



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 : GT-I8160P
FCC ID (Requested) : A3LGTI8160P
Report No : FJ-103-R1
Job No : FJ-103
Date issued : April 25, 2012

- Abstract -

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

Prepared By

HK LEE – Test Engineer

Authorized By

WT JANG – Technical Manager

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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 : A3LGTI8160P
- Model : GT-I8160P
- Quantity : Quantity production is planned
- Emission Designators : 247KGXW(GSM850), 246KG7W(GSM850 EDGE)
246KGXW(GSM1900), 245KG7W(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 : 0.267 W ERP GSM850 (24.27 dBm)
1.109 W EIRP GSM1900 (30.45 dBm)
0.065 W ERP GSM850 EDGE(18.11 dBm)
0.402 W EIRP GSM1900 EDGE(26.04 dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and
WLAN
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : April 4-5, 2012
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FJ-103-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 at 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	2013-03-14
	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	2013-03-05
	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	2013-03-02
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	2013-04-09
	WHK/3.5/18G-10SS	4	2013-04-09
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

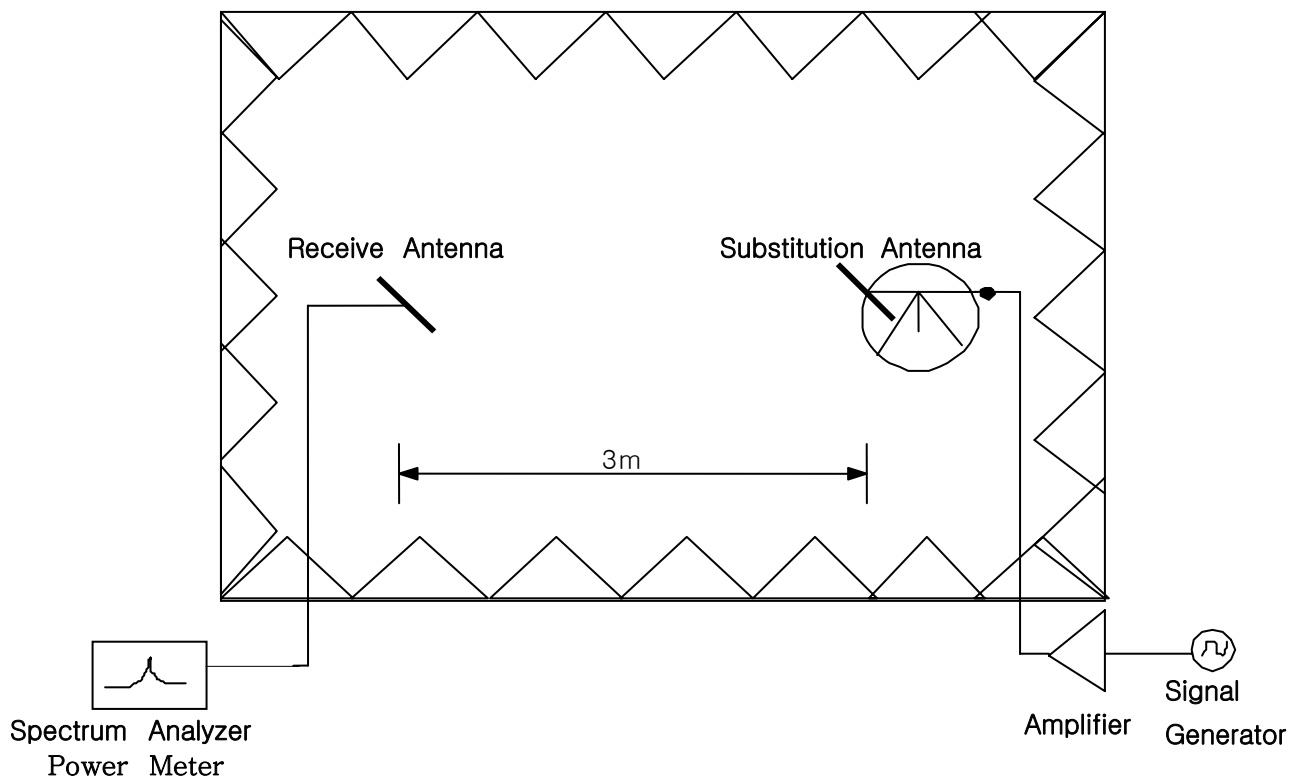


Figure 3. Diagram of ERP/EIRP test Set-up

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

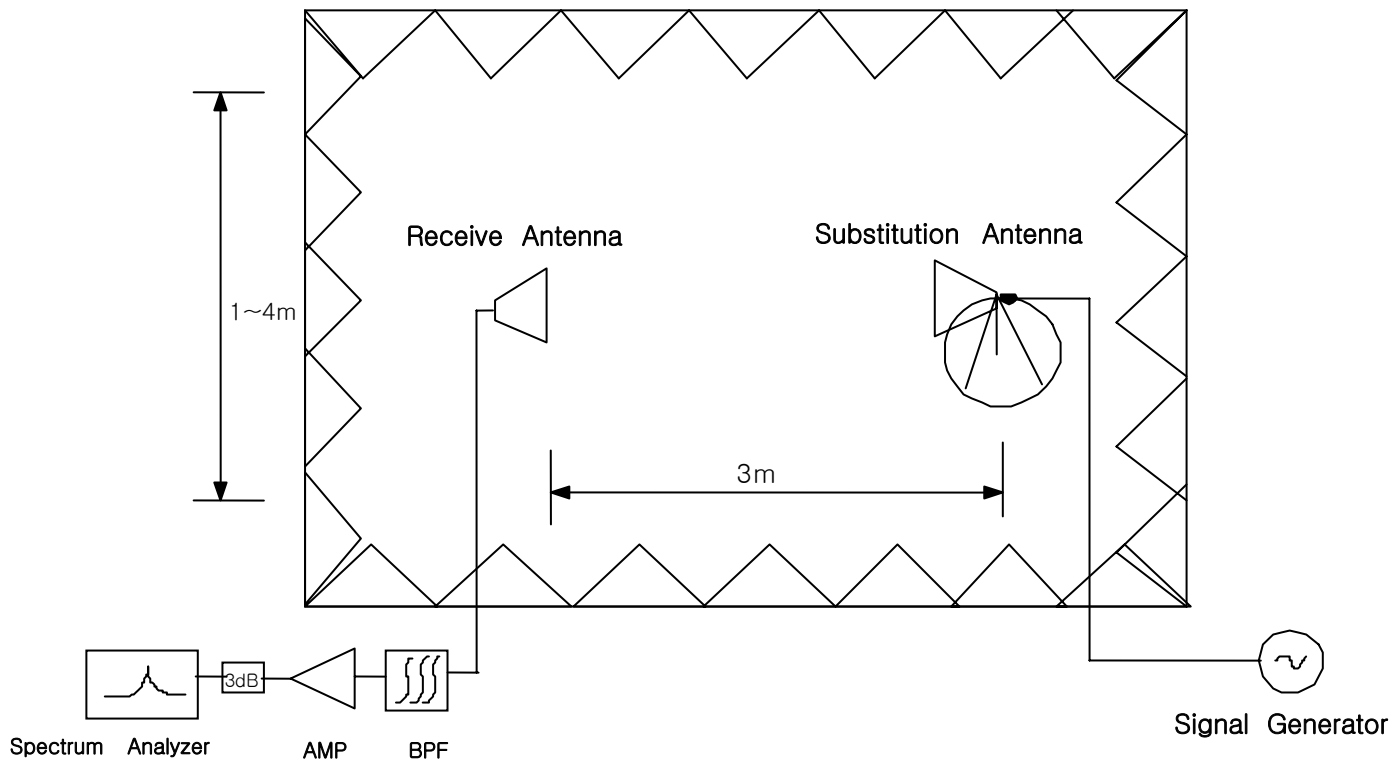


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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 occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured. The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts. The resolution and video bandwidth shall be set to as close to 1 percent of the selected span as is possible without being below 1 percent. Video averaging is not permitted. The trace data points are recovered and are directly summed in linear terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 percent of the total is reached and that frequency recorded. The process is repeated for the highest frequency data points. This frequency is recorded, The span between the two recorded frequencies is the occupied bandwidth. These measurements were performed on Agilent E4440A Spectrum Analyzer.

5.5. Spurious and Harmonic Emission at Antenna Terminal

5.5.1. Occupied Bandwidth Emission Limits

Part 24

- (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.

Part 22

- (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB.
- (b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). 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 emissions are attenuated at least 26 dB below the transmitter power.

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.

$$43 + 10\log (0.267 \text{ W}) = 37.27 \text{ dB}$$

$$24.27 \text{ dBm} - 37.27 \text{ dB} = -13 \text{ dBm}$$

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)

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 GSM850 Mode from 10MHz to 10GHz and GSM1900 Mode from 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°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°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

■ Result

Frequency (MHz)	Tested level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Polarization [H/V]	ERP [dBm]	ERP [W]	Battery
824.20	-13.66	25.15	-1.95	H	23.20	0.209	Standard
836.60	-14.47	24.58	-1.72	H	22.86	0.193	Standard
848.80	-15.16	25.85	-1.58	H	24.27	0.267	Standard

■ EDGE Result

Frequency (MHz)	Tested level (dBm)	Substitute Level [dBm]	Antenna Gain [dBd]	Polarization [H/V]	ERP (dBm)	ERP (W)	Battery
848.80	-21.33	19.69	-1.58	H	18.11	0.065	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

■ Result

Frequency (MHz)	Tested level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Polarization [H/V]	EIRP [dBm]	EIRP [W]	Battery
1850.20	-19.54	18.81	10.16	V	28.97	0.789	Standard
1880.00	-18.47	20.29	10.16	V	30.45	1.109	Standard
1909.80	-19.08	19.53	10.16	V	29.69	0.931	Standard

■ EDGE Result

Frequency (MHz)	Tested level (dBm)	Substitute Level [dBm]	Antenna Gain [dBi]	Polarization [H/V]	EIRP (dBm)	EIRP (W)	Battery
1880.00	-22.88	15.88	10.16	V	26.04	0.402	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 : 24.27 dBm = 0.267 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 37.27 \text{ dBc}$

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
128	2	1648.40	-65.78	V	78.16
	3	2472.60	-62.11	H	68.55
	4	3296.80	-67.65	V	70.22
	5	4121.00	-	-	-
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-67.21	H	78.64
	3	2509.80	-64.48	H	70.71
	4	3346.40	-67.83	V	70.49
	5	4183.00	-	-	-
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-65.62	H	75.77
	3	2546.40	-64.64	V	71.20
	4	3395.20	-68.10	V	70.62
	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

6.4. GSM1900 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 30.45 dBm = 1.109 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 43.45$ dBc

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-50.74	H	54.21
	3	5550.60	-66.56	H	66.61
	4	7400.80	-69.40	H	64.14
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-51.40	H	54.96
	3	5640.00	-65.37	H	65.08
	4	7520.00	-68.33	H	63.02
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-53.26	H	56.76
	3	5729.40	-67.21	H	66.46
	4	7639.20	-69.17	V	64.70
	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

6.5. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : April 5, 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	-66.91	-65.78	78.59	78.16
	3	2472.60	-11.12	10.60	-12.50	-32.97	-32.23	-62.11	-62.86	68.55	70.04
	4	3296.80	-12.19	12.00	-12.80	-36.08	-36.84	-67.83	-67.65	71.16	70.22
	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	-67.21	-66.94	78.64	79.14
	3	2509.80	-11.24	10.60	-12.40	-33.18	-32.42	-64.48	-64.31	70.71	71.30
	4	3346.40	-12.13	12.00	-12.90	-36.09	-36.75	-67.62	-67.83	70.94	70.49
	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	-65.62	-67.54	75.77	78.50
	3	2546.40	-11.22	10.60	-12.40	-32.63	-32.85	-64.51	-64.64	71.29	71.20
	4	3395.20	-12.28	12.00	-12.70	-36.60	-36.89	-68.02	-68.10	70.83	70.62
	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	-	-	-	-

6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : April 5, 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	-50.74	-52.47	54.21	56.89
	3	5550.60	-16.92	12.50	-8.60	-43.40	-42.99	-66.56	-66.87	66.61	67.33
	4	7400.80	-20.20	11.50	-4.30	-48.71	-48.56	-69.40	-69.38	64.14	64.27
	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	-51.40	-52.76	54.96	57.05
	3	5640.00	-17.07	12.50	-8.40	-43.74	-43.42	-65.37	-66.11	65.08	66.14
	4	7520.00	-20.60	11.50	-3.90	-48.76	-48.06	-68.33	-69.16	63.02	64.55
	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	-53.26	-54.65	56.76	58.55
	3	5729.40	-17.16	12.50	-8.30	-44.20	-43.35	-67.21	-66.85	66.46	66.95
	4	7639.20	-20.88	11.50	-3.60	-48.25	-47.92	-69.70	-69.17	64.90	64.70
	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	-	-	-	-

