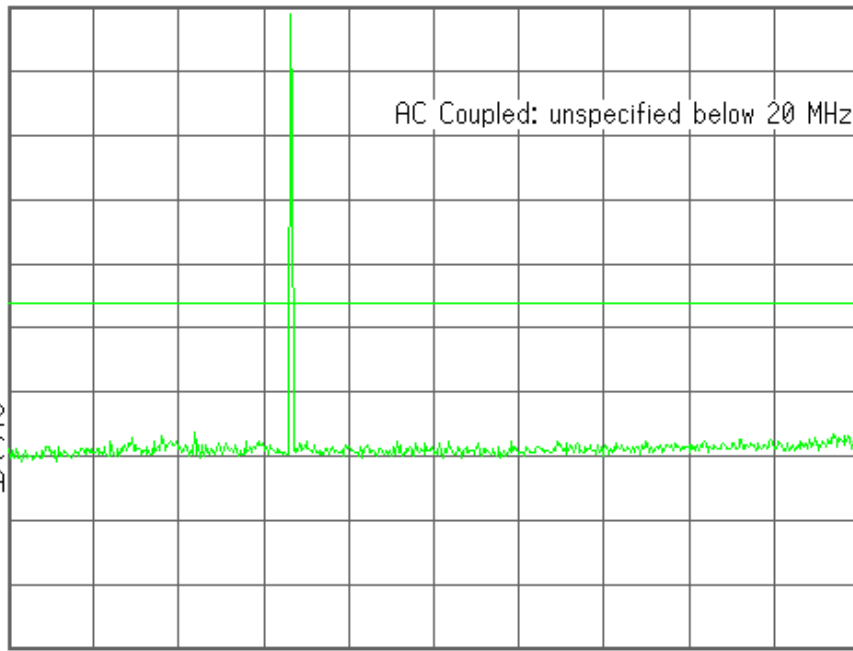
S3 FC

AA

£(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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.190

Mkr1 466.0 MHz

Ref 33 dBm

Atten 40 dB

-33.79 dBm

#Peak

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

#LgAv

V1 S2

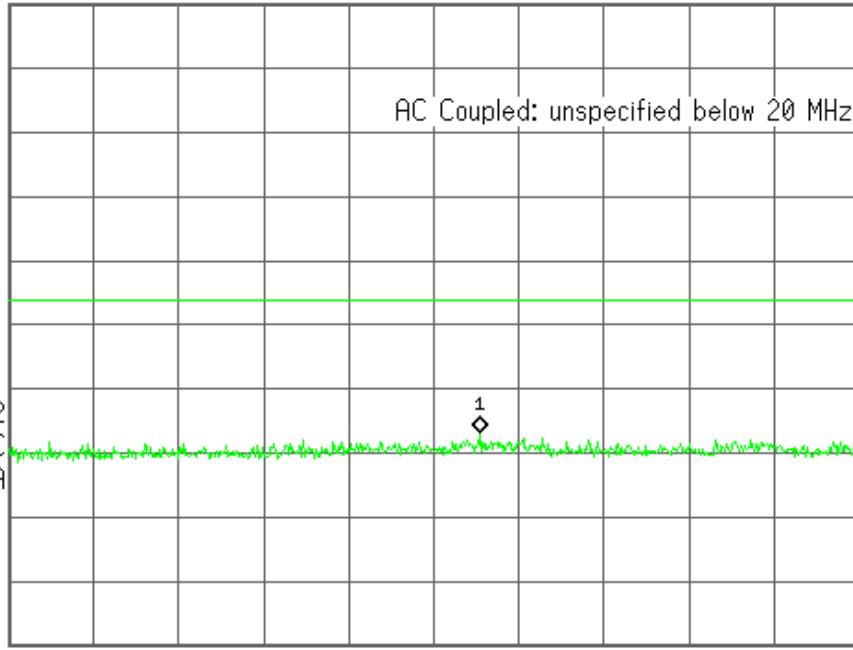
S3 FC

AA

£(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
420.800000 MHz

Start Freq
10.0000000 MHz

Stop Freq
831.600000 MHz

CF Step
82.1600000 MHz
Auto Man

Freq Offset
0.00000000 Hz

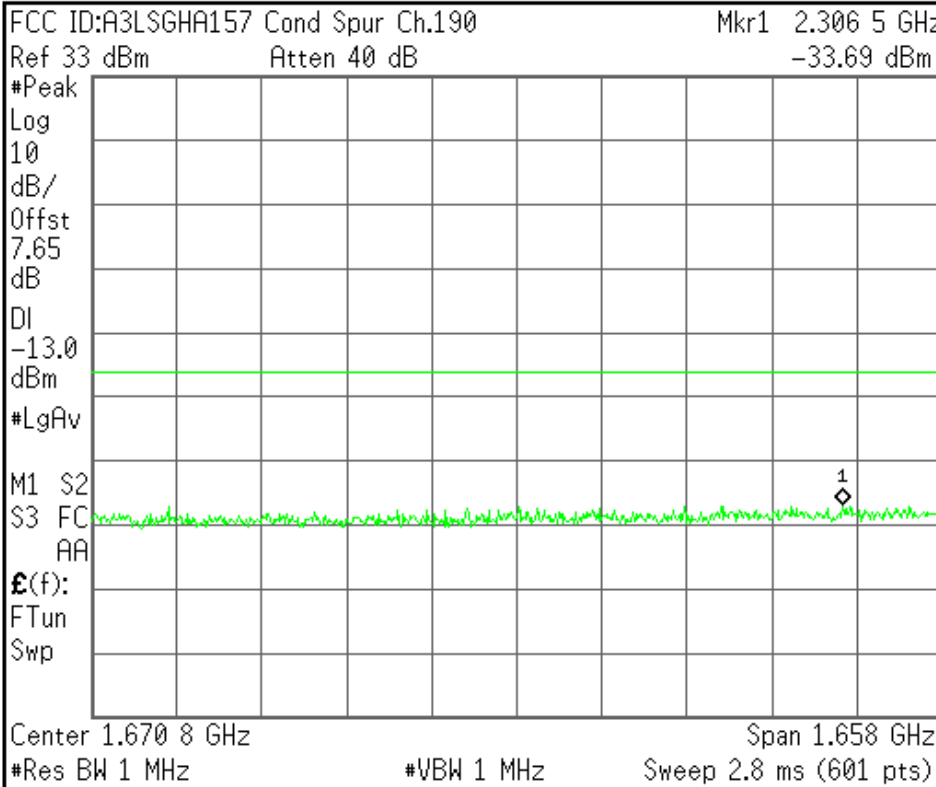
Signal Track
On Off

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

Agilent

R T

Freq/Channel



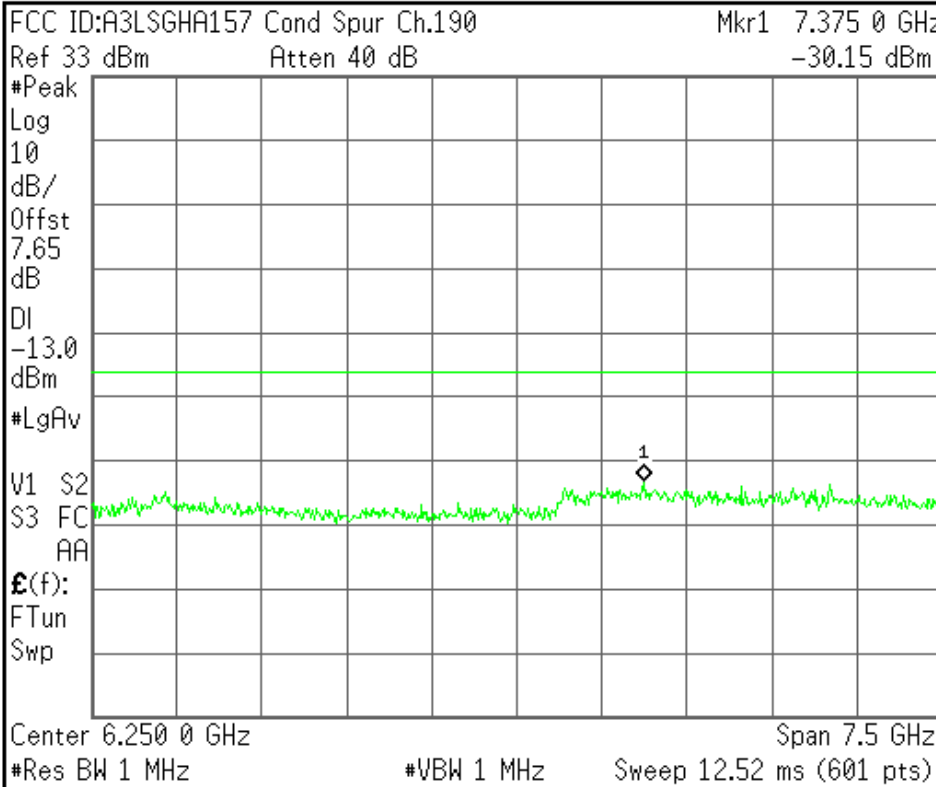
| |
|--|
| Center Freq 1.67080000 GHz |
| Start Freq 841.600000 MHz |
| Stop Freq 2.50000000 GHz |
| CF Step 165.840000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



| |
|--|
| Center Freq 6.25000000 GHz |
| Start Freq 2.50000000 GHz |
| Stop Freq 10.00000000 GHz |
| CF Step 750.000000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

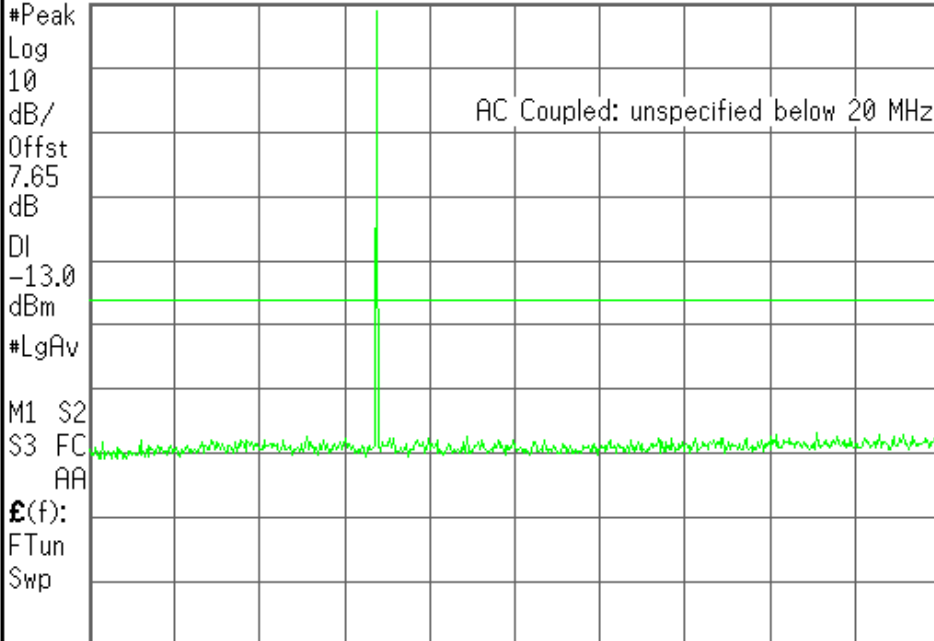
Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.251

Ref 33 dBm Atten 40 dB



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

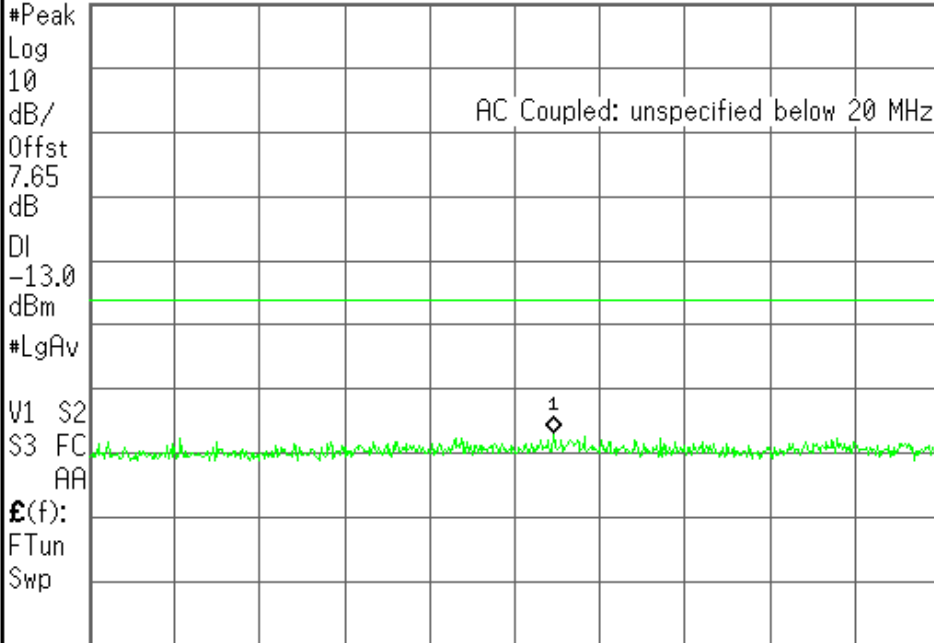
Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.251

Mkr1 464.4 MHz

Ref 33 dBm Atten 40 dB

-33.90 dBm



Center Freq
426.900000 MHz

Start Freq
10.0000000 MHz

Stop Freq
843.800000 MHz

CF Step
83.3800000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

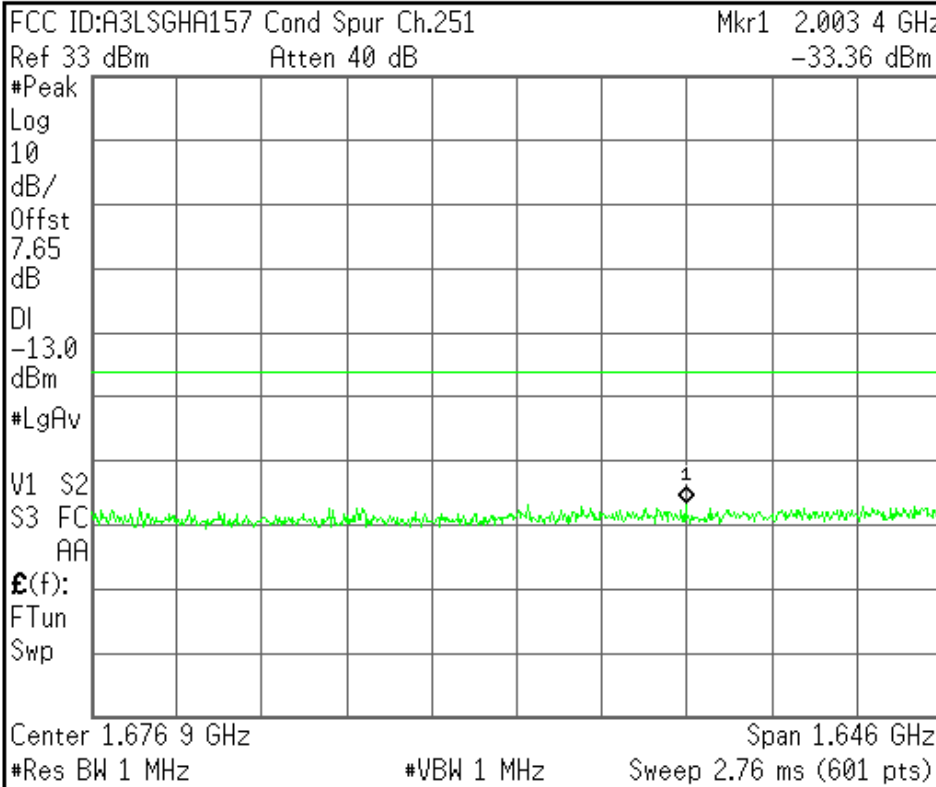
Center 426.9 MHz Span 833.8 MHz
#Res BW 1 MHz #VBW 1 MHz Sweep 1.4 ms (601 pts)