6.7. Frequency Stability

6.7.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

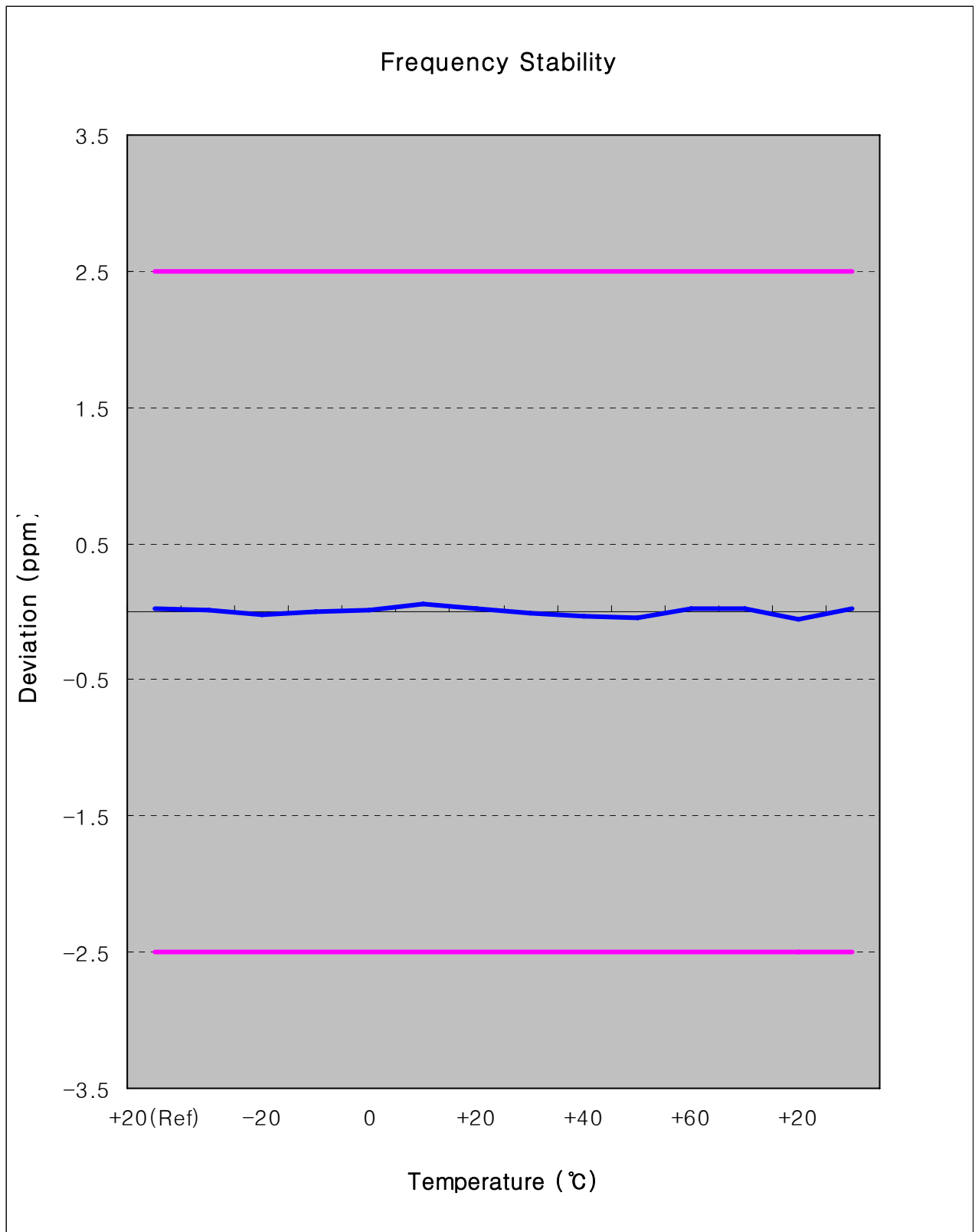
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-0.10	836,600,000	0.000000	0.000
100%		-30	5.00	836,600,005	0.000001	0.006
100%		-20	25.70	836,600,026	0.000003	0.031
100%		-10	-19.00	836,599,981	-0.000002	-0.023
100%		0	-26.30	836,599,974	-0.000003	-0.031
100%		+10	-12.10	836,599,988	-0.000001	-0.014
100%		+20	-0.10	836,600,000	0.000000	0.000
100%		+30	-24.60	836,599,975	-0.000003	-0.029
100%		+40	26.20	836,600,026	0.000003	0.031
100%		+50	-15.90	836,599,984	-0.000002	-0.019
100%		+60	2.10	836,600,002	0.000000	0.003
115%	4.26	+20	-49.60	836,599,950	-0.000006	-0.059
Batt.Endpoint	3.35	+20	-6.10	836,599,994	-0.000001	-0.007

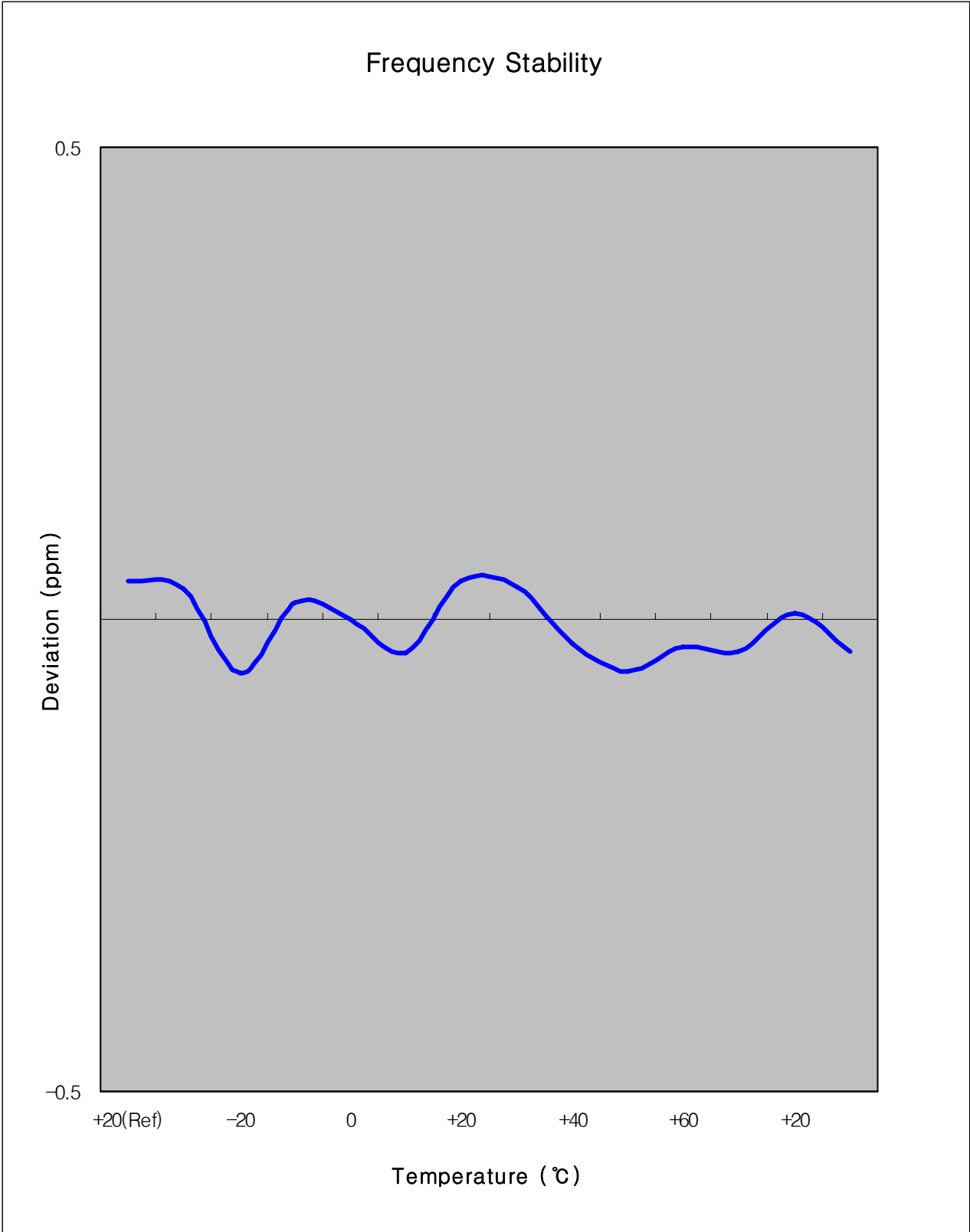
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.2. 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

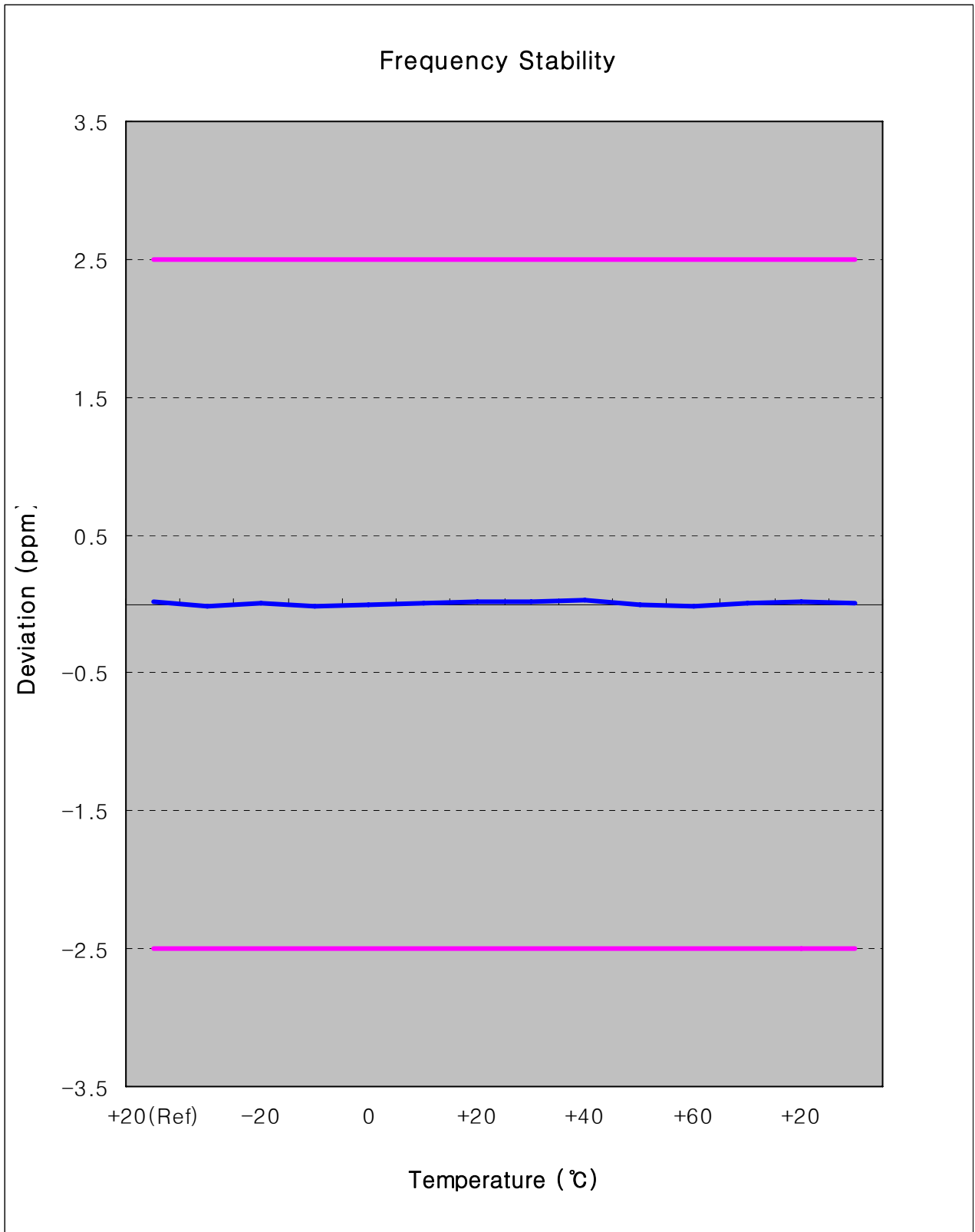
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	32.90	1,880,000,033	0.000002	0.018
100%		-30	37.80	1,880,000,038	0.000002	0.020
100%		-20	1.20	1,880,000,001	0.000000	0.001
100%		-10	-32.00	1,879,999,968	-0.000002	-0.017
100%		0	-35.70	1,879,999,964	-0.000002	-0.019
100%		+10	13.60	1,880,000,014	0.000001	0.007
100%		+20	32.90	1,880,000,033	0.000002	0.018
100%		+30	-36.50	1,879,999,964	-0.000002	-0.019
100%		+40	34.90	1,880,000,035	0.000002	0.019
100%		+50	4.50	1,880,000,005	0.000000	0.002
100%		+60	14.40	1,880,000,014	0.000001	0.008
115%	4.26	+20	43.90	1,880,000,044	0.000002	0.023
Batt.Endpoint	3.35	+20	31.90	1,880,000,032	0.000002	0.017