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

Agilent

R T

Freq/Channel



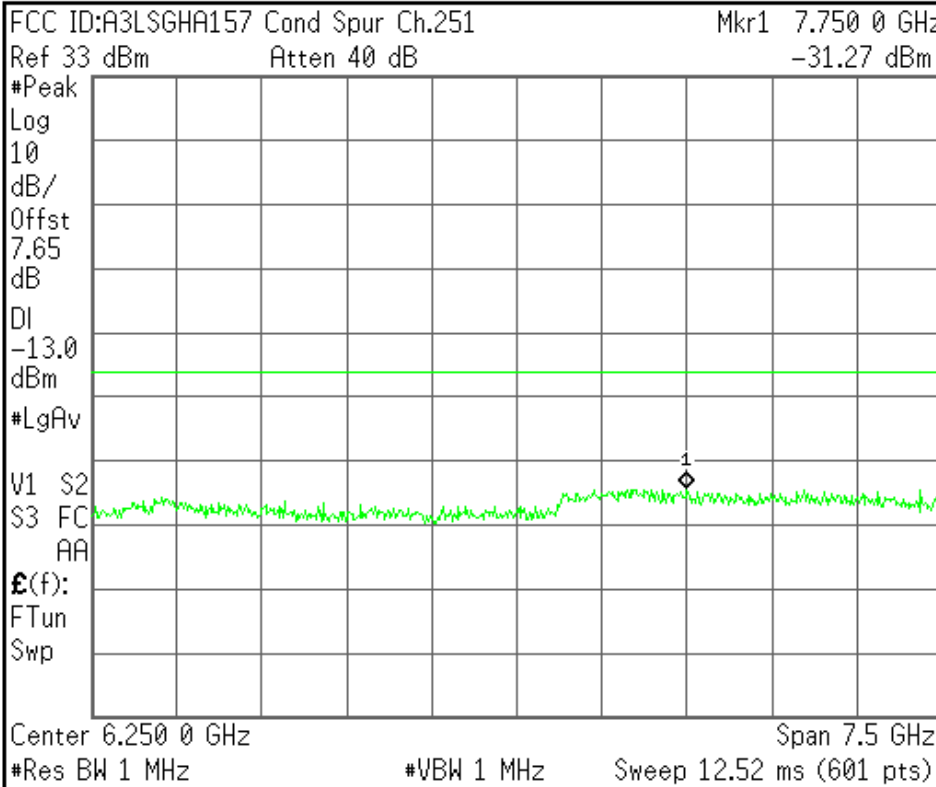
| |
|--|
| Center Freq 1.67690000 GHz |
| Start Freq 853.800000 MHz |
| Stop Freq 2.50000000 GHz |
| CF Step 164.620000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



| |
|--|
| Center Freq 6.25000000 GHz |
| Start Freq 2.50000000 GHz |
| Stop Freq 10.00000000 GHz |
| CF Step 750.000000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.128

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

PAvg

M1 S2

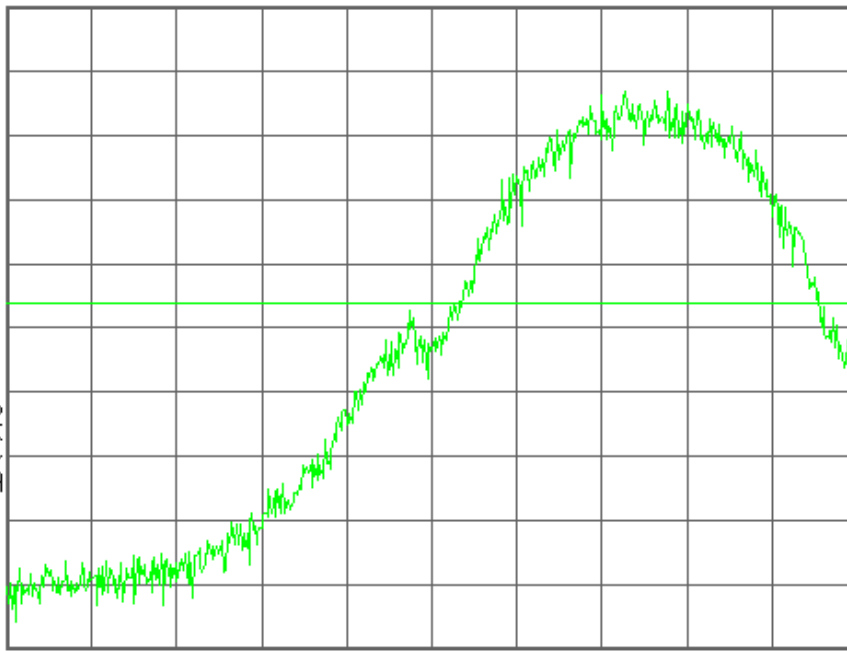
S3 FC

AA

£(f):

f>50k

Swp



Center 824.000 00 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

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Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.128

Mkr1 823.974 59 MHz

Ref 33 dBm

Atten 40 dB

-14.95 dBm

#Avg

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

PAvg

M1 S2

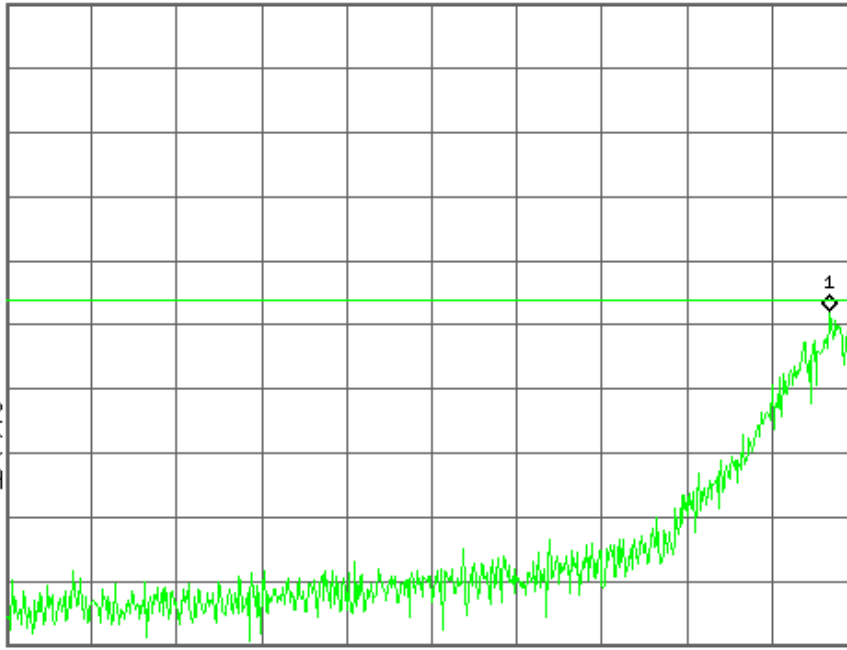
S3 FC

AA

£(f):

f>50k

Swp



Center 823.595 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
823.595000 MHz

Start Freq
823.190000 MHz

Stop Freq
824.000000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.251

Ref 33 dBm Atten 40 dB

#Avg

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

PAvg

M1 S2

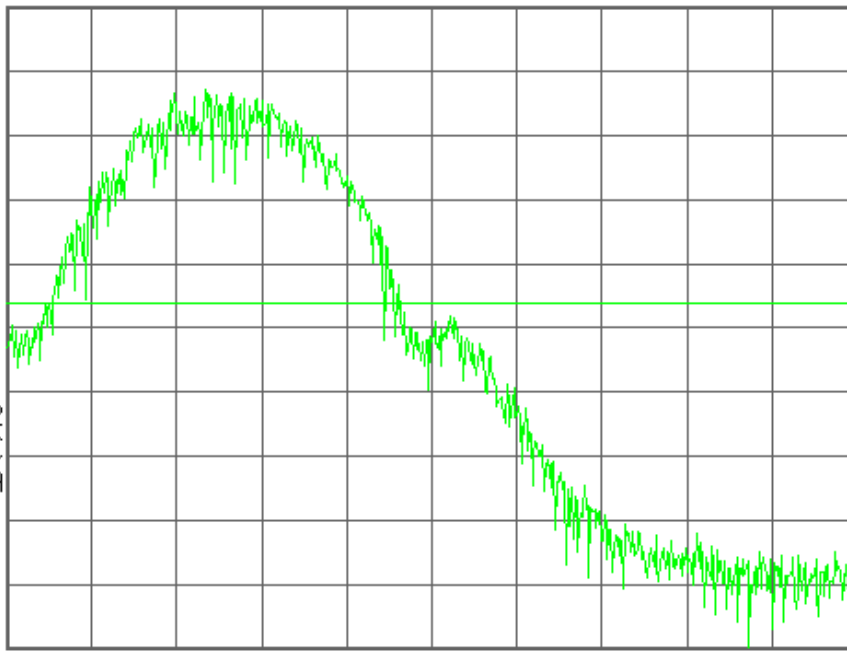
S3 FC

AA

£(f):

f>50k

Swp



Center 849.000 00 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:A3LSGHA157 Band Edge Ch.251

Mkr1 849.008 02 MHz

Ref 33 dBm Atten 40 dB

-15.90 dBm

#Avg

Log

10

dB/

Offst

7.65

dB

DI

-13.0

dBm

PAvg

M1 S2

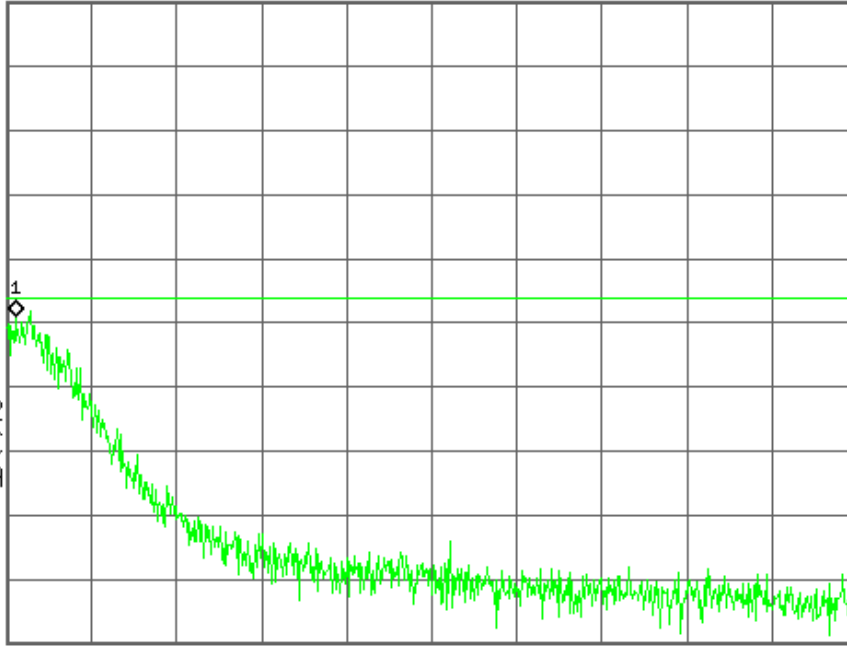
S3 FC

AA

£(f):

f>50k

Swp



Center 849.405 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.405000 MHz

Start Freq
849.000000 MHz

Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

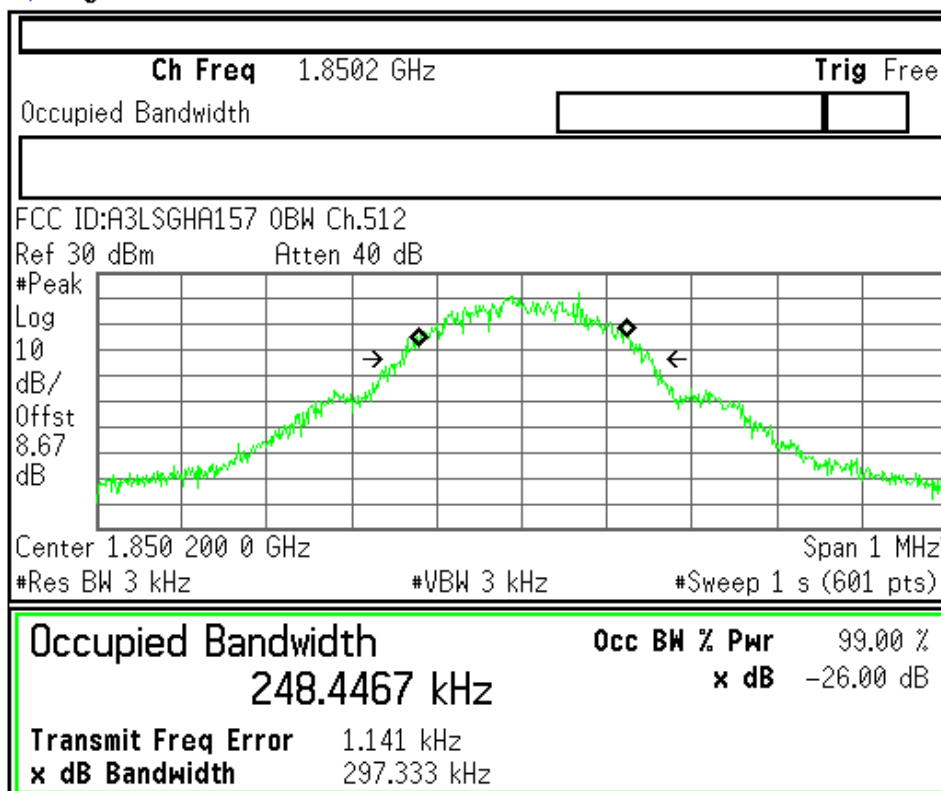
Signal Track
On Off

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

GSM1900

Agilent

R T

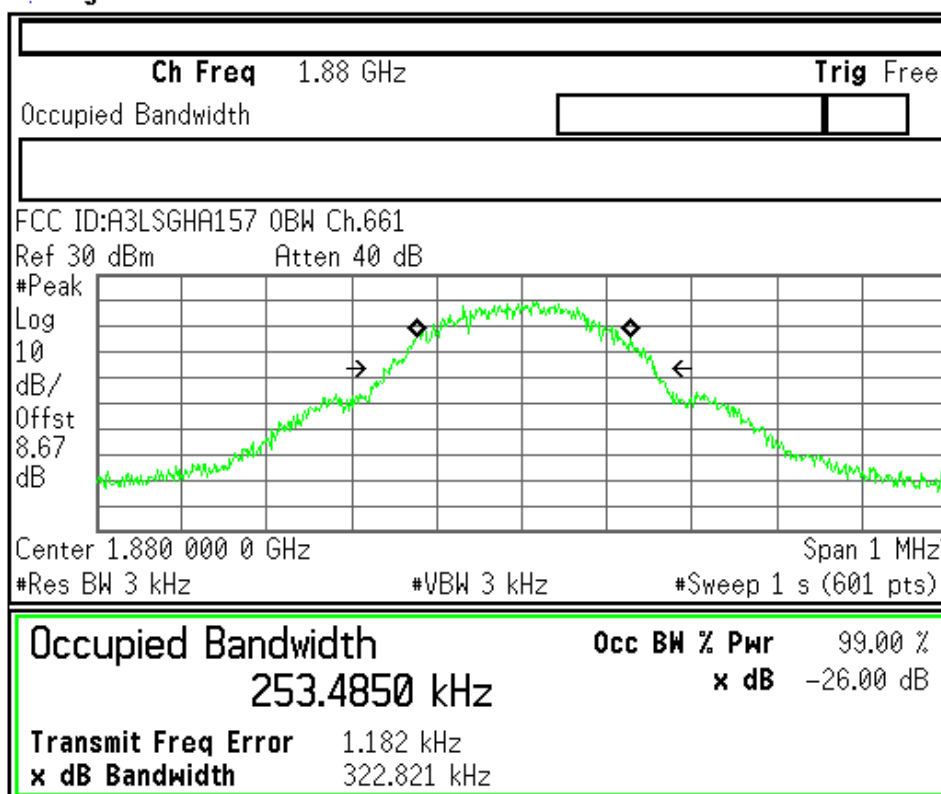


| |
|--|
| Freq/Channel |
| Center Freq 1.85020000 GHz |
| Start Freq 1.84970000 GHz |
| Stop Freq 1.85070000 GHz |
| CF Step 100.000000 kHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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Agilent

R T



| |
|--|
| 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

| | | | |
|--|--|-----------------------------|--|
| Ch Freq 1.9098 GHz | | Trig Free | |
| Occupied Bandwidth | | | |
| FCC ID:A3LSGHA157 0BW Ch.810 Ref 30 dBm Atten 40 dB | | | |
| | | | |
| Center 1.909 800 0 GHz | | Span 1 MHz | |
| #Res BW 3 kHz | | #Sweep 1 s (601 pts) | |
| Occupied Bandwidth | | Occ BW % Pwr 99.00 % | |
| 248.9428 kHz | | x dB -26.00 dB | |
| Transmit Freq Error 1.653 kHz | | | |
| x dB Bandwidth 311.310 kHz | | | |
| File Operation Status, C:\TEMP.GIF file saved | | | |

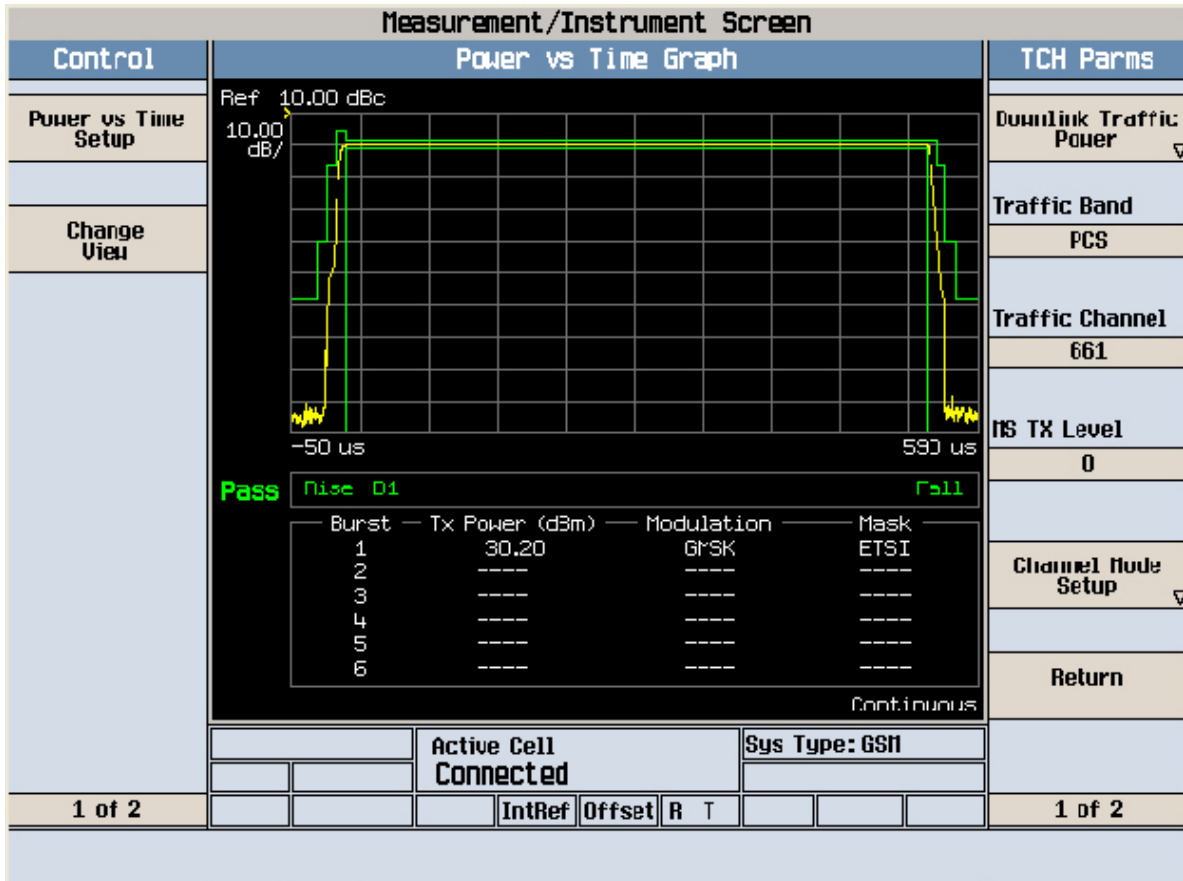
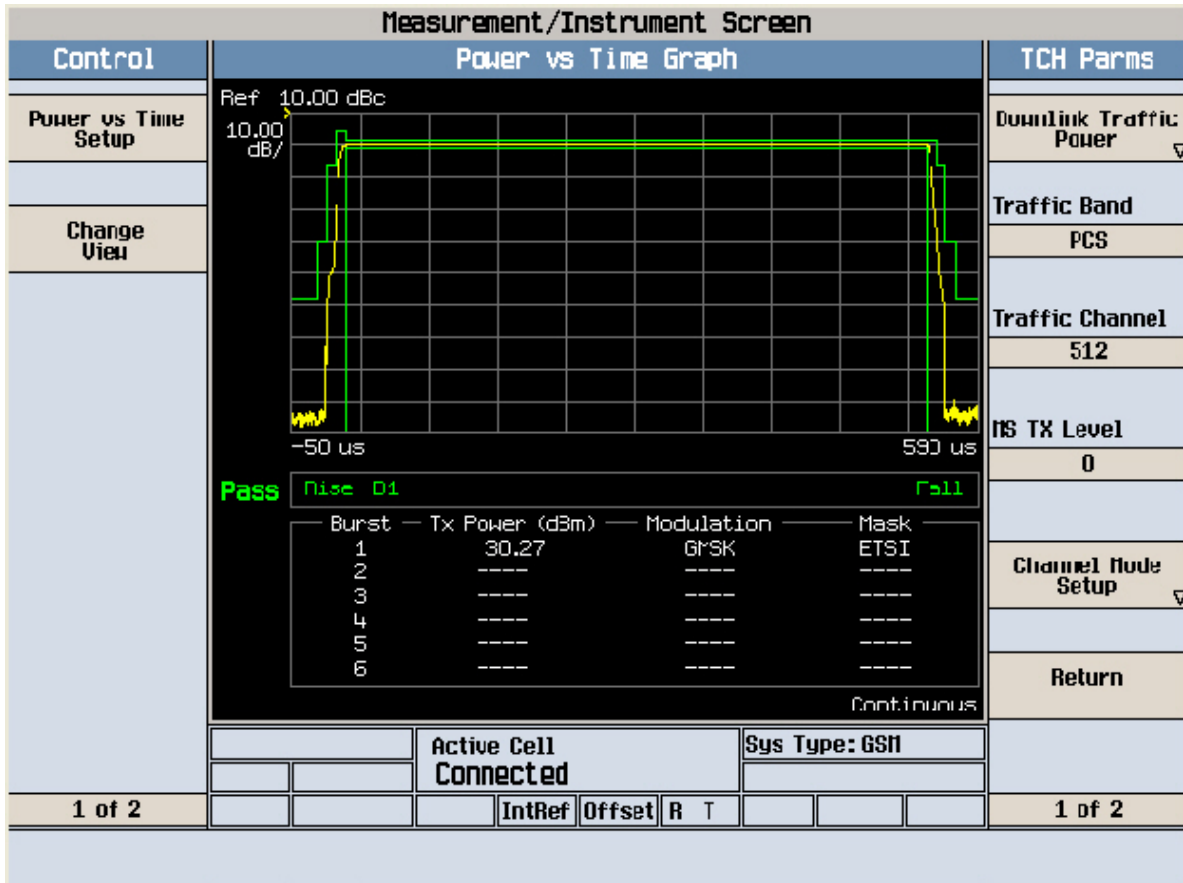
| |
|--|
| Freq/Channel |
| Center Freq 1.90980000 GHz |
| Start Freq 1.90930000 GHz |
| Stop Freq 1.91030000 GHz |
| CF Step 100.000000 kHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

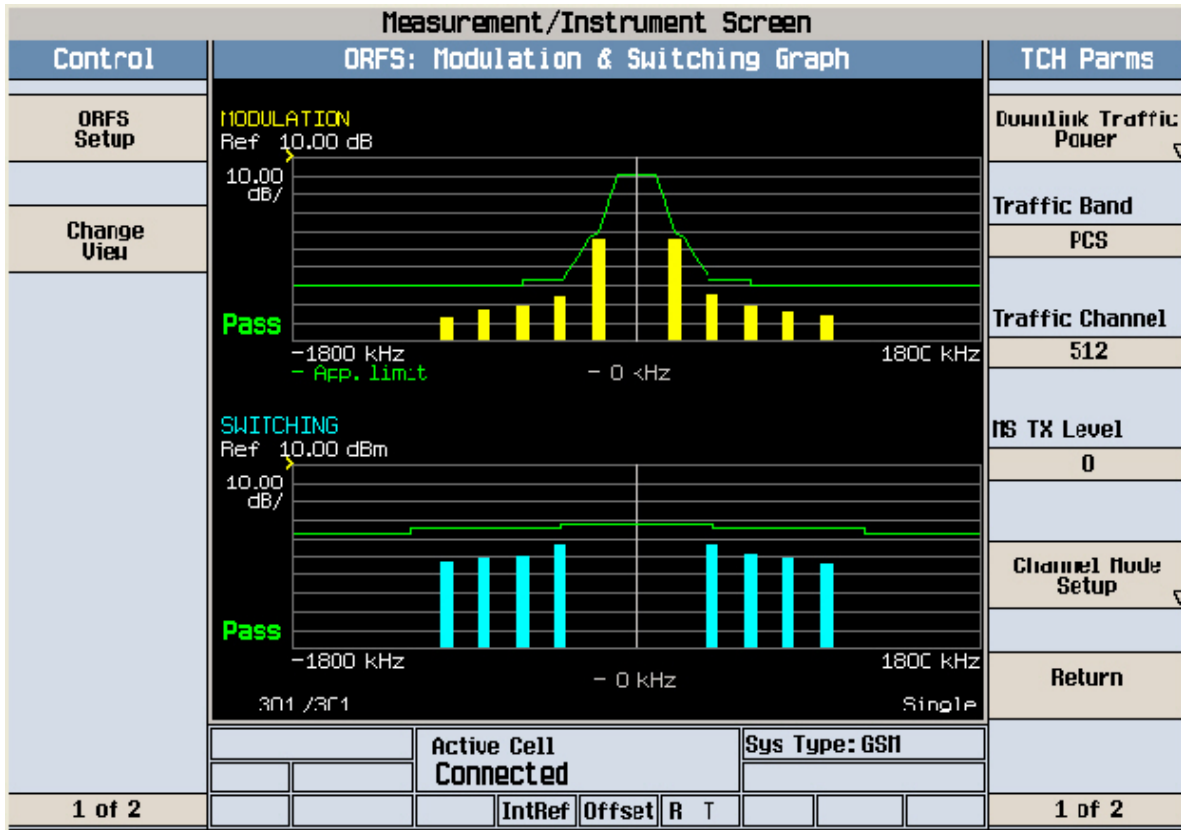
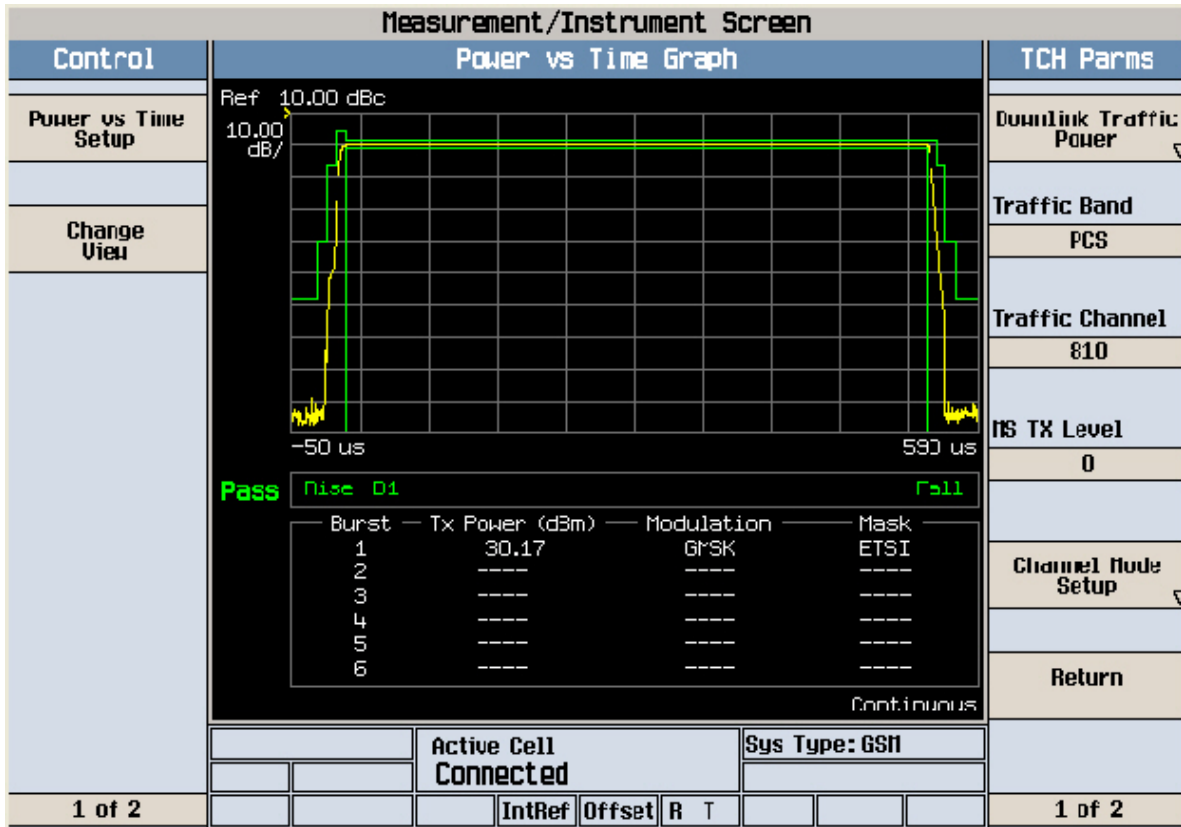
FCC ID : A3LSGHA157 Transmit Power 512CH