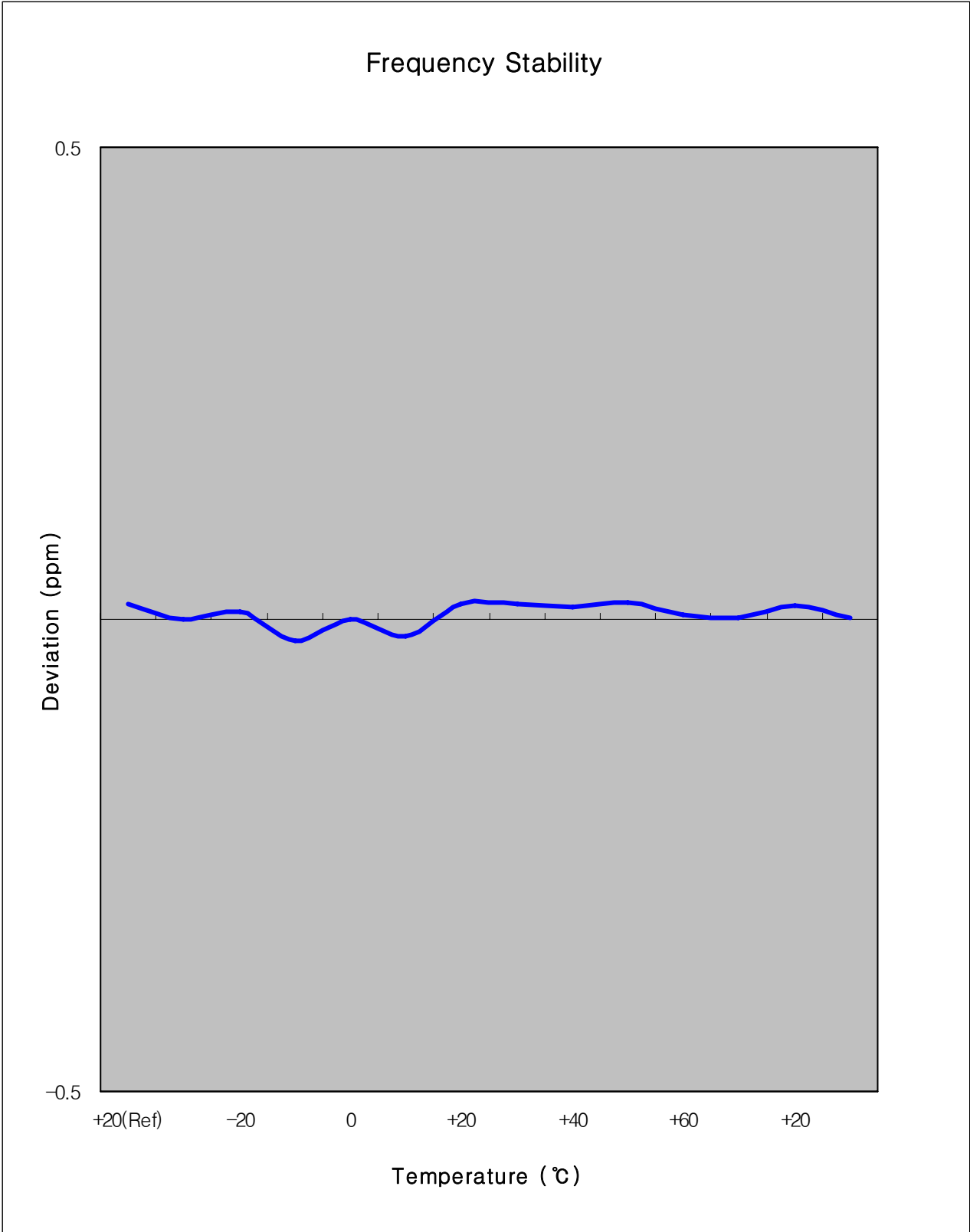
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

The data collected shows that the SAMSUNG 850/1900 GSM/GPRS/EDGE Phone with Bluetooth and WLAN.

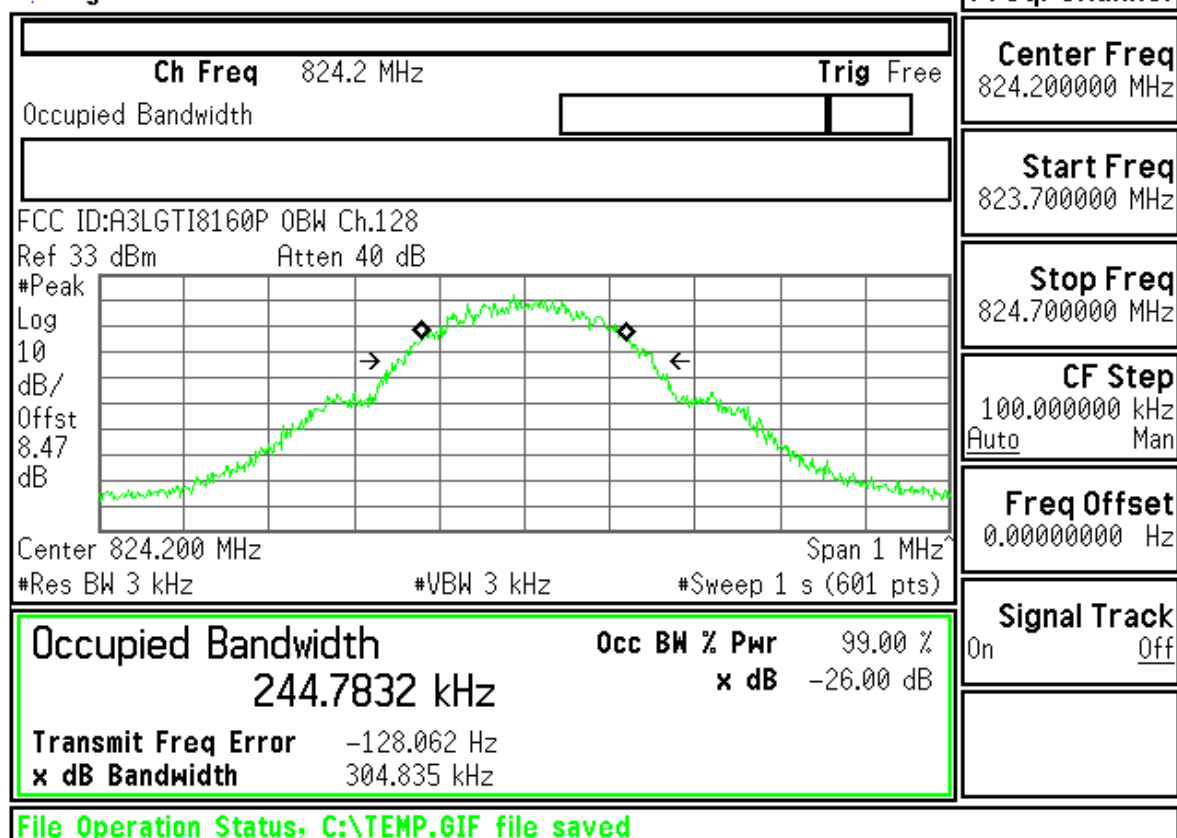
FCC ID : A3LGTI8160P complies with all the requirements of Parts 2,22,24 of the FCC Rules.