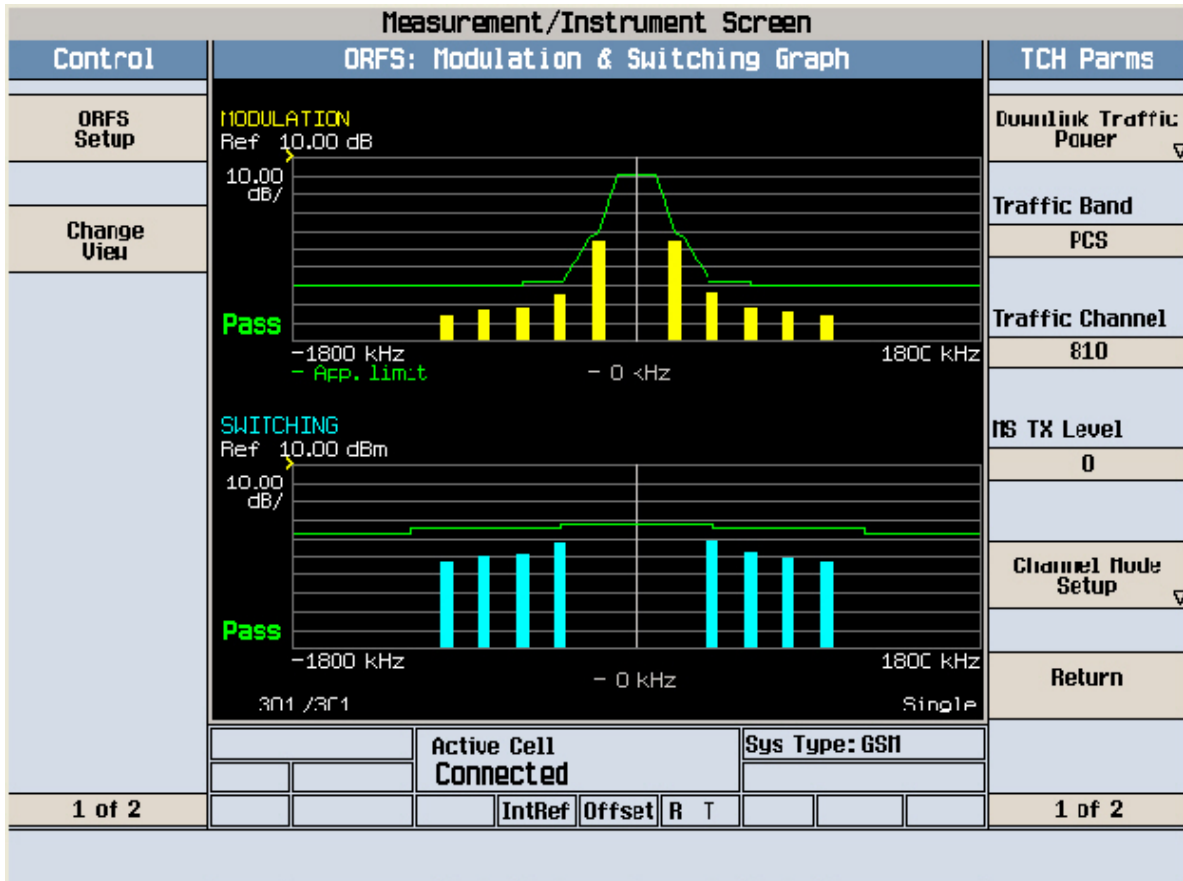
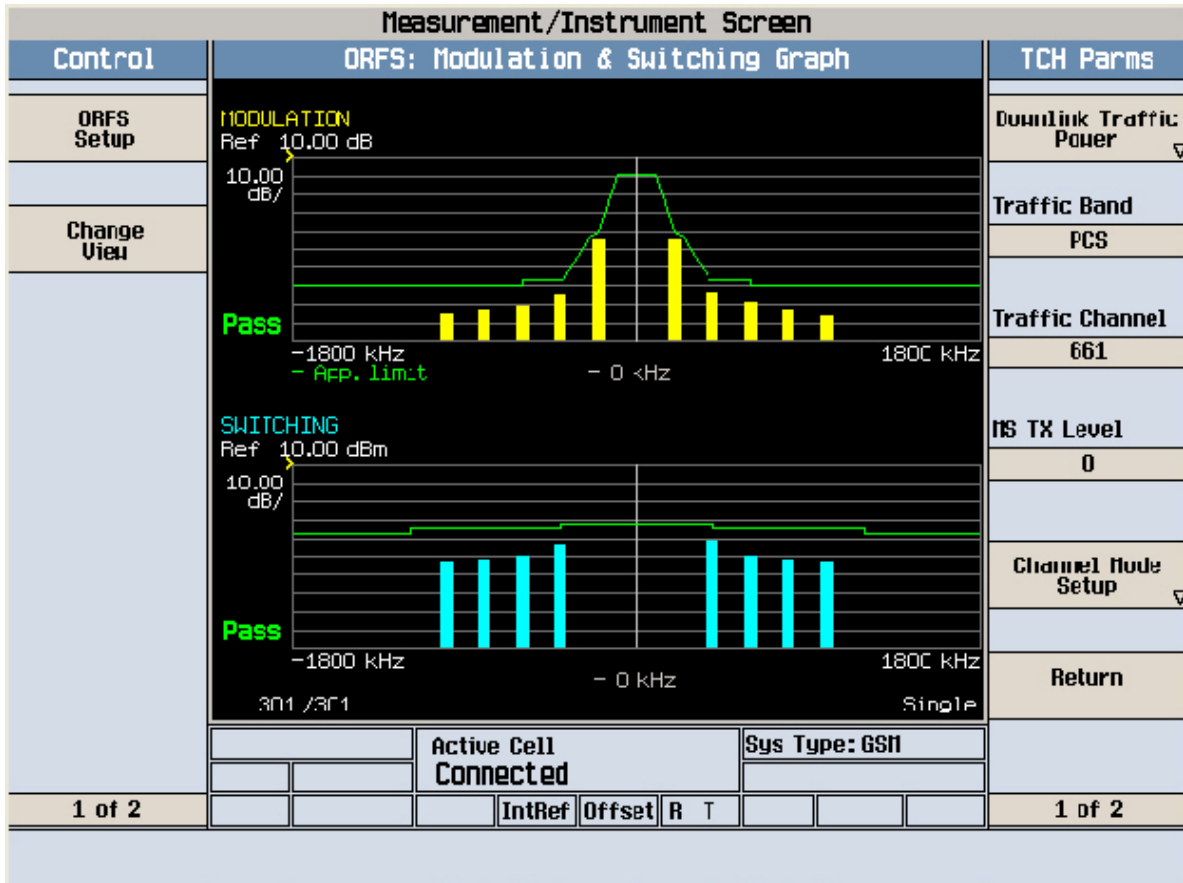
| Measurement/Instrument Screen | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|---|--------------|---------|---------------|---------------------------|--------------|-------------|--------------|---------|---------|---------|---------|---------|-------|------|--------|---------|------|------|--------|-----------|------|------|------|---------------|------|
| Control | Transmit Power | | | | | TCH Parms | | | | | | | | | | | | | | | | | | | | | |
| | Transmit Power Setup | <table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>30.27</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>30.27</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table> | | | | | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | BP | 30.27 | ---- | ---- | ---- | ---- | ---- | ECP | 30.27 | ---- | ---- | ---- | ---- | ---- |
| | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | | | | | | | | | | | | | | | | | | | | | |
| BP | 30.27 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | |
| ECP | 30.27 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | |
| Setup Window Positions | Phase & Frequency Error | | | | | Channel Mode Setup | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.48</td> <td>1.76</td> <td>-29.39</td> </tr> <tr> <td>Maximum</td> <td>7.38</td> <td>2.17</td> <td>-15.01</td> </tr> <tr> <td>Average</td> <td>5.61</td> <td>1.97</td> <td>-22.52</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 4.48 | 1.76 | -29.39 | Maximum | 7.38 | 2.17 | -15.01 | Average | 5.61 | 1.97 | -22.52 | Pass/Fail | Pass | Pass | Pass | Return | |
| | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 4.48 | 1.76 | -29.39 | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 7.38 | 2.17 | -15.01 | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 5.61 | 1.97 | -22.52 | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | | Active Cell Connected | | | Sys Type: GSM | | | | | | | | | | | | | | | | | | | | | | |
| | | IntRef Offset R T | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | | 1 of 2 | | | | | | | | | | | | | | | | | | | | | | | | | |

| Measurement/Instrument Screen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|--------------|-------------|--------------|---------|---------|---------------|--------------------|--------------|-------------|--------------|---------|---------|---------|-------|---------|------|------|------|---------|------|------|-------|-----------|------|------|------|-----------------|------------------------|--|
| Control | Transmit Power | | | | | | | TCH Parms | | | | | | | | | | | | | | | | | | | | | | |
| Transmit Power Setup | <table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>30.20</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>30.20</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table> | | | | | | | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | BP | 30.20 | ---- | ---- | ---- | ---- | ---- | ECP | 30.20 | ---- | ---- | ---- | ---- | ---- | Downlink Traffic Power | |
| | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | | | | | | | | | | | | | | | | | | | | | | | |
| BP | 30.20 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| ECP | 30.20 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| Swap Window Positions | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.32</td> <td>1.74</td> <td>-8.97</td> </tr> <tr> <td>Maximum</td> <td>8.08</td> <td>2.37</td> <td>6.86</td> </tr> <tr> <td>Average</td> <td>5.66</td> <td>1.97</td> <td>-1.28</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 4.32 | 1.74 | -8.97 | Maximum | 8.08 | 2.37 | 6.86 | Average | 5.66 | 1.97 | -1.28 | Pass/Fail | Pass | Pass | Pass | Traffic Band | PCS | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 4.32 | 1.74 | -8.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 8.08 | 2.37 | 6.86 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 5.66 | 1.97 | -1.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.32</td> <td>1.74</td> <td>-8.97</td> </tr> <tr> <td>Maximum</td> <td>8.08</td> <td>2.37</td> <td>6.86</td> </tr> <tr> <td>Average</td> <td>5.66</td> <td>1.97</td> <td>-1.28</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 4.32 | 1.74 | -8.97 | Maximum | 8.08 | 2.37 | 6.86 | Average | 5.66 | 1.97 | -1.28 | Pass/Fail | Pass | Pass | Pass | Traffic Channel | 661 | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 4.32 | 1.74 | -8.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 8.08 | 2.37 | 6.86 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 5.66 | 1.97 | -1.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 / 50 | | | | | | | MS TX Level | 0 | | | | | | | | | | | | | | | | | | | | | | |
| Active Cell Connected | | | | | | | Sys Type: GSM | Channel Mode Setup | | | | | | | | | | | | | | | | | | | | | | |
| IntRef | | | | | | | Offset | R | T | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Return | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 1 of 2 | | | | | | | | | | | | | | | | | | | | | | | |

| Measurement/Instrument Screen | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|--|--------------|-------------|--------------|---------|---------|---------------|--------------------|--------------|-------------|--------------|---------|---------|---------|--------|---------|------|------|-------|---------|------|------|--------|-----------|------|------|------|-----------------|------------------------|--|
| Control | Transmit Power | | | | | | | TCH Parms | | | | | | | | | | | | | | | | | | | | | | |
| Transmit Power Setup | <table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>30.17</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>30.17</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table> | | | | | | | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | BP | 30.17 | ---- | ---- | ---- | ---- | ---- | ECP | 30.17 | ---- | ---- | ---- | ---- | ---- | Downlink Traffic Power | |
| | | Burst 1 | Burst 2 | Burst 3 | Burst 4 | Burst 5 | Burst 6 | | | | | | | | | | | | | | | | | | | | | | | |
| BP | 30.17 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| ECP | 30.17 | ---- | ---- | ---- | ---- | ---- | | | | | | | | | | | | | | | | | | | | | | | | |
| Swap Window Positions | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.32</td> <td>1.63</td> <td>-19.64</td> </tr> <tr> <td>Maximum</td> <td>8.48</td> <td>2.20</td> <td>-3.45</td> </tr> <tr> <td>Average</td> <td>5.55</td> <td>1.93</td> <td>-12.40</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 4.32 | 1.63 | -19.64 | Maximum | 8.48 | 2.20 | -3.45 | Average | 5.55 | 1.93 | -12.40 | Pass/Fail | Pass | Pass | Pass | Traffic Band | PCS | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 4.32 | 1.63 | -19.64 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 8.48 | 2.20 | -3.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 5.55 | 1.93 | -12.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 of 2 | <table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.32</td> <td>1.63</td> <td>-19.64</td> </tr> <tr> <td>Maximum</td> <td>8.48</td> <td>2.20</td> <td>-3.45</td> </tr> <tr> <td>Average</td> <td>5.55</td> <td>1.93</td> <td>-12.40</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table> | | | | | | | | Peak Phase ° | RMS Phase ° | Frequency Hz | Minimum | 4.32 | 1.63 | -19.64 | Maximum | 8.48 | 2.20 | -3.45 | Average | 5.55 | 1.93 | -12.40 | Pass/Fail | Pass | Pass | Pass | Traffic Channel | 810 | |
| | | Peak Phase ° | RMS Phase ° | Frequency Hz | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 4.32 | 1.63 | -19.64 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum | 8.48 | 2.20 | -3.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 5.55 | 1.93 | -12.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Pass/Fail | Pass | Pass | Pass | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 50 / 50 | | | | | | | MS TX Level | 0 | | | | | | | | | | | | | | | | | | | | | | |
| Active Cell Connected | | | | | | | Sys Type: GSM | Channel Mode Setup | | | | | | | | | | | | | | | | | | | | | | |
| IntRef | | | | | | | Offset | R | T | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | Return | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 1 of 2 | | | | | | | | | | | | | | | | | | | | | | | |







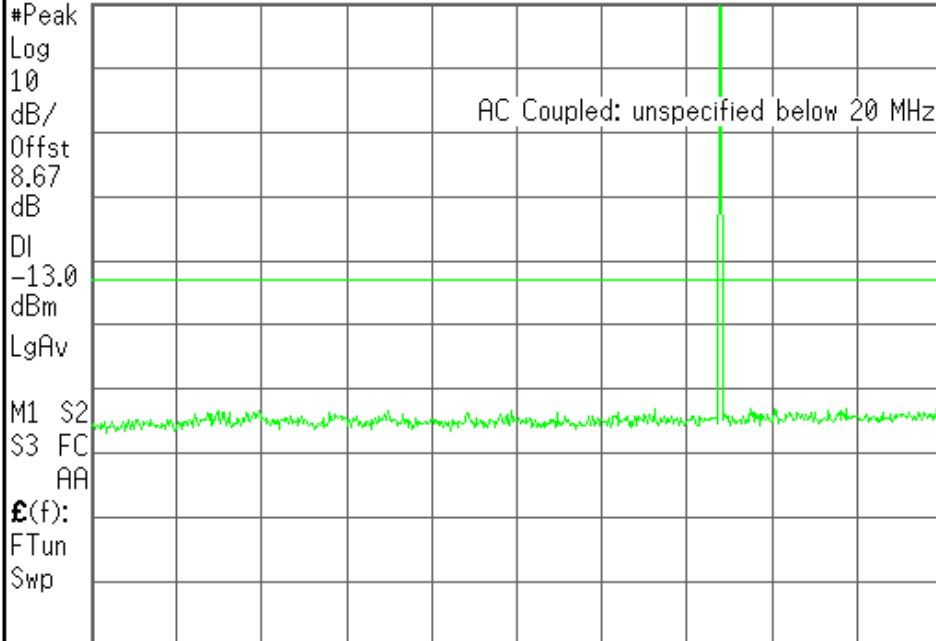
Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.512

Ref 30 dBm Atten 40 dB



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)

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Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Cond Spur Ch.512

Mkr1 1.653 GHz

Ref 30 dBm Atten 40 dB

-33.24 dBm



Center Freq
926.350000 MHz

Start Freq
10.0000000 MHz

Stop Freq
1.84270000 GHz

CF Step
183.270000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

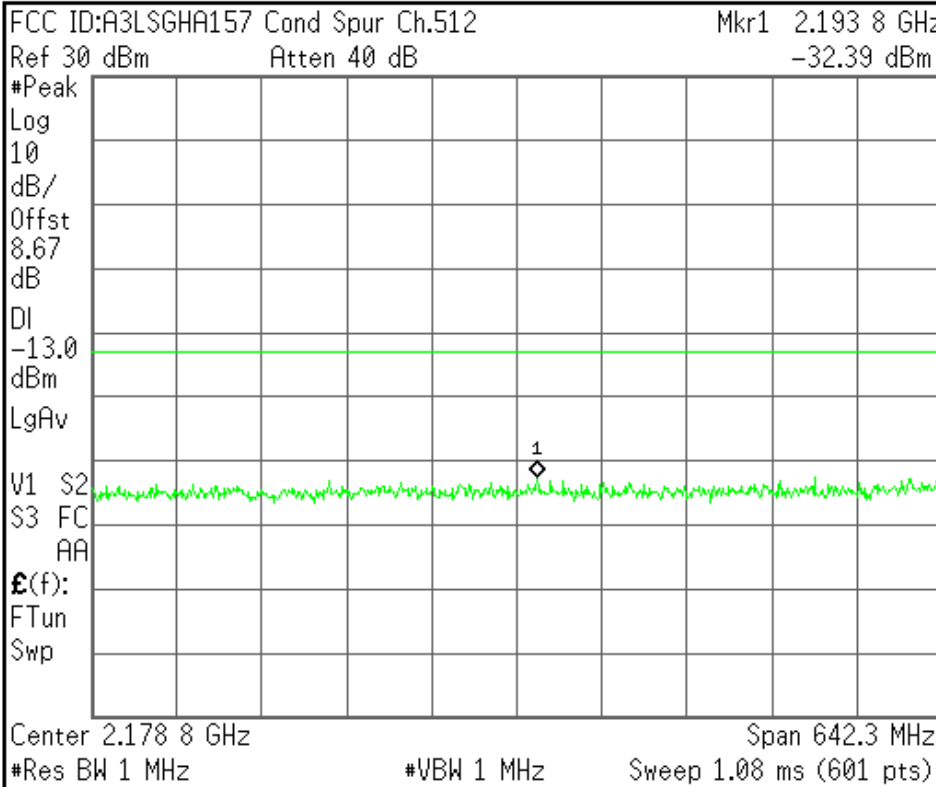
Center 926 MHz Span 1.833 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 3.08 ms (601 pts)

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

Agilent

R T

Freq/Channel



Center Freq
2.17885000 GHz

Start Freq
1.85770000 GHz

Stop Freq
2.50000000 GHz

CF Step
64.2300000 MHz
Auto Man

Freq Offset
0.00000000 Hz

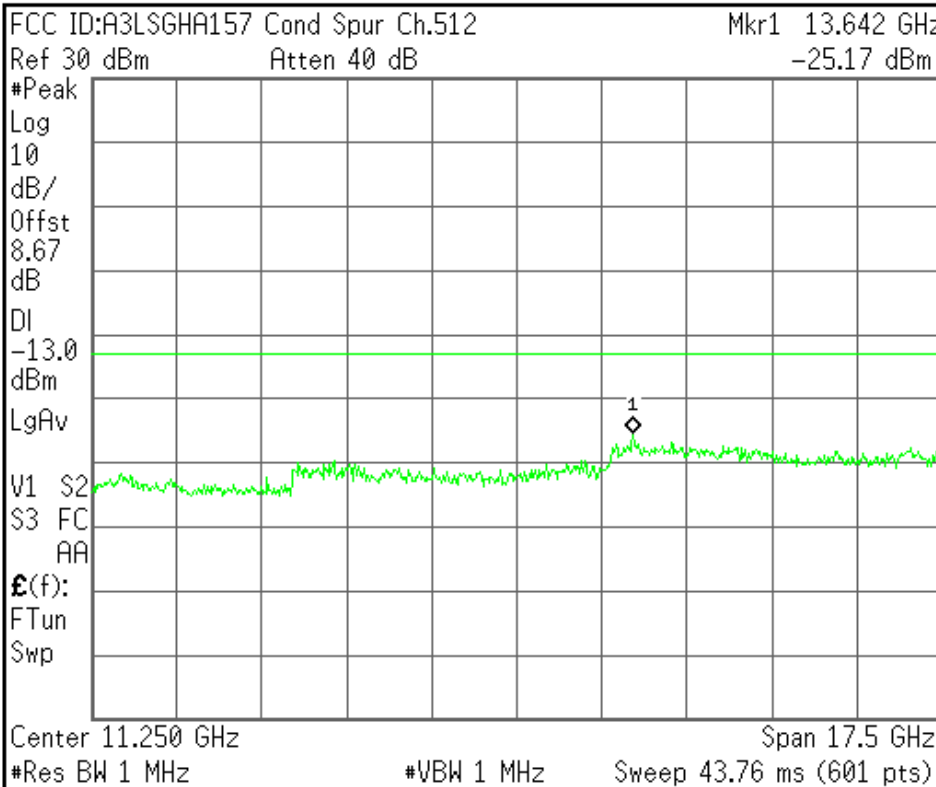
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

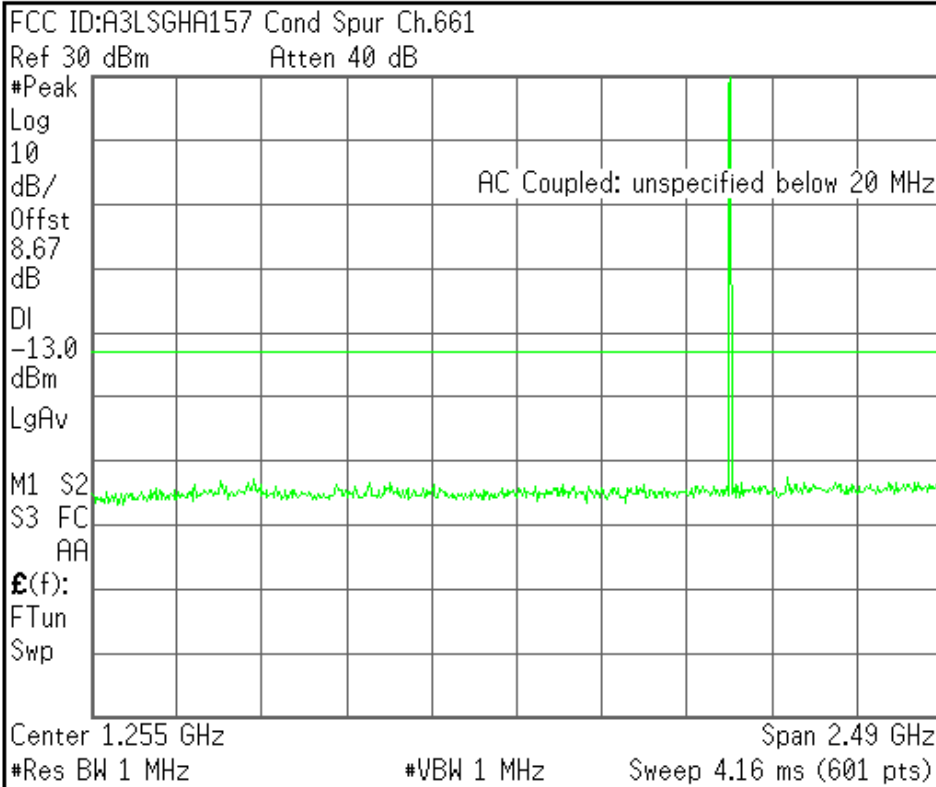
Signal Track
On Off

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

Agilent

R T

Freq/Channel



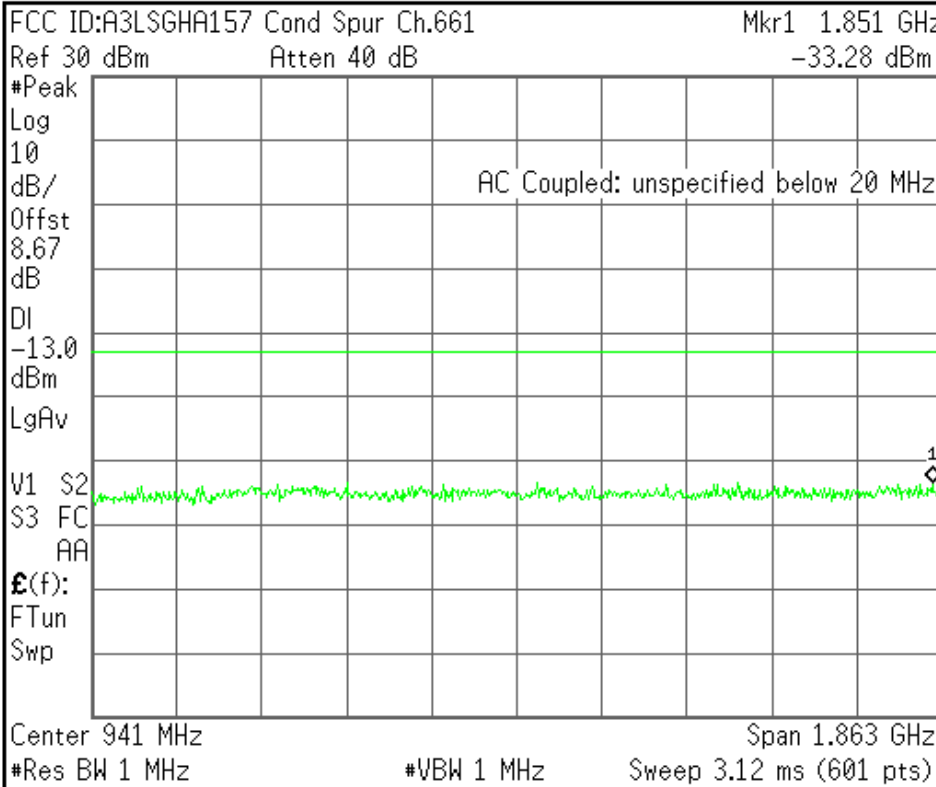
| |
|--|
| Center Freq 1.25500000 GHz |
| Start Freq 10.0000000 MHz |
| Stop Freq 2.50000000 GHz |
| CF Step 249.000000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



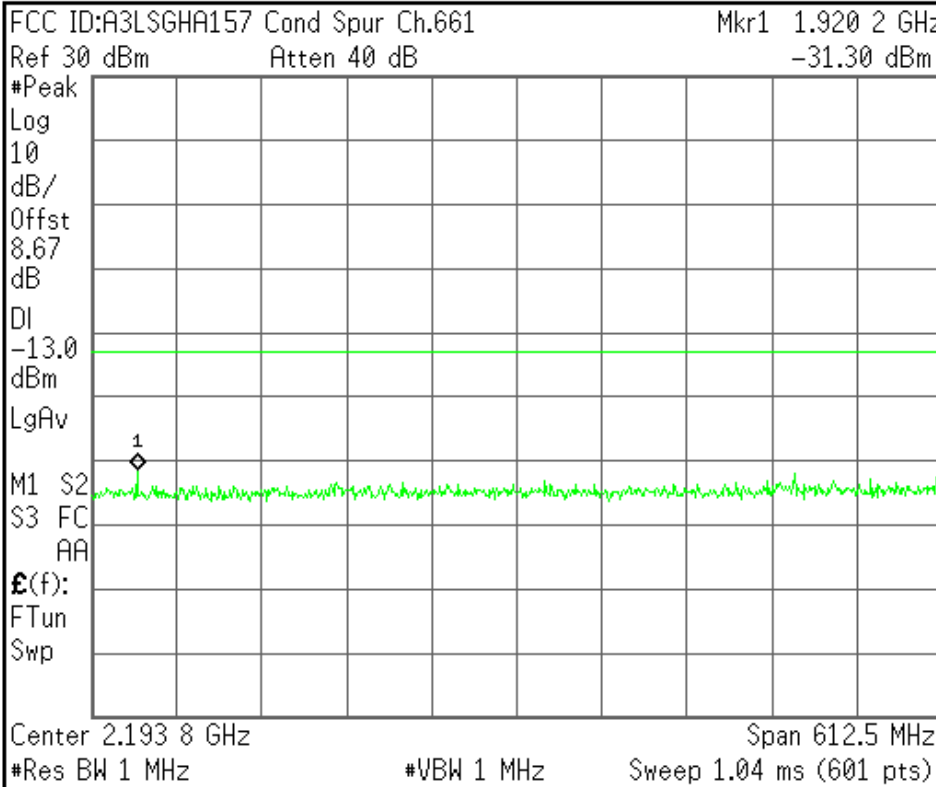
| |
|--|
| Center Freq 941.250000 MHz |
| Start Freq 10.0000000 MHz |
| Stop Freq 1.87250000 GHz |
| CF Step 186.250000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



Center Freq
2.19375000 GHz

Start Freq
1.88750000 GHz

Stop Freq
2.50000000 GHz

CF Step
61.2500000 MHz
Auto Man

Freq Offset
0.00000000 Hz

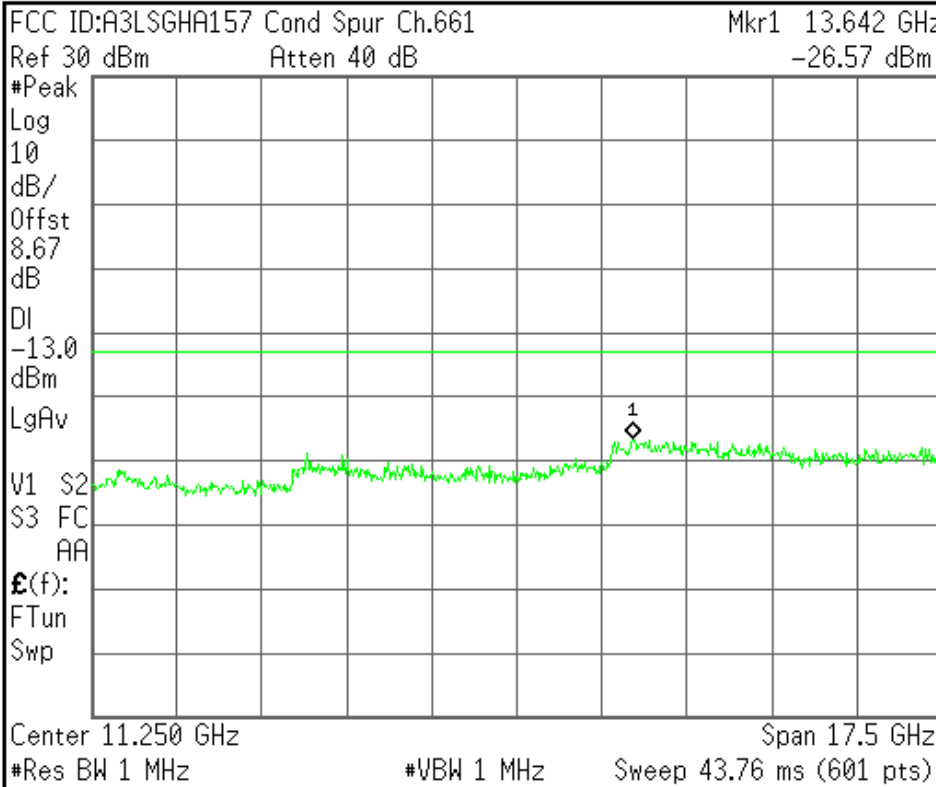
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