8. TEST PLOTS



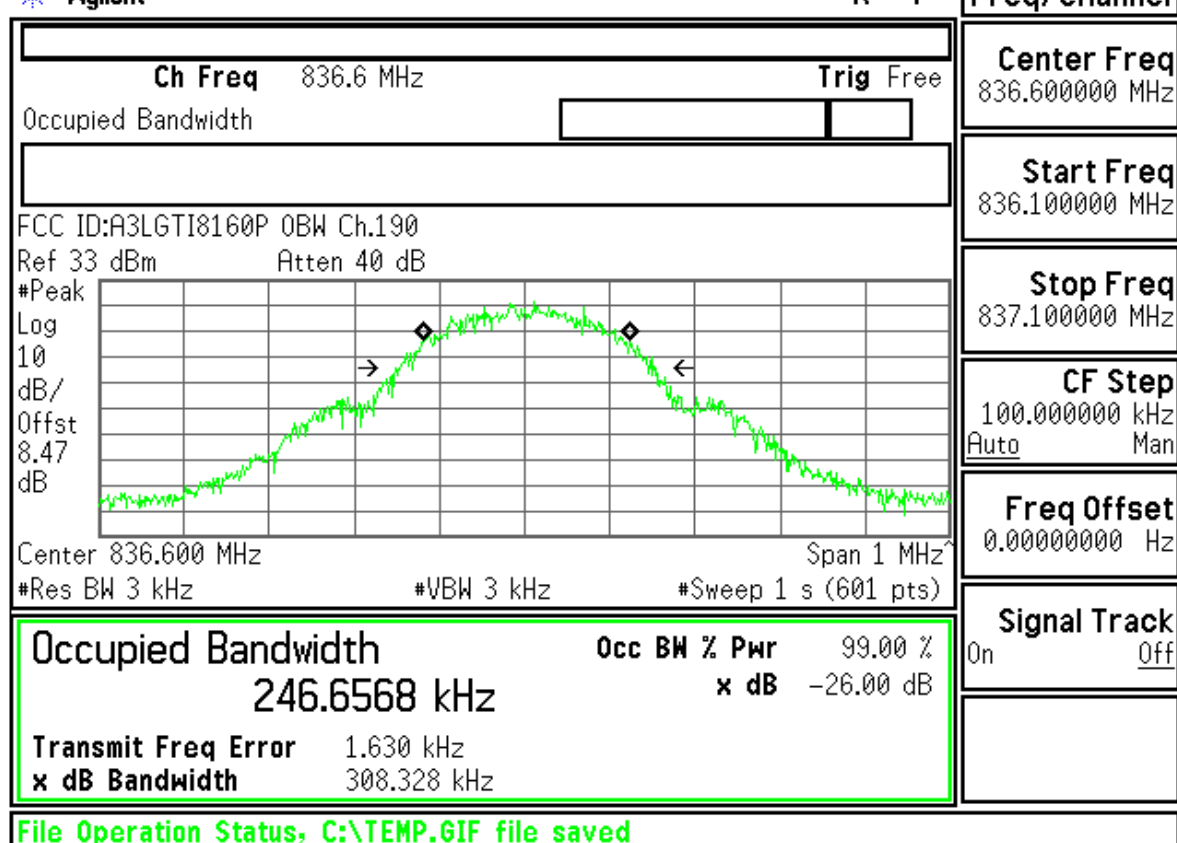
Agilent

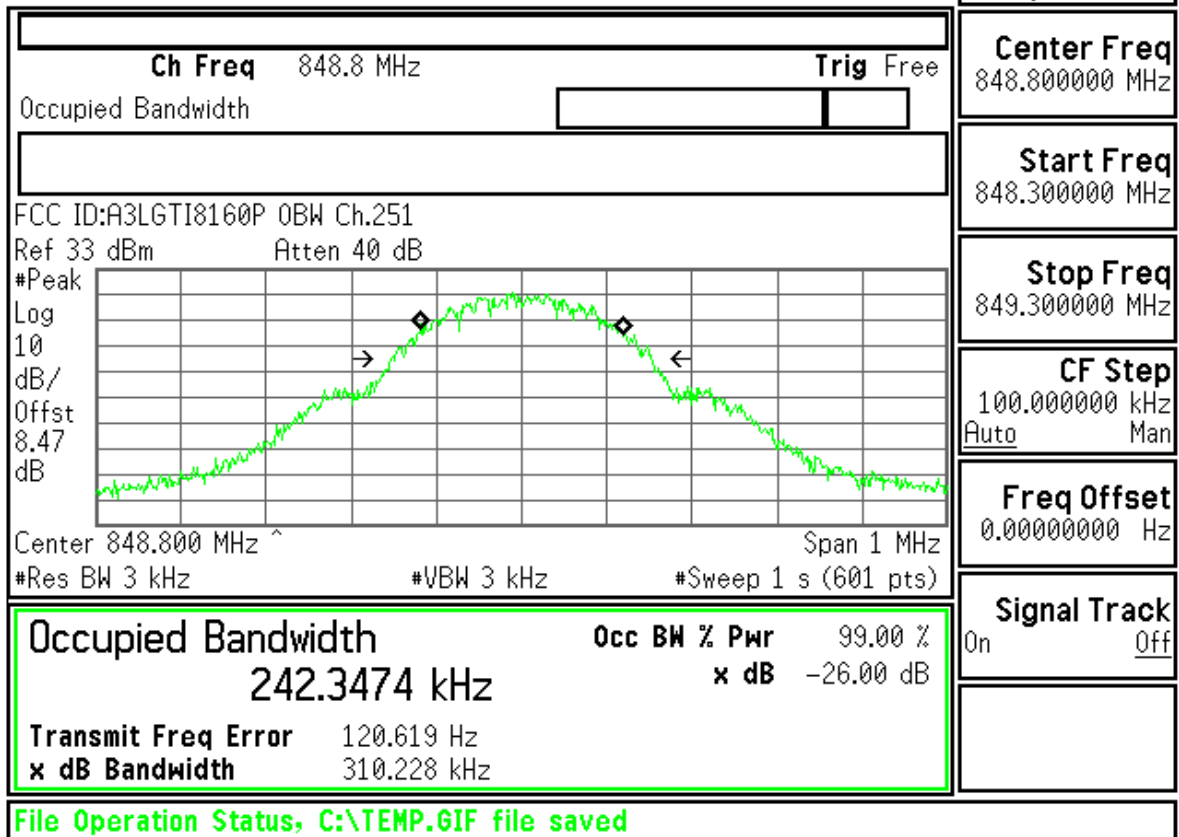
R T



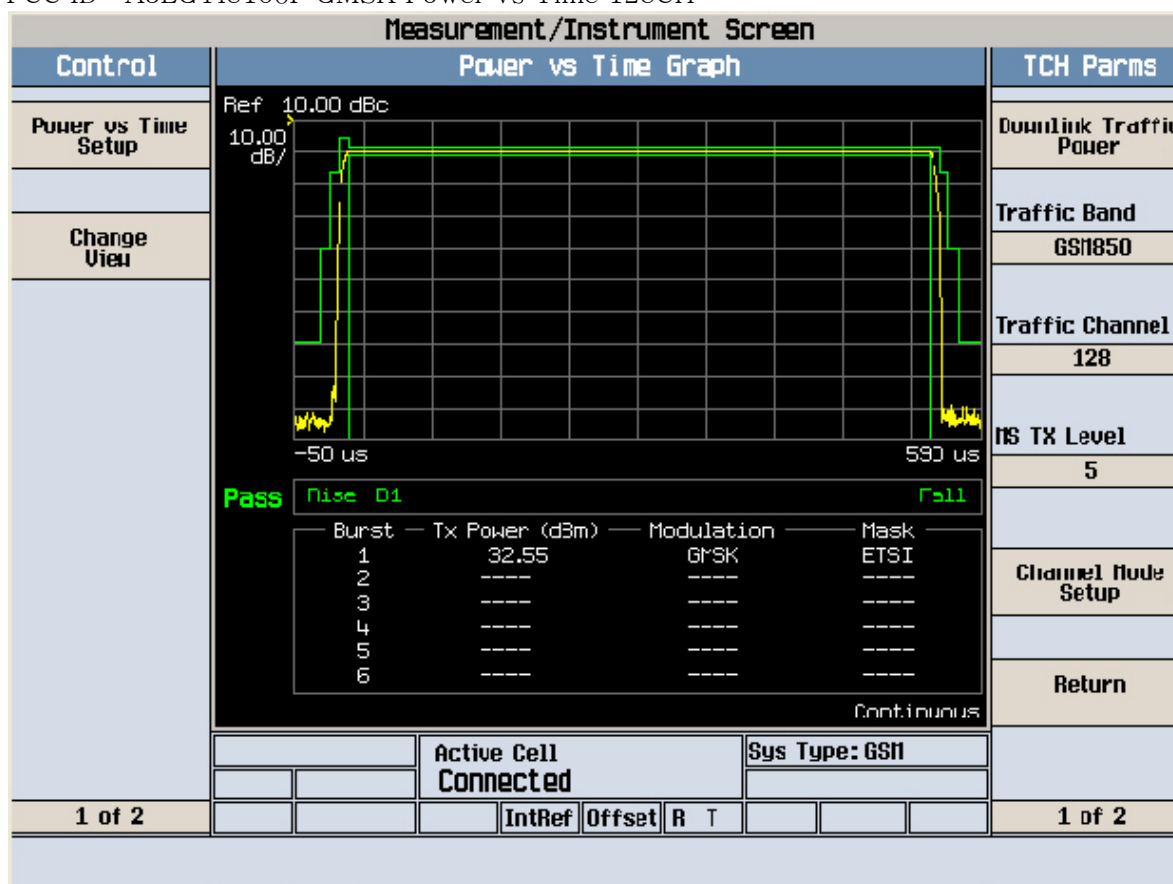
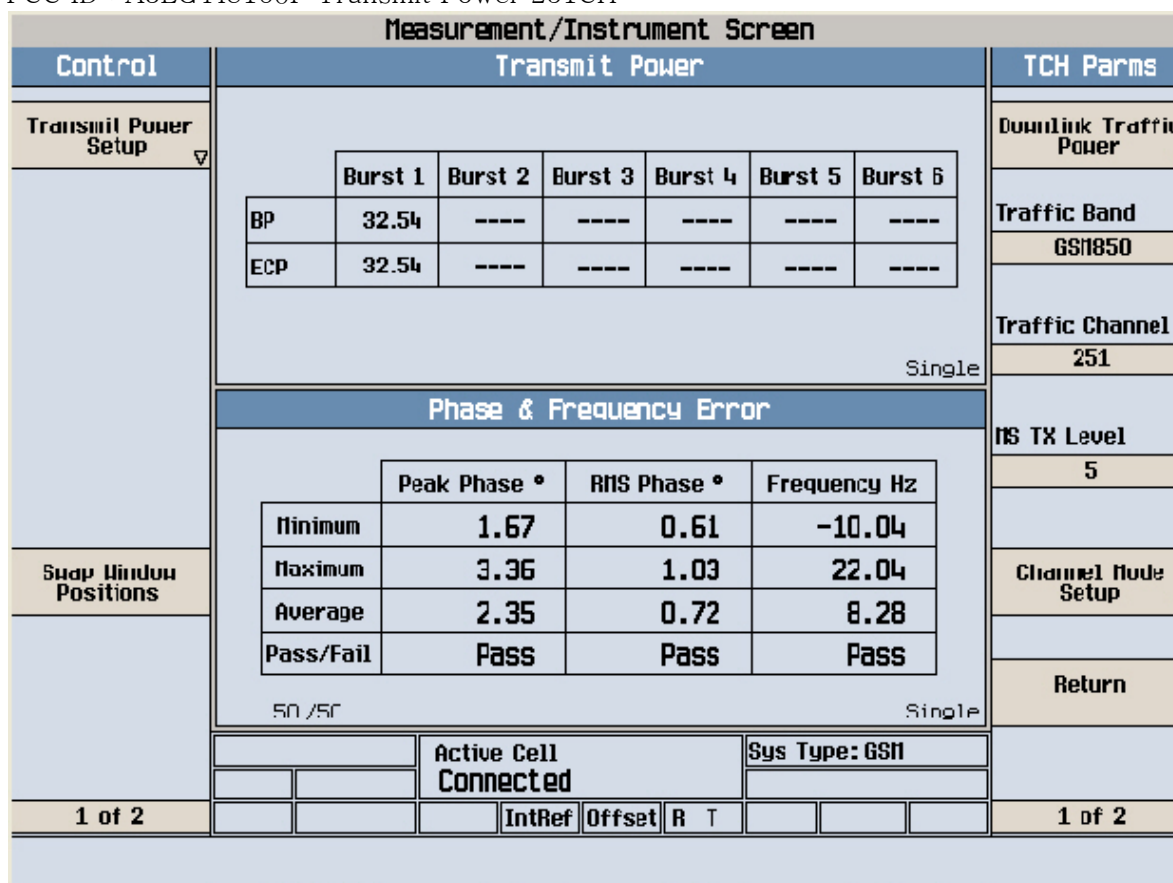
Agilent

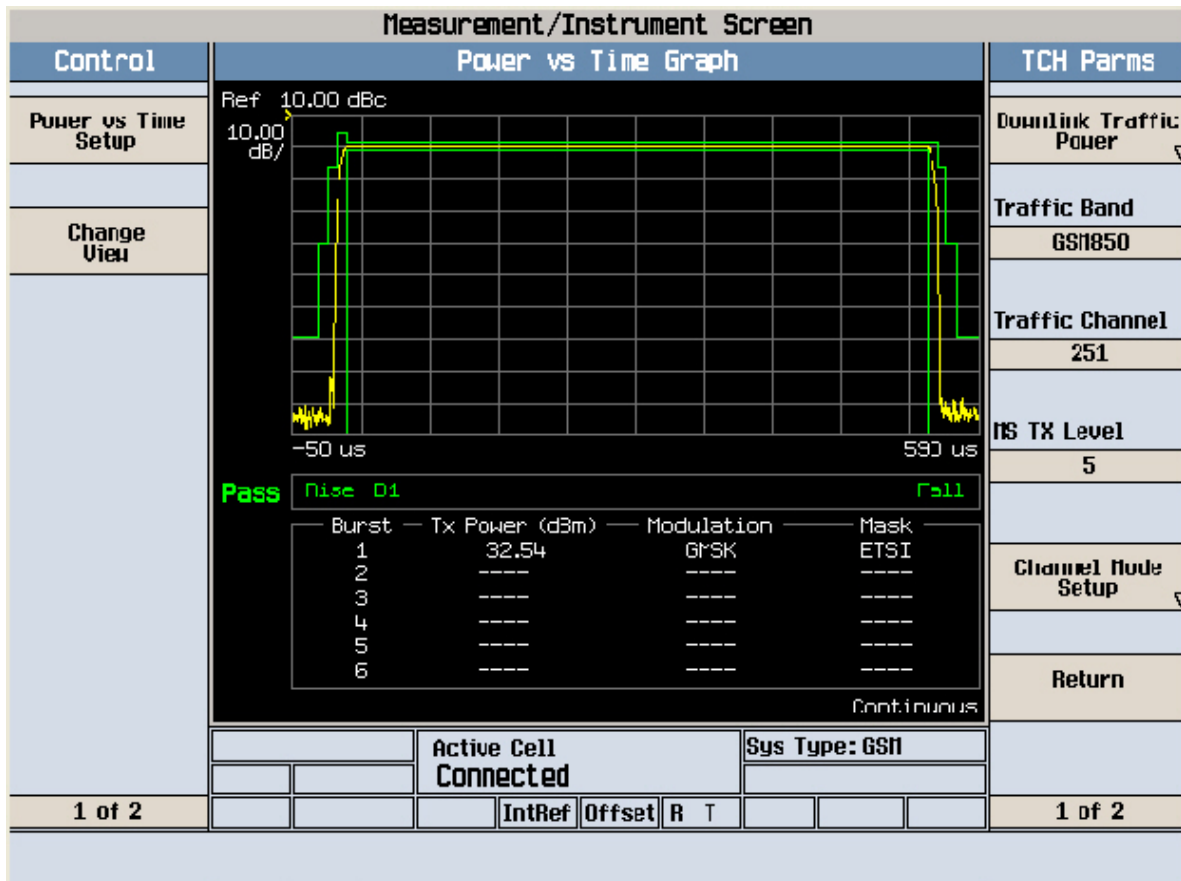
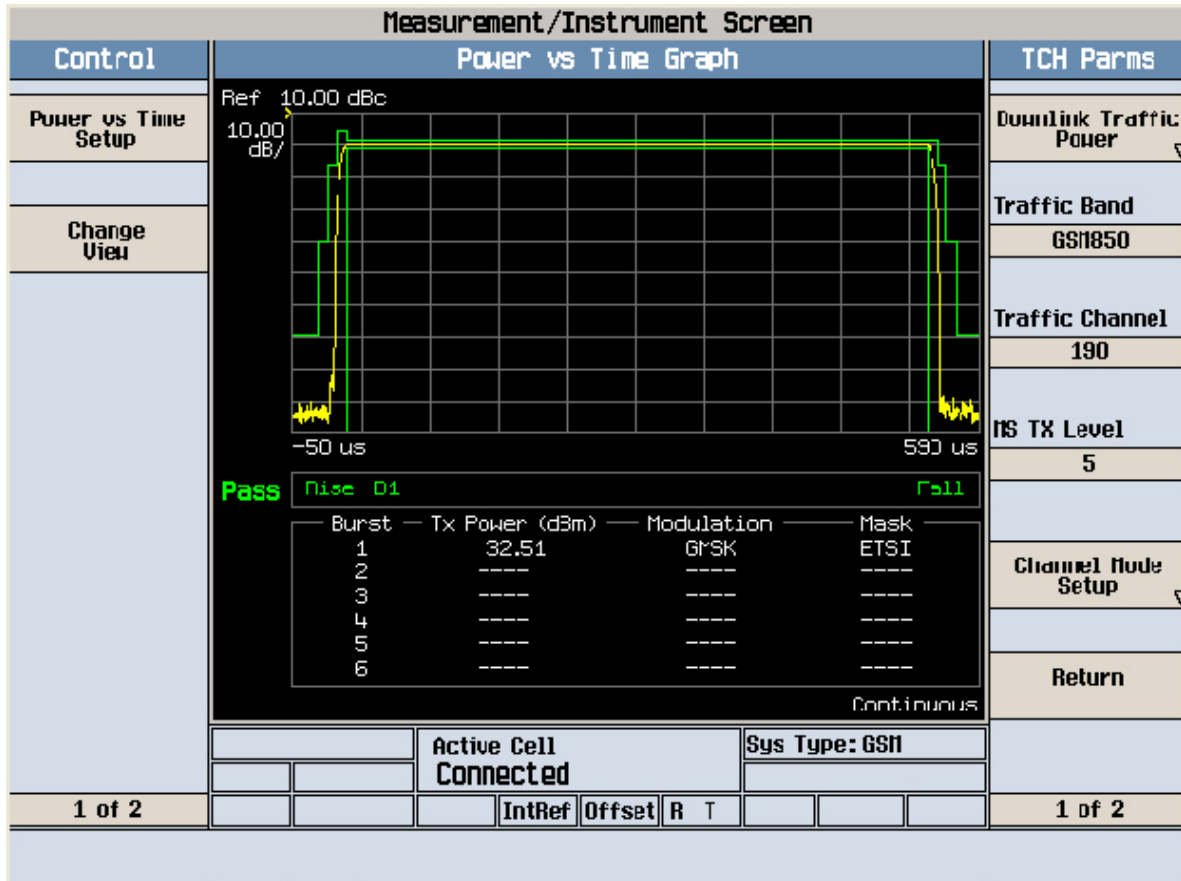
R T