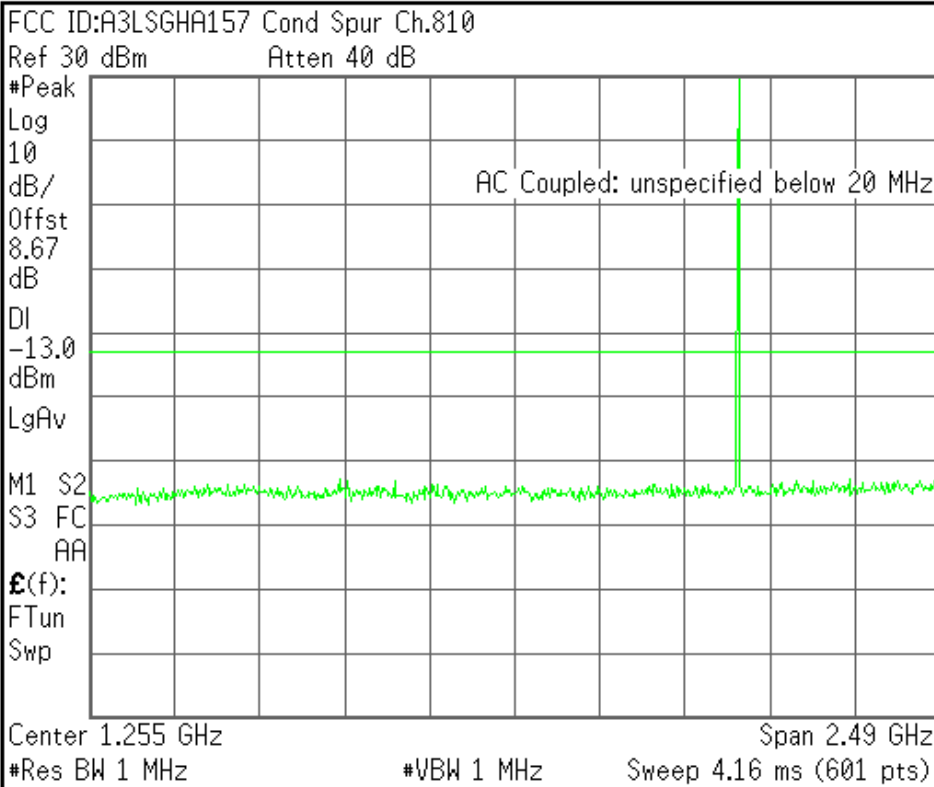
Signal Track
On Off

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

Agilent

R T

Freq/Channel



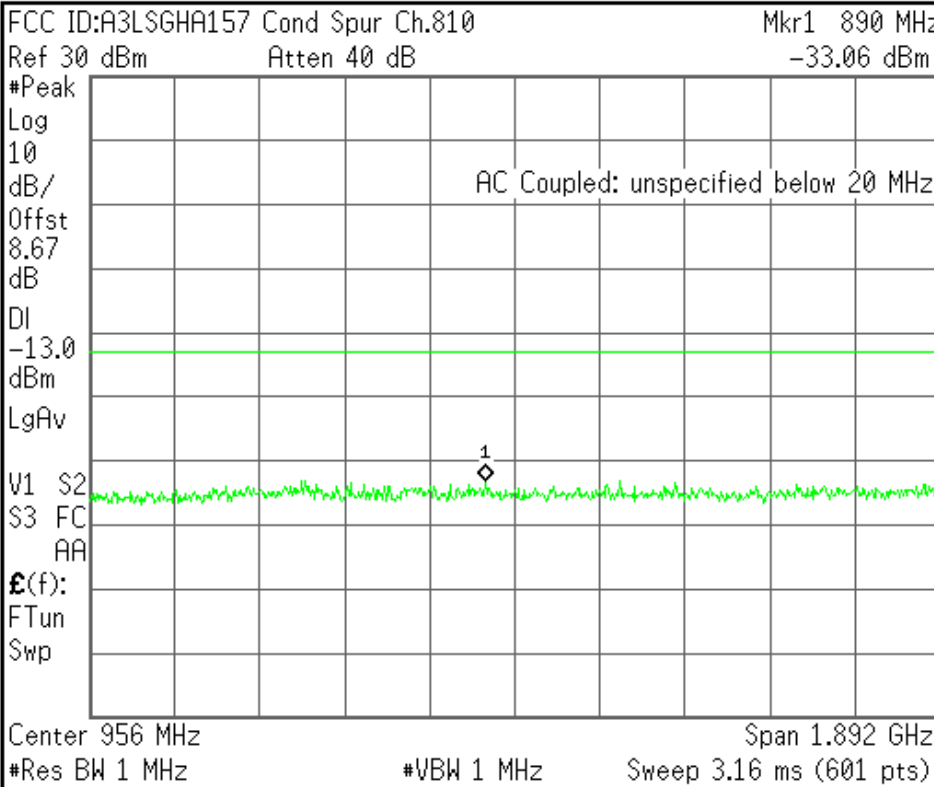
| |
|---|
| Center Freq 1.25500000 GHz |
| Start Freq 10.00000000 MHz |
| Stop Freq 2.50000000 GHz |
| CF Step 249.0000000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



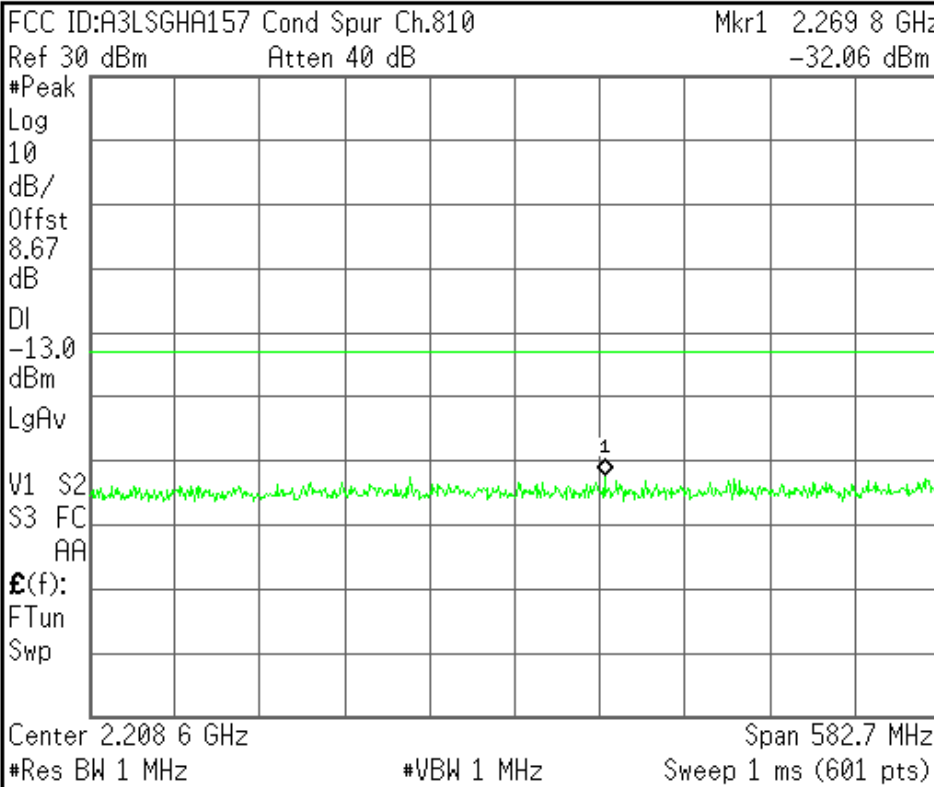
| |
|---|
| Center Freq 956.150000 MHz |
| Start Freq 10.00000000 MHz |
| Stop Freq 1.90230000 GHz |
| CF Step 189.2300000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



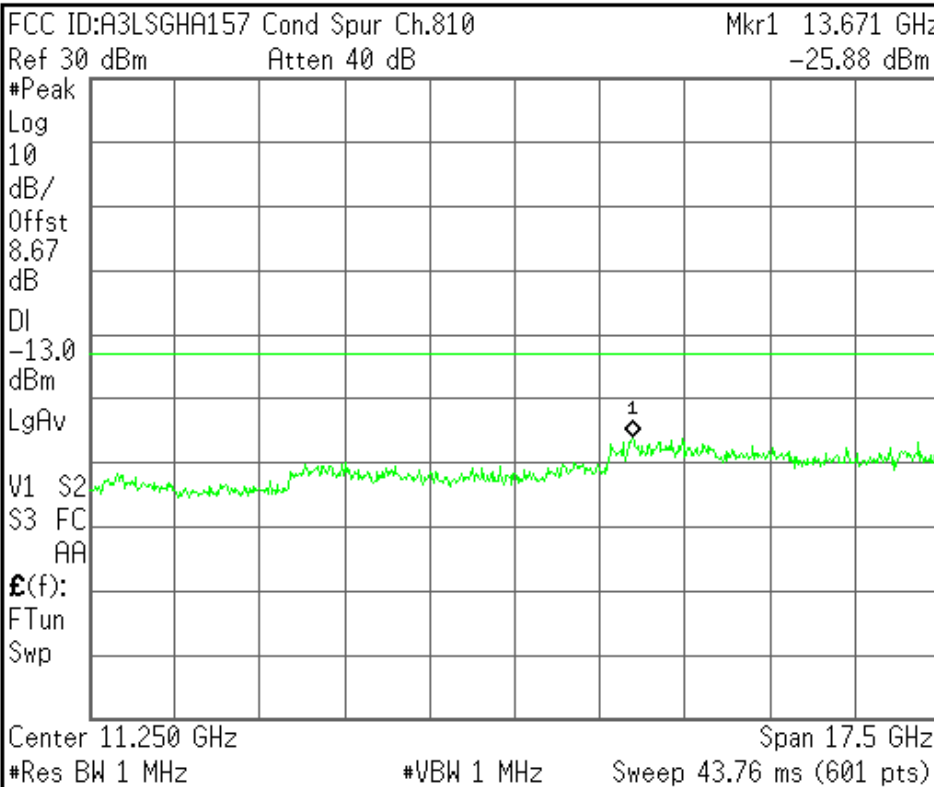
| |
|---|
| Center Freq 2.20865000 GHz |
| Start Freq 1.91730000 GHz |
| Stop Freq 2.50000000 GHz |
| CF Step 58.27000000 MHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

R T

Freq/Channel



| |
|--|
| Center Freq 11.25000000 GHz |
| Start Freq 2.50000000 GHz |
| Stop Freq 20.00000000 GHz |
| CF Step 1.75000000 GHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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

Agilent

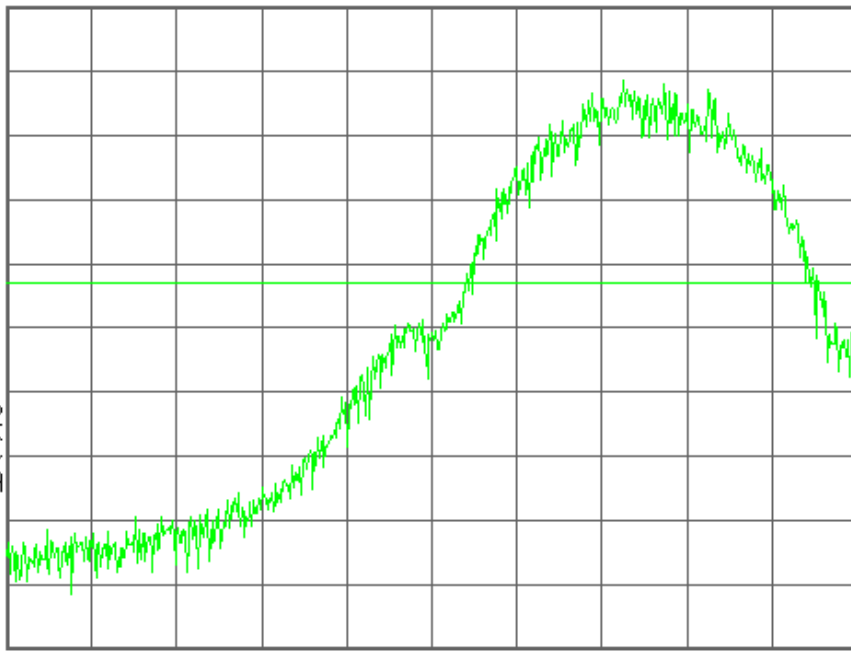
R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.512

Ref 30 dBm Atten 40 dB

#Avg
Log
10
dB/
Offst
8.67
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.850 000 00 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

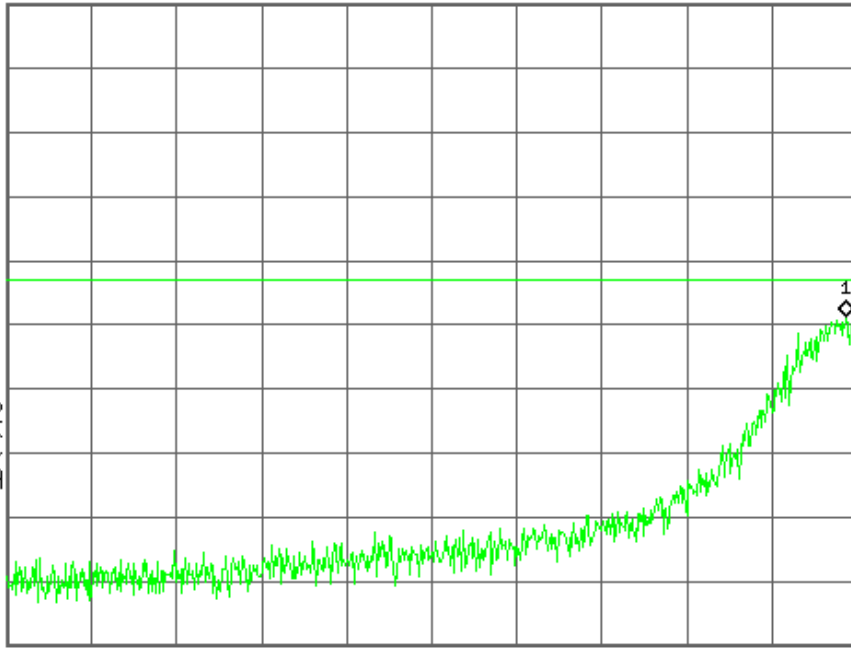
FCC ID:A3LSGHA157 Band Edge Ch.512

Mkr1 1.849 989 31 GHz

Ref 30 dBm Atten 40 dB

-18.60 dBm

#Avg
Log
10
dB/
Offst
8.67
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.849 595 00 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

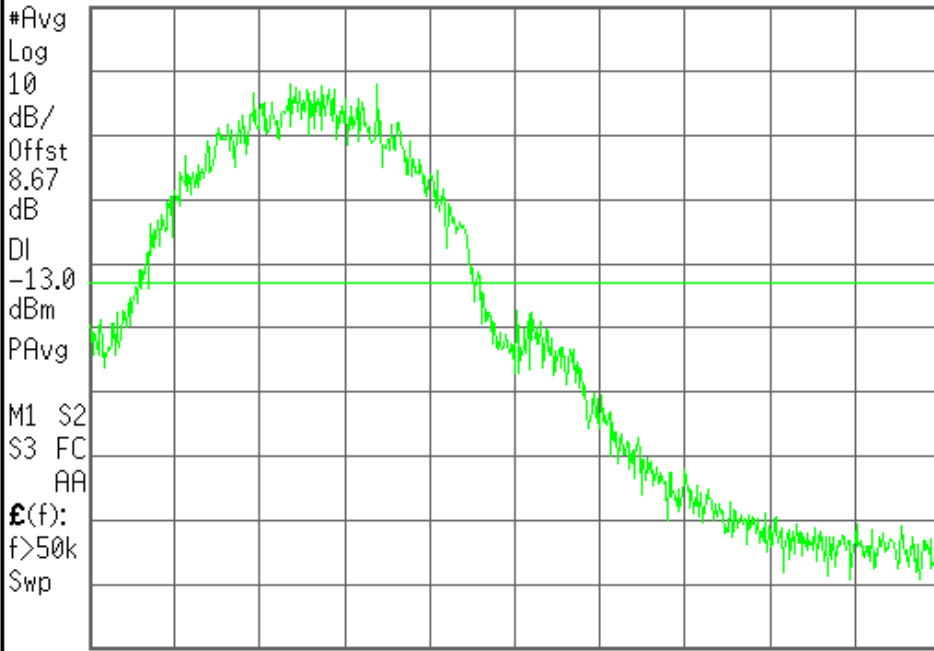
Agilent

R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.810

Ref 30 dBm Atten 40 dB



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

Center 1.910 000 00 GHz Span 810 kHz

#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

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

Agilent

R T

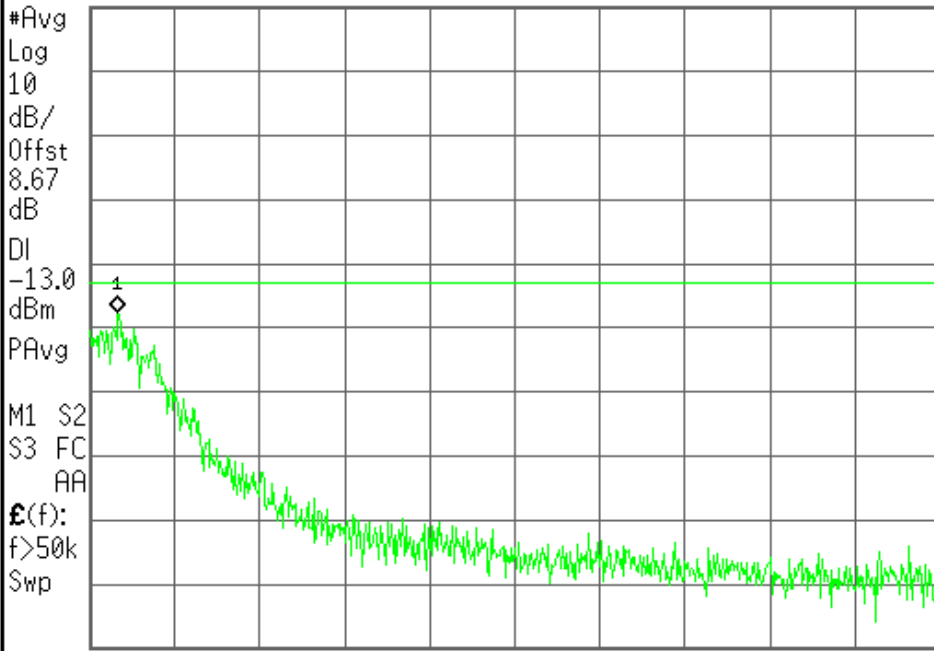
Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.810