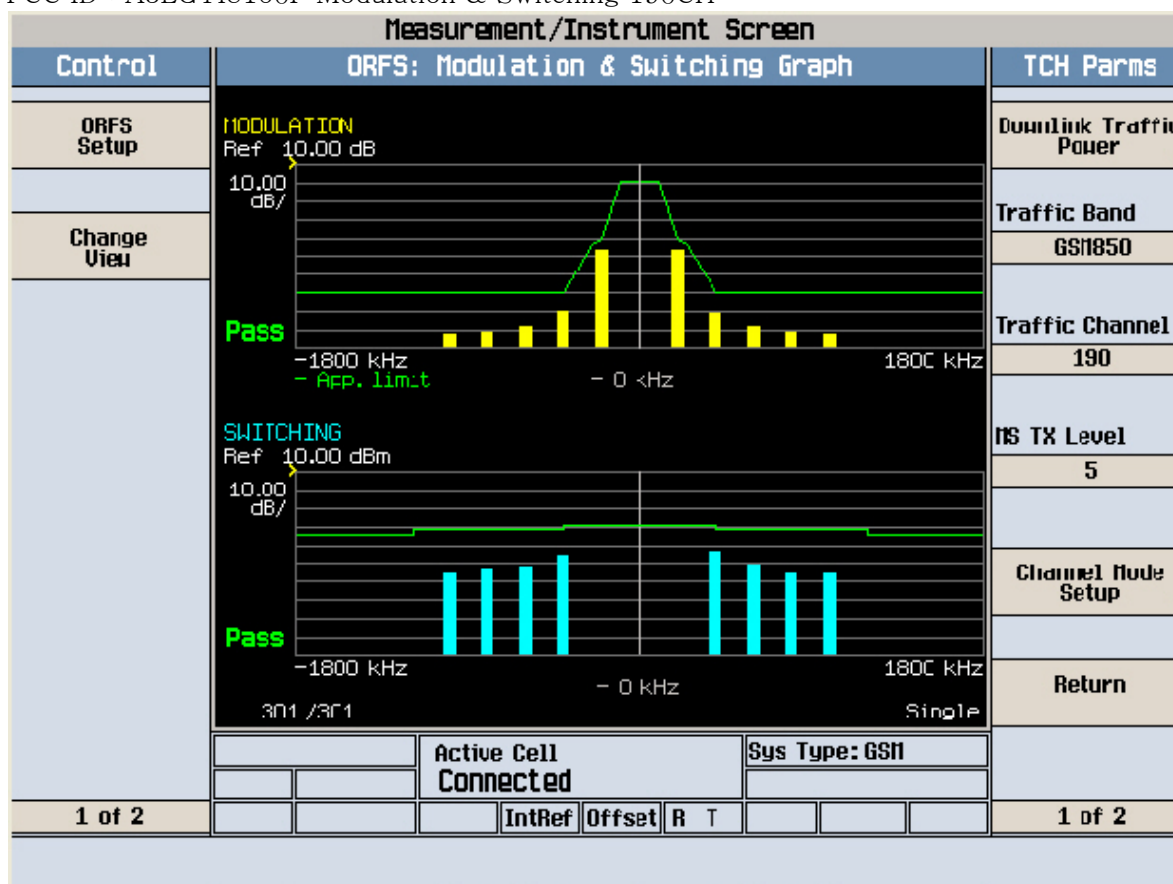
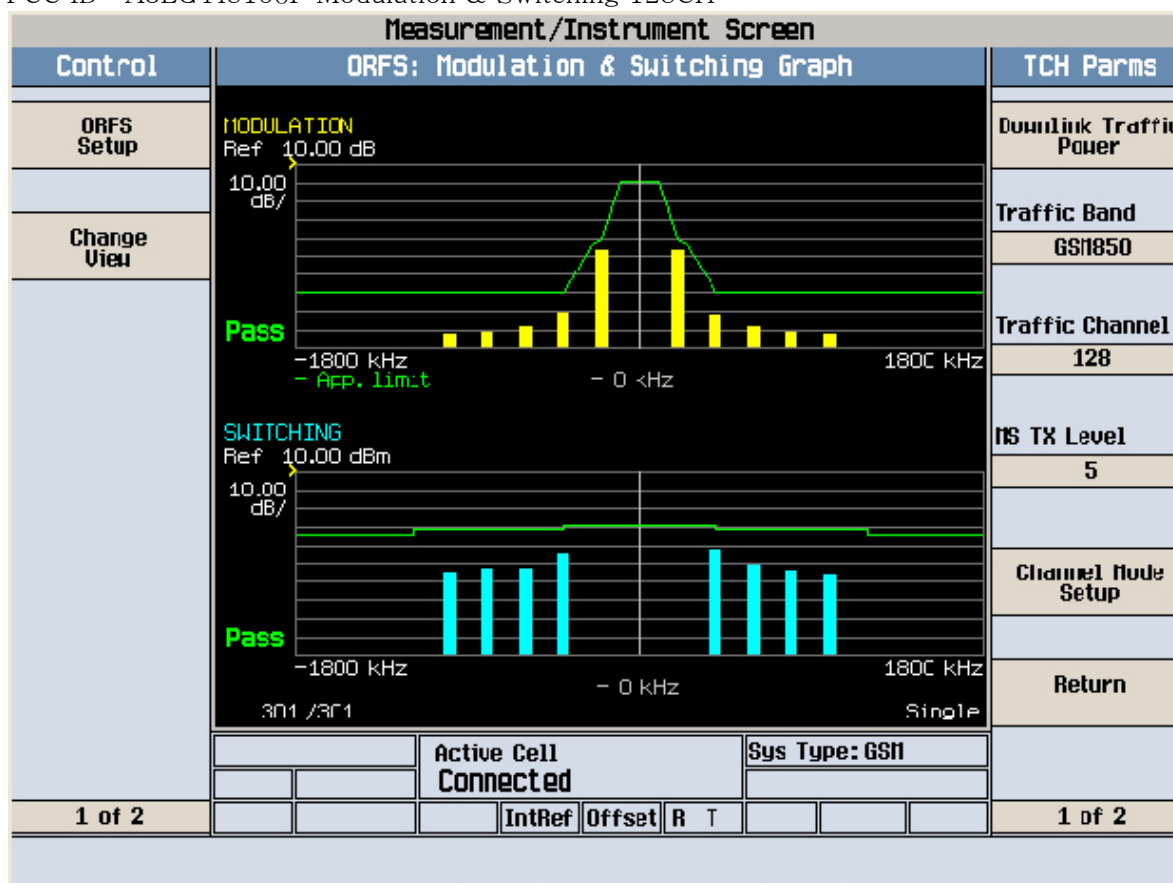


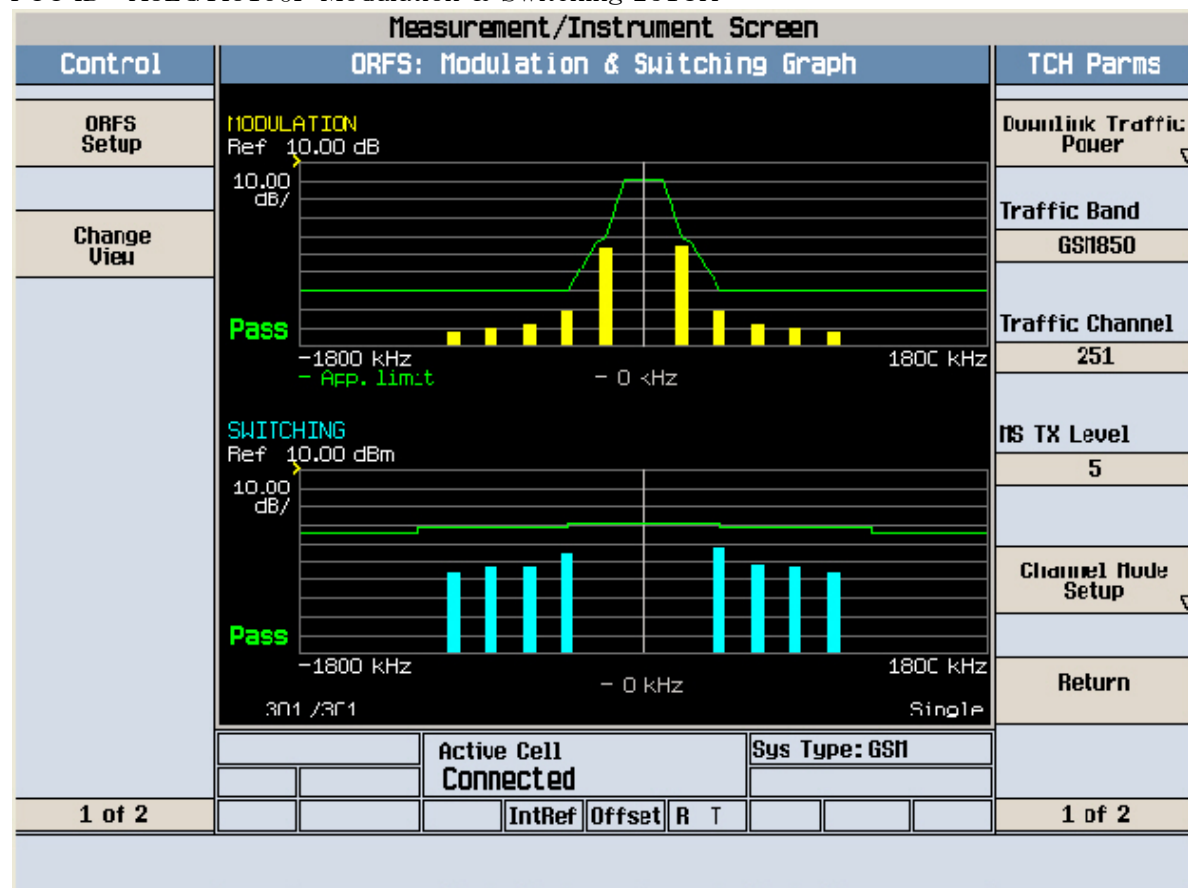


Measurement/Instrument Screen												
Control		Transmit Power							TCH Parms			
Transmit Power Setup ▾									Downlink Traffic Power ▾			
			Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	Traffic Band			
		BP	32.55	----	----	----	----	----	GSM850			
		ECP	32.55	----	----	----	----	----	Traffic Channel			
									128			
		Single										
Swap Window Positions		Phase & Frequency Error									RIS TX Level	
			Peak Phase °		RMS Phase °		Frequency Hz		5			
		Minimum	2.18		0.81		-4.22					
		Maximum	4.02		1.34		28.92		Channel Mode Setup ▾			
		Average	2.88		1.02		10.39					
		Pass/Fail	Pass		Pass		Pass		Return			
		50 / 50							Single			
				Active Cell Connected				Sys Type: GSM				
		1 of 2				IntRef	Offset	R	T			1 of 2









Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.128

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

AA

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

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

Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.128

Mkr1 673.5 MHz

Ref 33 dBm

Atten 40 dB

-33.17 dBm

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

AA

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

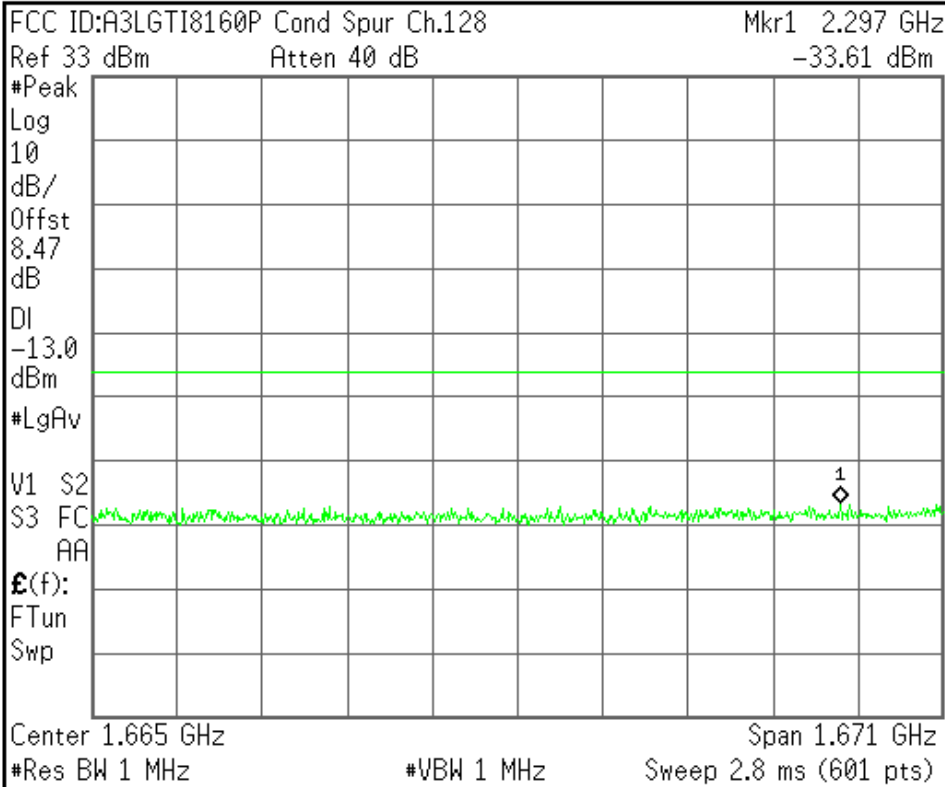
Signal Track
On Off

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

Agilent

R L

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

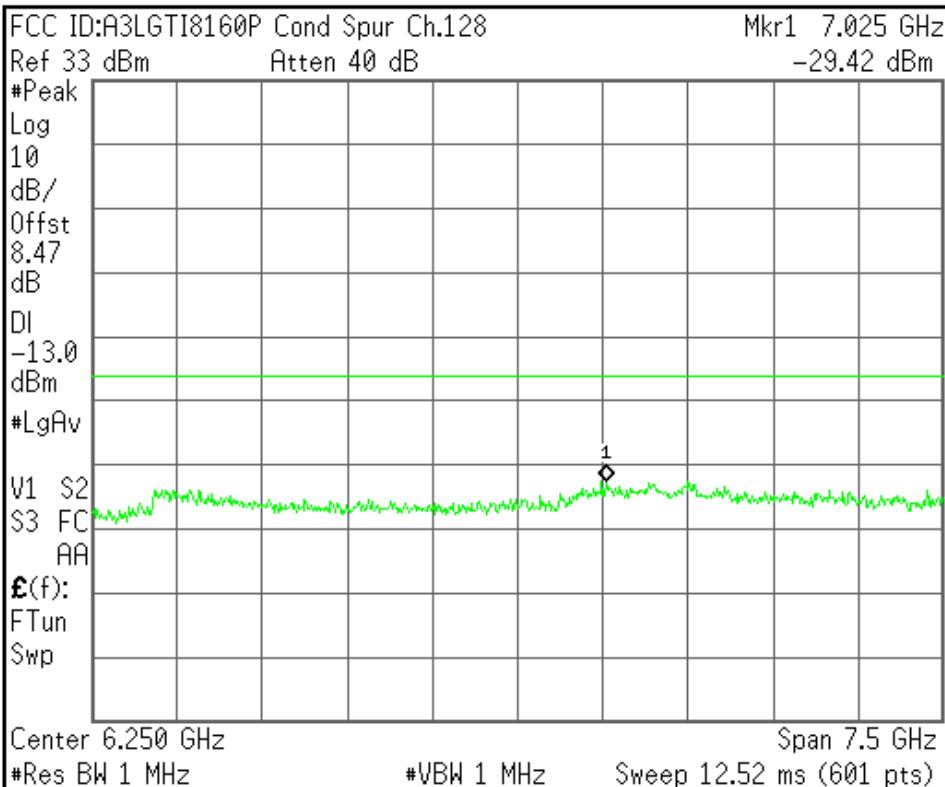
Signal Track
On Off

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

Agilent

R L

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 L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