Mkr1 1.910 019 00 GHz

Ref 30 dBm Atten 40 dB

-17.43 dBm



Center Freq
1.91040500 GHz

Start Freq
1.91000000 GHz

Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

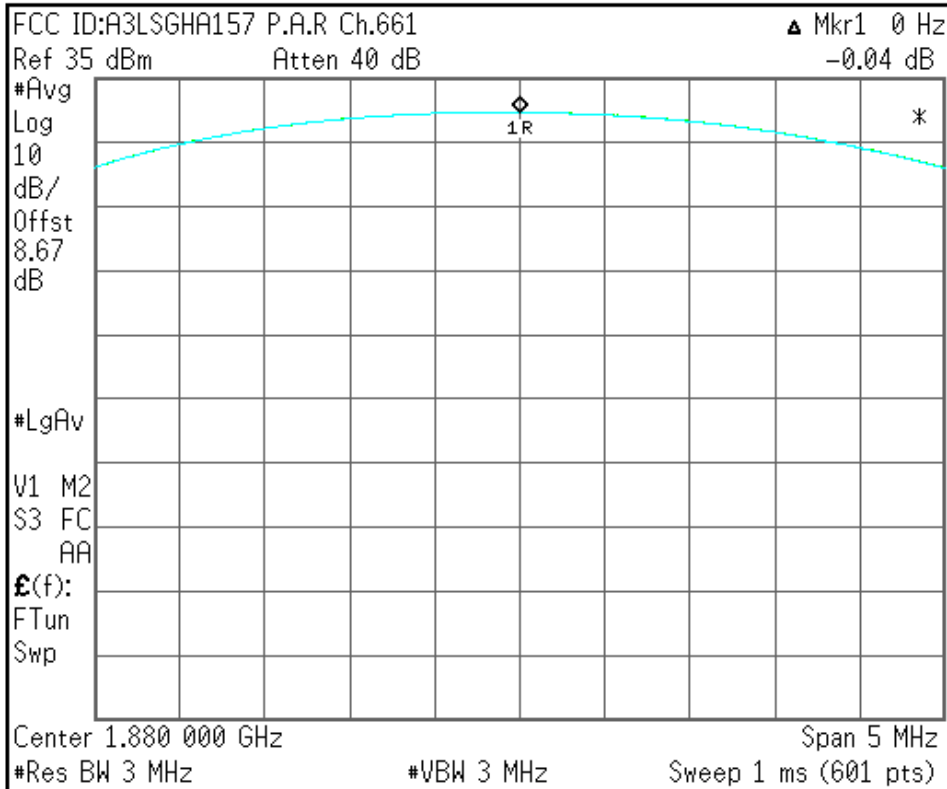
Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.910 405 00 GHz Span 810 kHz

#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

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



| |
|--|
| Freq/Channel |
| Center Freq 1.88000000 GHz |
| Start Freq 1.87750000 GHz |
| Stop Freq 1.88250000 GHz |
| CF Step 500.000000 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 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHA157 0BW Ch.128 EDGE
 Ref 27 dBm Atten 30 dB

Center 824.200 0 MHz Span 1 MHz
 #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

| | | |
|----------------------------|---------------------|-----------|
| Occupied Bandwidth | Occ BW % Pwr | 99.00 % |
| 245.1356 kHz | x dB | -26.00 dB |
| Transmit Freq Error | 1.012 kHz | |
| x dB Bandwidth | 305.009 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:A3LSGHA157 0BW Ch.190 EDGE
 Ref 27 dBm Atten 30 dB

Center 836.600 0 MHz Span 1 MHz
 #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

| | | |
|----------------------------|---------------------|-----------|
| Occupied Bandwidth | Occ BW % Pwr | 99.00 % |
| 243.4308 kHz | x dB | -26.00 dB |
| Transmit Freq Error | 401.939 Hz | |
| x dB Bandwidth | 304.131 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

| | | | |
|---|--|-----------------------------|--|
| Ch Freq 848.8 MHz | | Trig Free | |
| Occupied Bandwidth | | <input type="text"/> | |
| FCC ID:A3LSGHA157 0BW Ch.251 EDGE Ref 27 dBm Atten 30 dB | | | |
| | | | |
| Center 848.800 0 MHz | | Span 1 MHz | |
| #Res BW 3 kHz | | #Sweep 1 s (601 pts) | |
| Occupied Bandwidth | | Occ BW % Pwr 99.00 % | |
| 242.3764 kHz | | x dB -26.00 dB | |
| Transmit Freq Error 882.967 Hz | | | |
| x dB Bandwidth 304.703 kHz | | | |
| File Operation Status, C:\TEMP.GIF file saved | | | |

| | |
|---------------------|----------------------------|
| Freq/Channel | |
| 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 |

Agilent

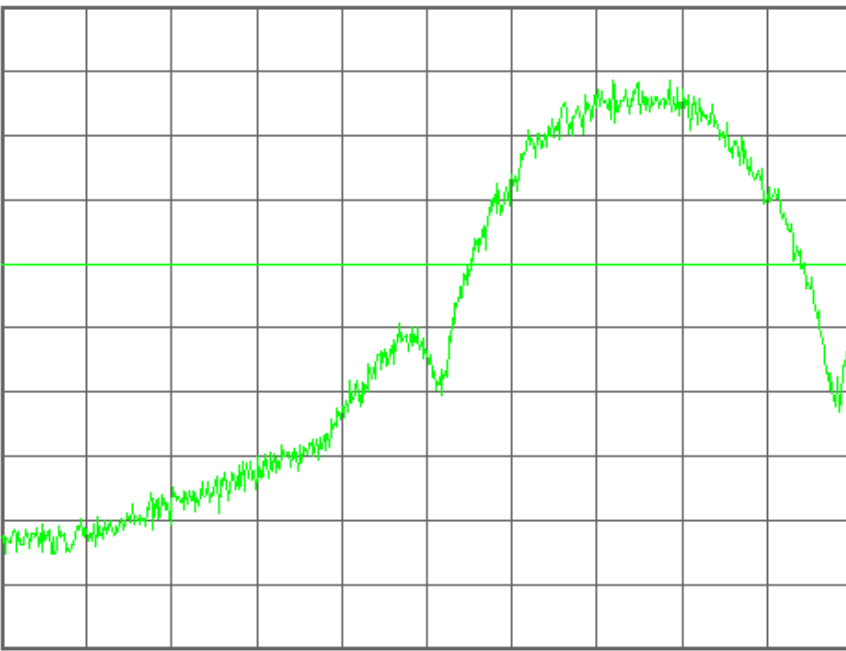
R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.128 EDGE

Ref 27 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
7.65
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 824.000 00 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

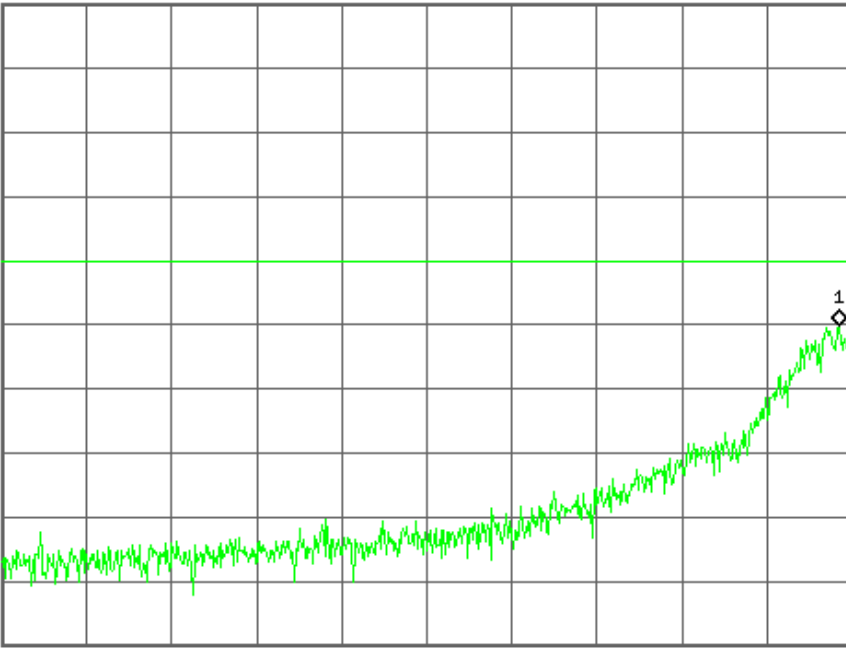
FCC ID:A3LSGHA157 Band Edge Ch.128 EDGE

Mkr1 823.987 97 MHz

Ref 27 dBm Atten 30 dB

-23.17 dBm

#Avg
Log
10
dB/
Offst
7.65
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 823.595 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
823.595000 MHz

Start Freq
823.190000 MHz

Stop Freq
824.000000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

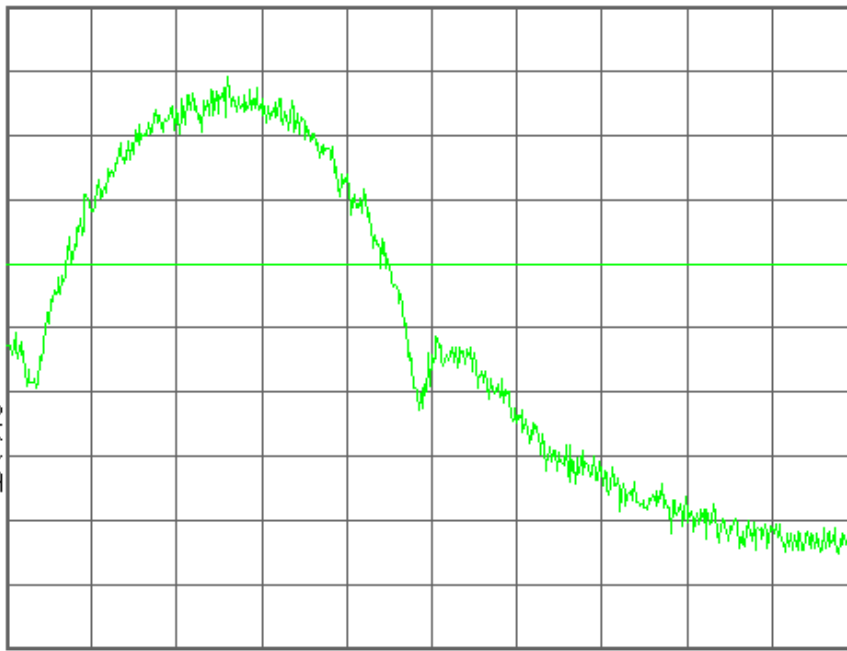
R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.251 EDGE

Ref 27 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
7.65
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 849.000 00 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

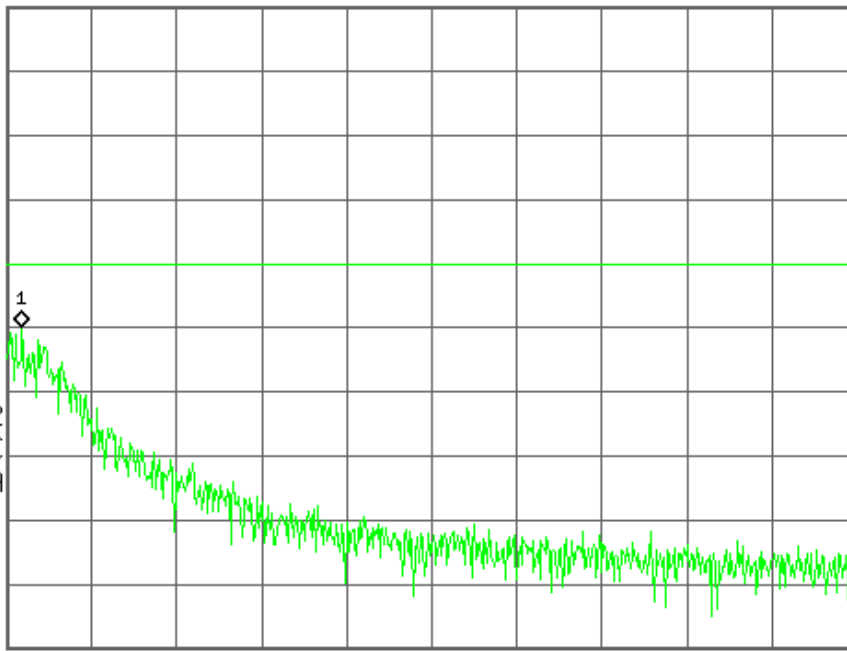
FCC ID:A3LSGHA157 Band Edge Ch.251 EDGE

Mkr1 849.014 71 MHz

Ref 27 dBm Atten 30 dB

-22.92 dBm

#Avg
Log
10
dB/
Offst
7.65
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 849.405 00 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

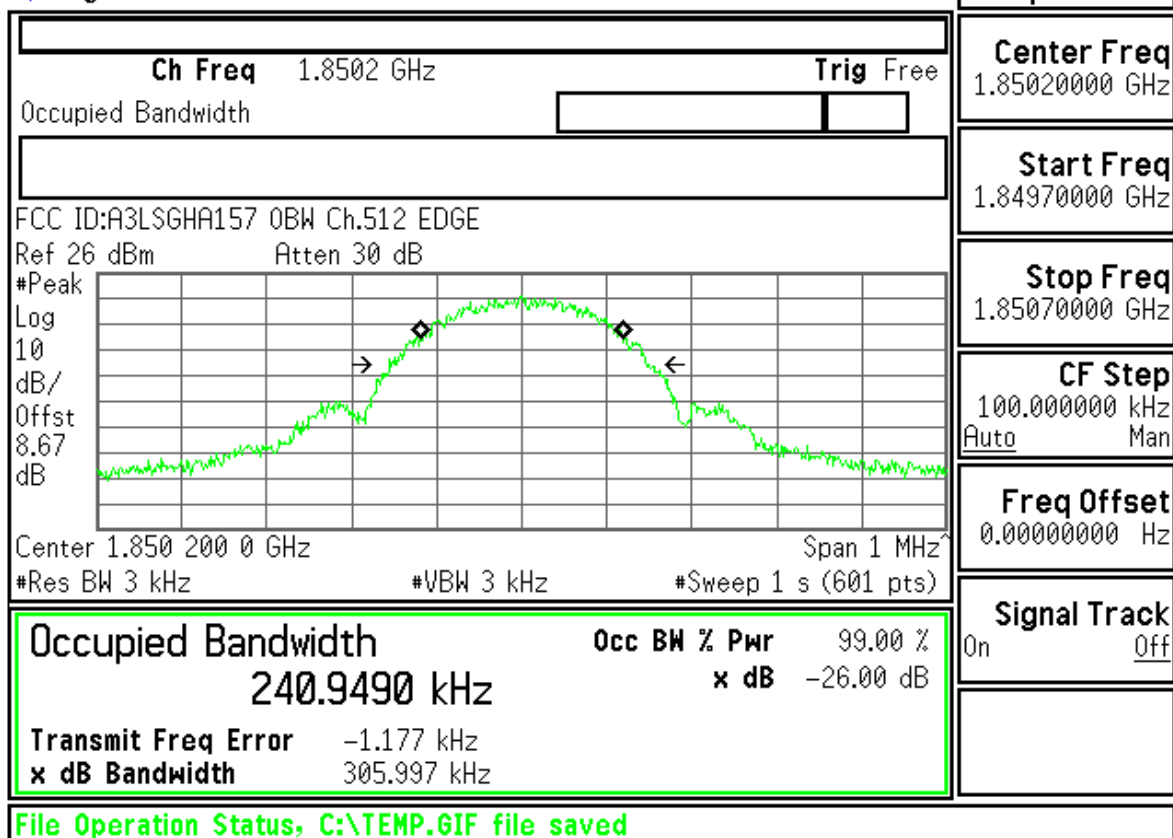
Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

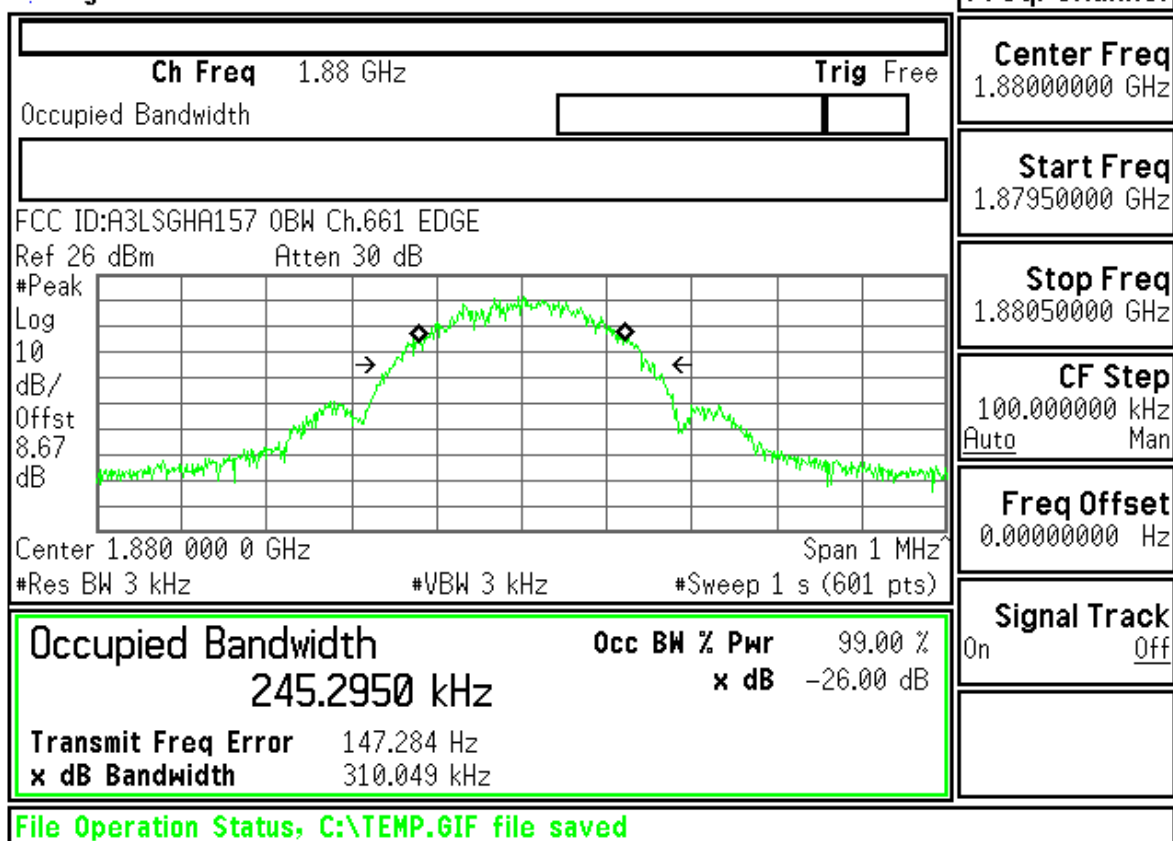
Freq Offset
0.00000000 Hz

Signal Track
On Off

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



| |
|--|
| 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 |



| |
|--|
| 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 |

| | | | |
|--|--|--|--|
| Ch Freq 1.9098 GHz Trig Free | | Freq/Channel | |
| Occupied Bandwidth | | Center Freq 1.90980000 GHz | |
| FCC ID:A3LSGHA157 0BW Ch.810 EDGE Ref 26 dBm Atten 30 dB | | Start Freq 1.90930000 GHz | |
| #Peak Log 10 dB/ Offst 8.67 dB | | Stop Freq 1.91030000 GHz | |
| | | CF Step 100.000000 kHz Auto Man | |
| Center 1.909 800 0 GHz Span 1 MHz #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts) | | Freq Offset 0.00000000 Hz | |
| Occupied Bandwidth | | Signal Track On Off | |
| 246.9030 kHz | | Occ BW % Pwr 99.00 % x dB -26.00 dB | |
| Transmit Freq Error 920.043 Hz | | | |
| x dB Bandwidth 305.136 kHz | | | |
| File Operation Status, C:\TEMP.GIF file saved | | | |

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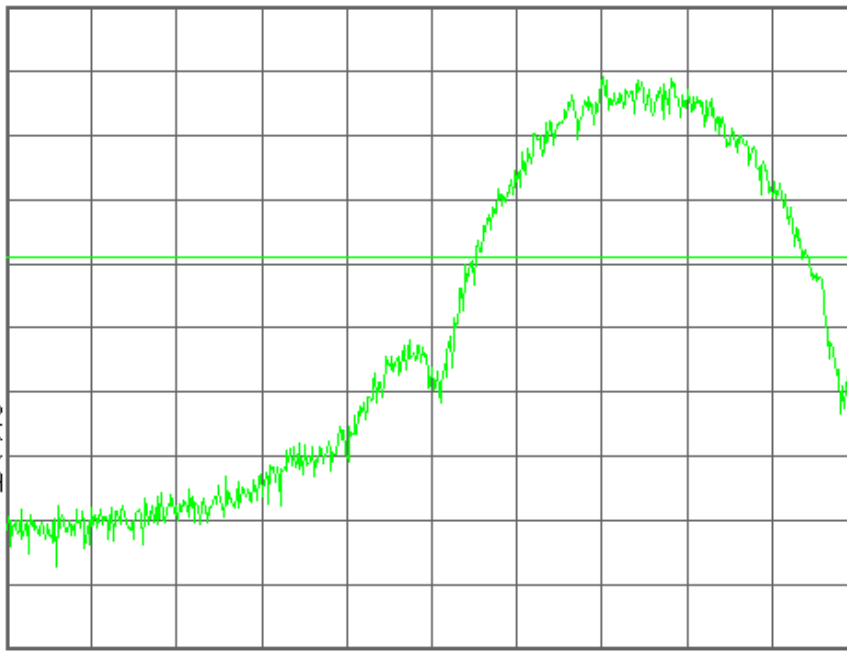
R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.512 EDGE

Ref 26 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
8.67
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.850 000 00 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
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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R T

Freq/Channel

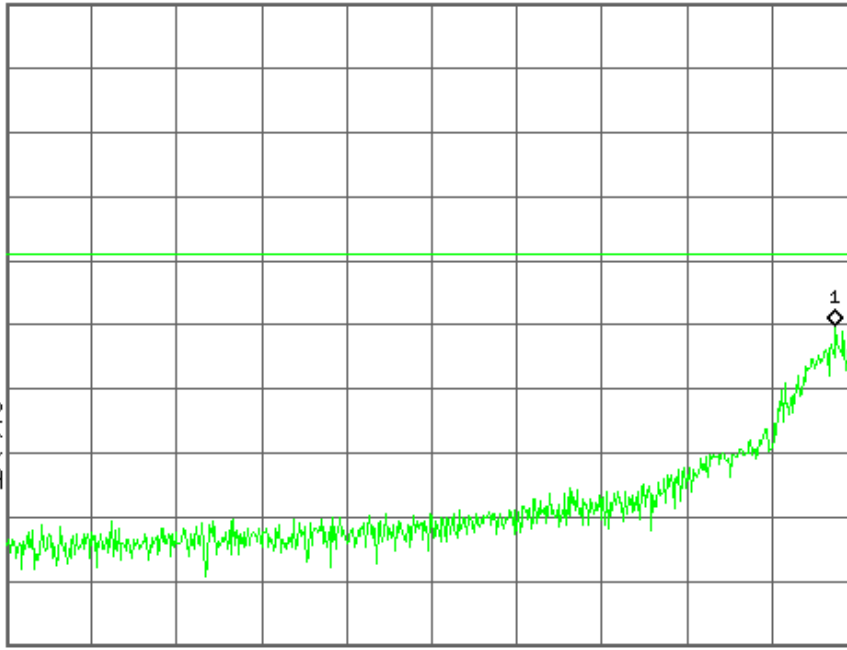
FCC ID:A3LSGHA157 Band Edge Ch.512 EDGE

Mkr1 1.849 979 94 GHz

Ref 26 dBm Atten 30 dB

-24.16 dBm

#Avg
Log
10
dB/
Offst
8.67
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.849 595 00 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
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

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R T

Freq/Channel

FCC ID:A3LSGHA157 Band Edge Ch.810 EDGE

Ref 26 dBm Atten 30 dB

#Avg

Log

10

dB/

Offst

8.67

dB

DI

-13.0

dBm

PAvg

M1 S2

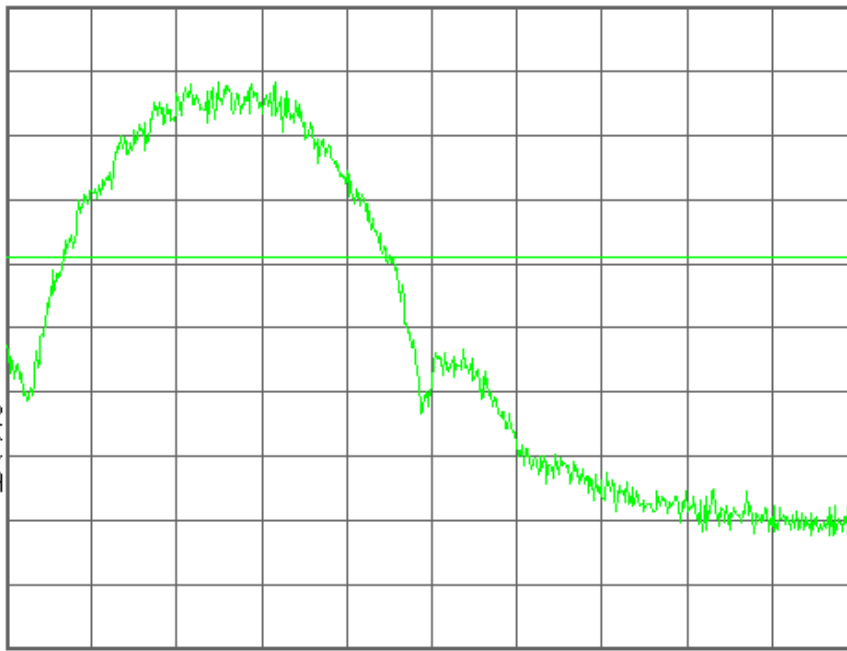
S3 FC

AA

£(f):

f>50k

Swp



Center 1.910 000 00 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:A3LSGHA157 Band Edge Ch.810 EDGE

Mkr1 1.910 002 28 GHz

Ref 26 dBm Atten 30 dB

-27.07 dBm

#Avg

Log

10

dB/

Offst

8.67

dB

DI

-13.0

dBm

PAvg

M1 S2

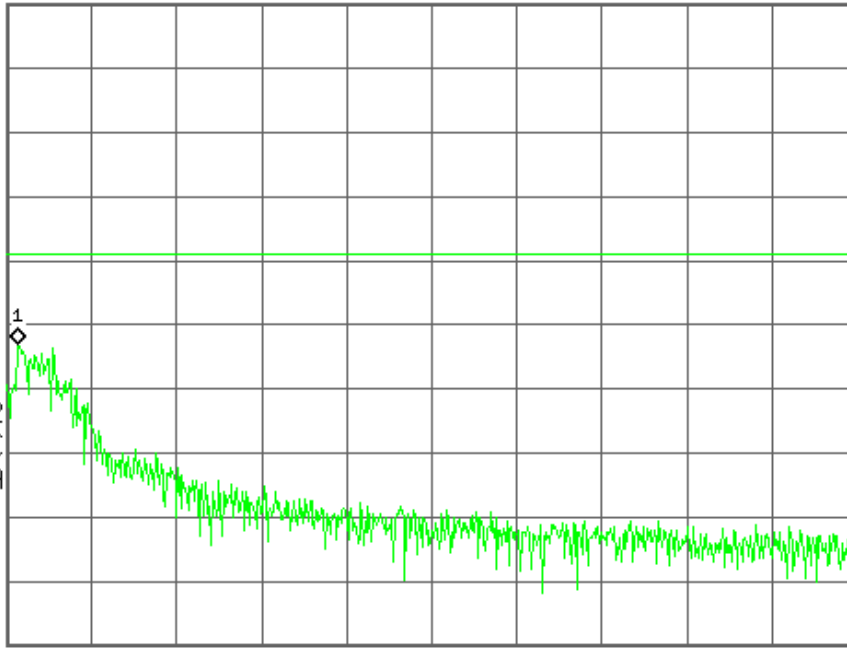
S3 FC

AA

£(f):

f>50k

Swp



Center 1.910 405 00 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

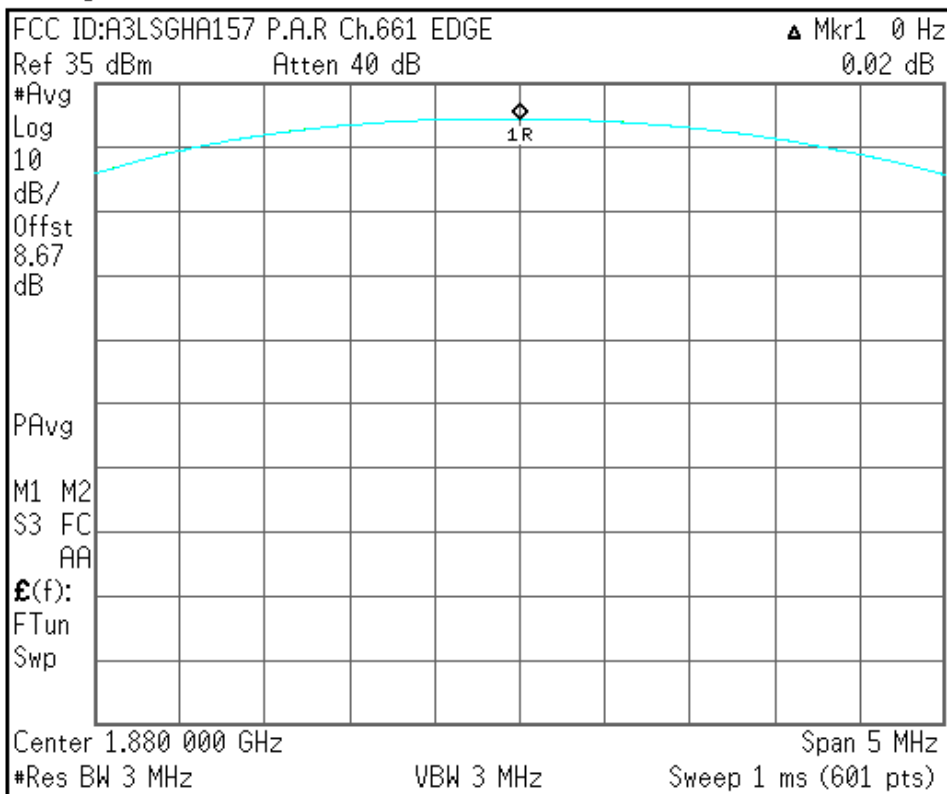
Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



| |
|--|
| Freq/Channel |
| Center Freq 1.88000000 GHz |
| Start Freq 1.87750000 GHz |
| Stop Freq 1.88250000 GHz |
| CF Step 500.000000 kHz Auto Man |
| Freq Offset 0.00000000 Hz |
| Signal Track On Off |

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