AA

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

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

Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.190

Mkr1 355.1 MHz

Ref 33 dBm

Atten 40 dB

-34.11 dBm

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

V1 S2

S3 FC

AA

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
420.800000 MHz

Start Freq
10.0000000 MHz

Stop Freq
831.600000 MHz

CF Step
82.1600000 MHz
Auto Man

Freq Offset
0.00000000 Hz

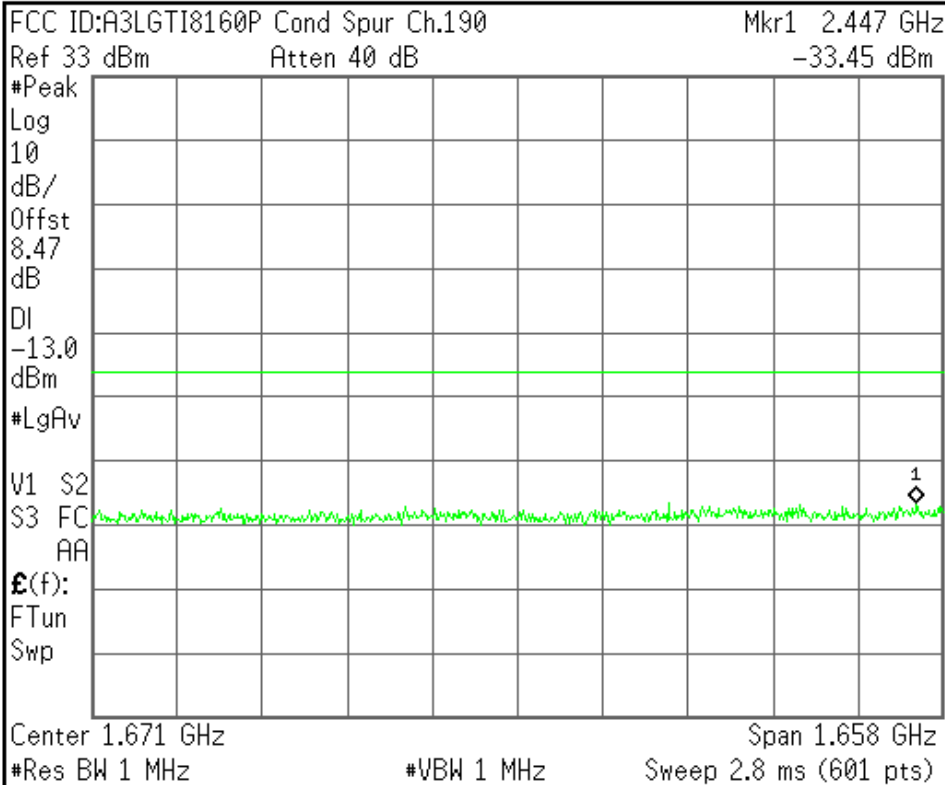
Signal Track
On Off

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

Agilent

R L

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

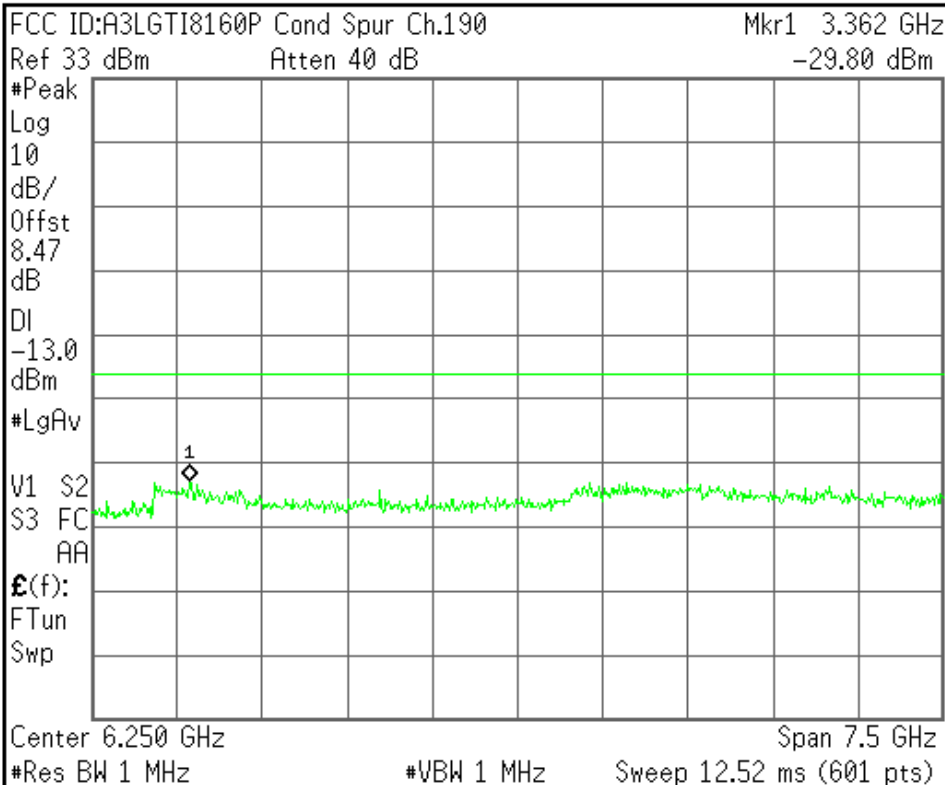
Signal Track
On Off

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

Agilent

R L

Freq/Channel



Center Freq
6.25000000 GHz

Start Freq
2.50000000 GHz

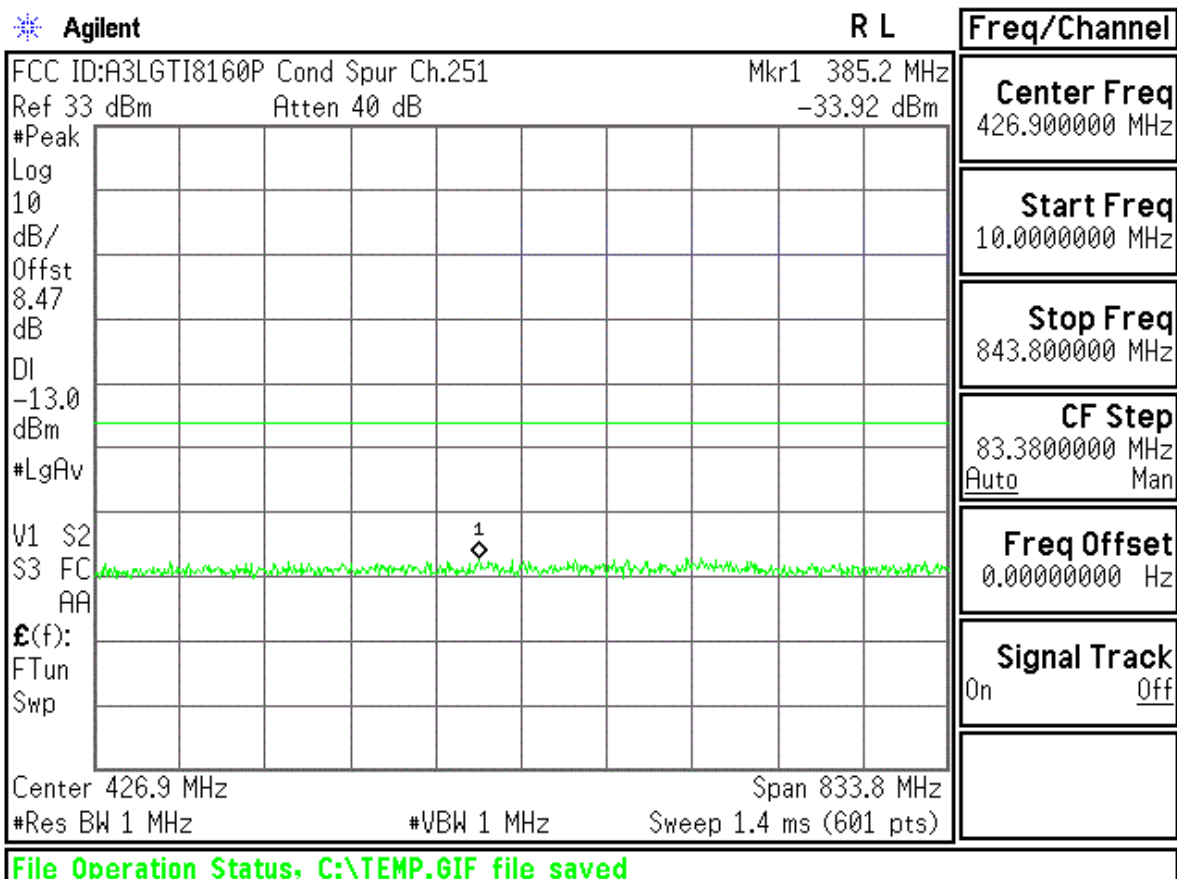
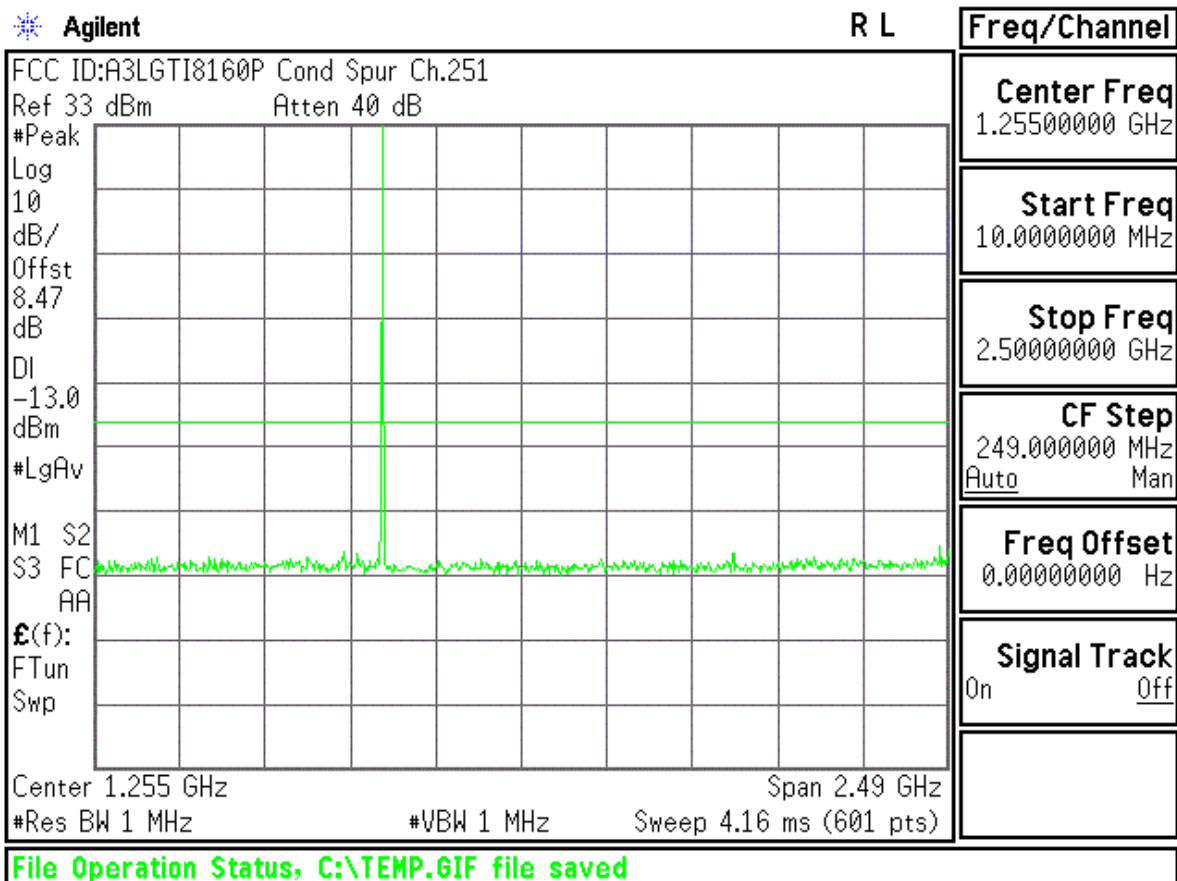
Stop Freq
10.00000000 GHz

CF Step
750.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

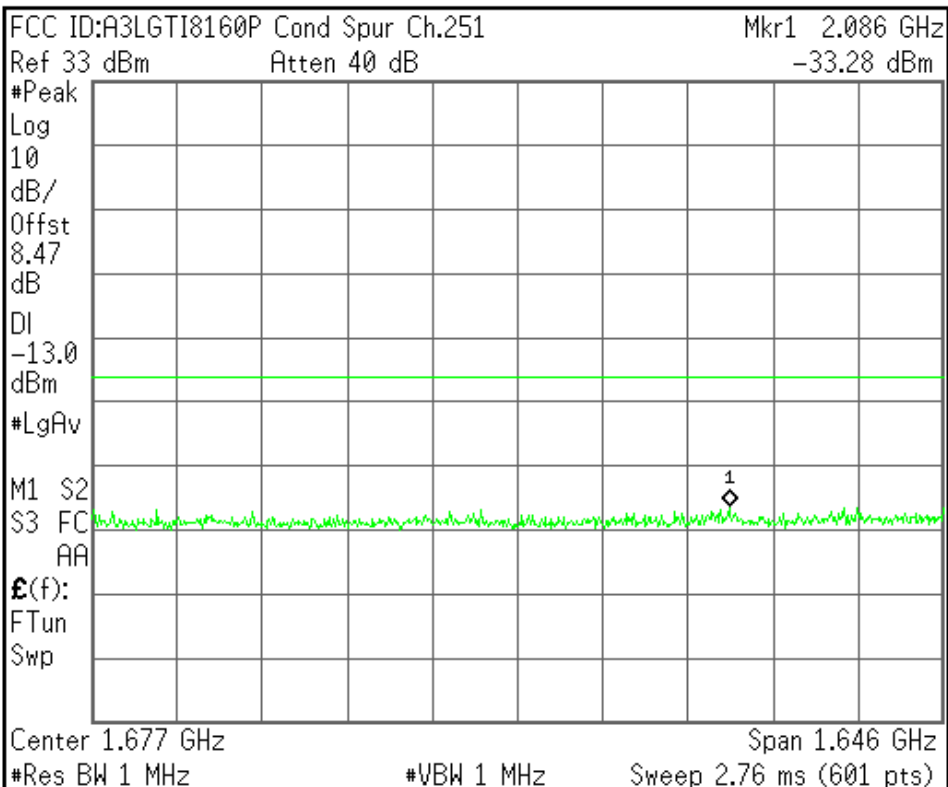
File Operation Status, C:\TEMP.GIF file saved



Agilent

R L

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

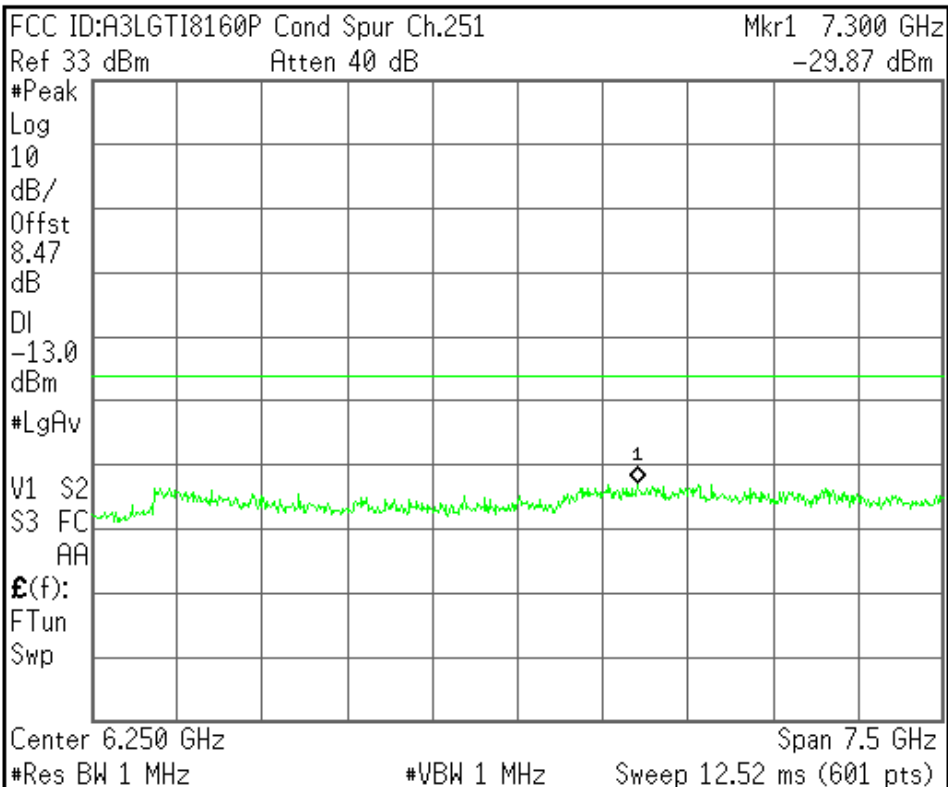
Signal Track
On Off

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

Agilent

R L

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 L

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.128

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

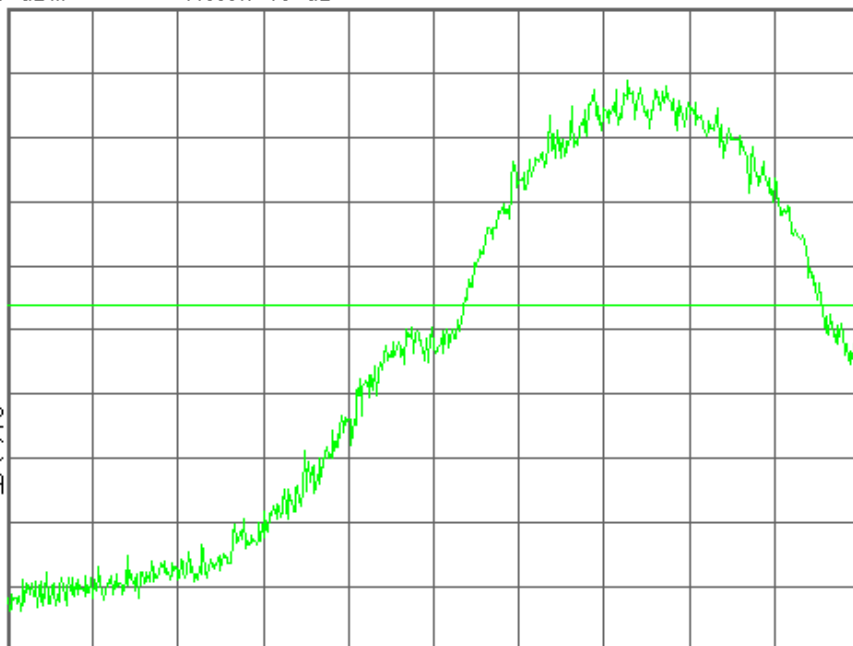
S3 FC

AA

$\mathcal{E}(f)$:

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

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R T

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.128

Mkr1 823.979 9 MHz

Ref 33 dBm

Atten 40 dB

-16.49 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

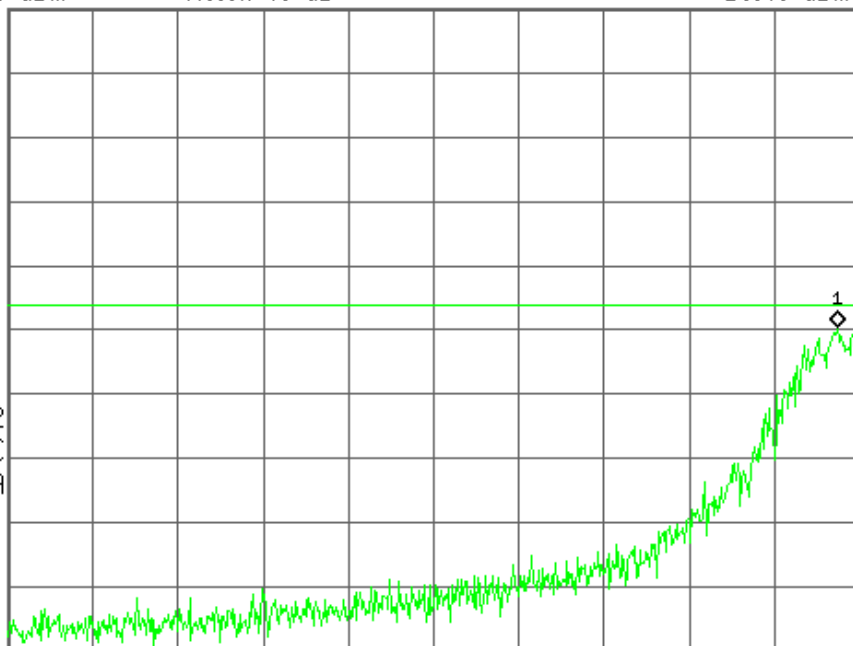
S3 FC

AA

$\mathcal{E}(f)$:

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:A3LGTI8160P Band Edge Ch.251

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

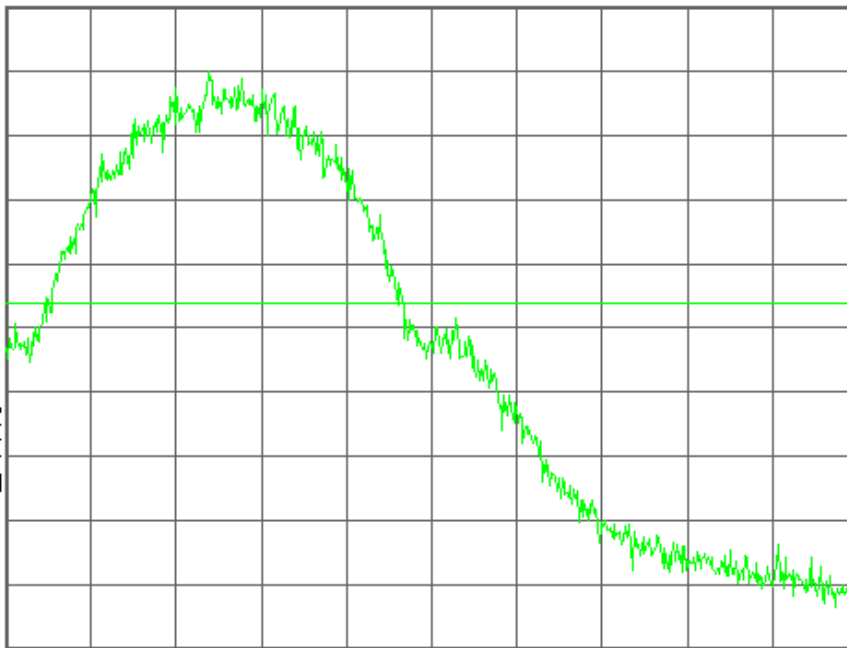
S3 FC

AA

$\mathcal{E}(f)$:

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:A3LGTI8160P Band Edge Ch.251

Mkr1 849.020 1 MHz

Ref 33 dBm

Atten 40 dB

-15.69 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

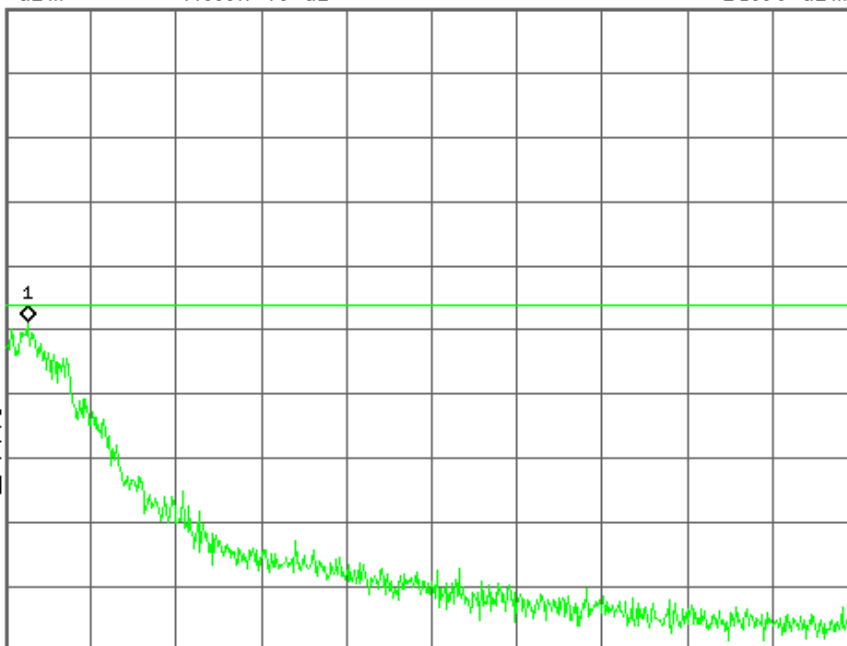
S3 FC

AA

$\mathcal{E}(f)$:

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

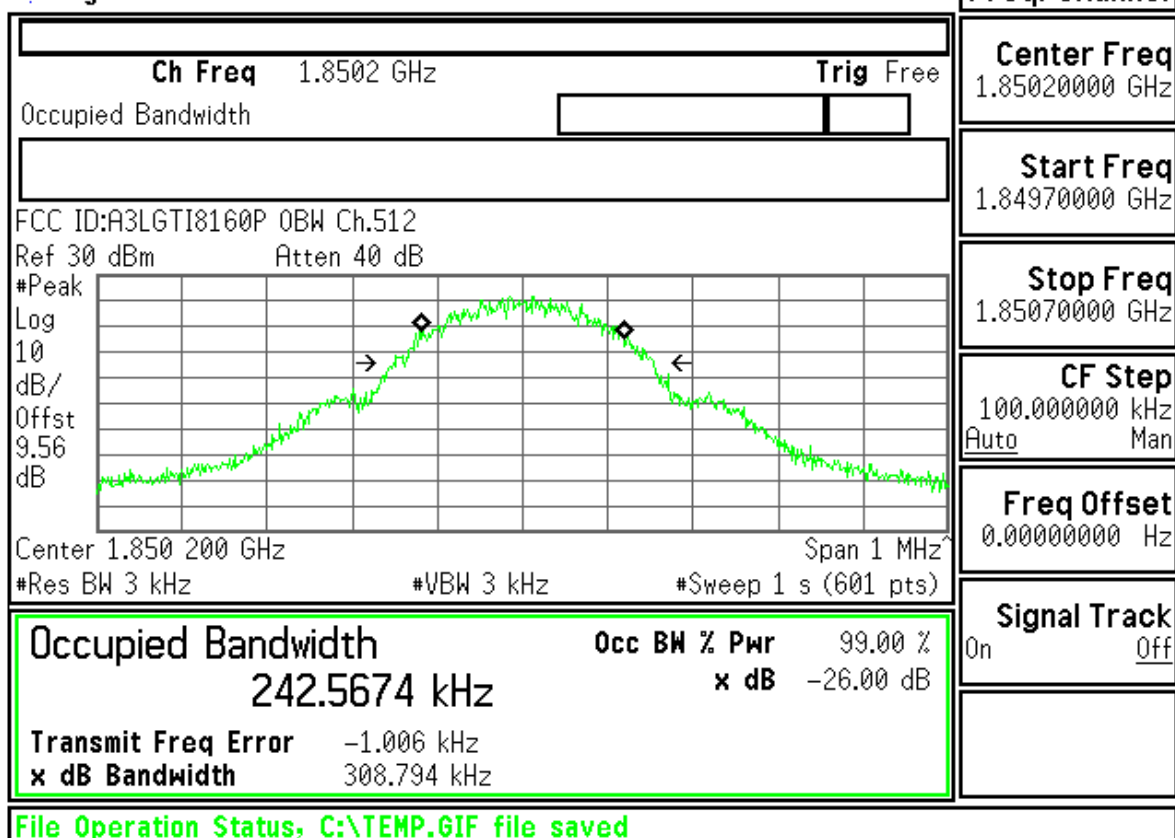
GSM1900



Agilent

R T

Freq/Channel


Center Freq
 1.85020000 GHz

Start Freq
 1.84970000 GHz

Stop Freq
 1.85070000 GHz

CF Step
 100.000000 kHz
 Auto Man

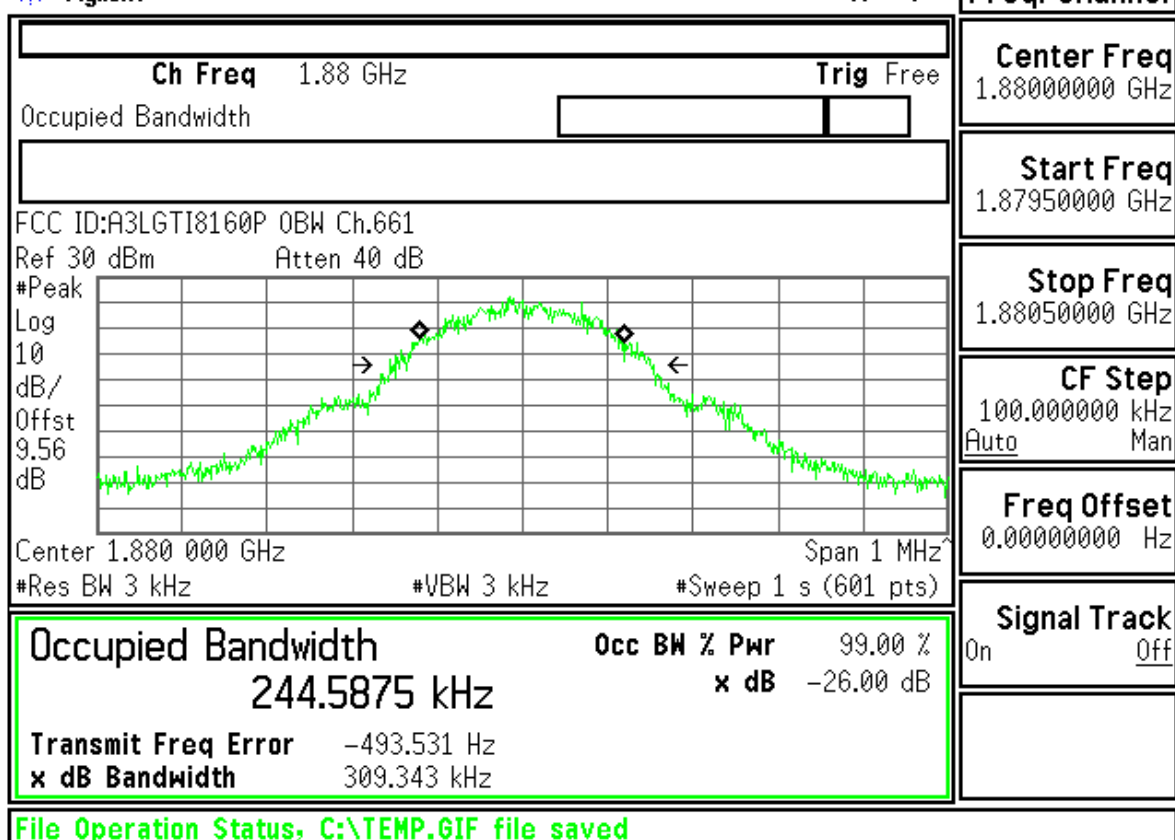
Freq Offset
 0.00000000 Hz

Signal Track
 On Off


Agilent

R T

Freq/Channel


Center Freq
 1.88000000 GHz

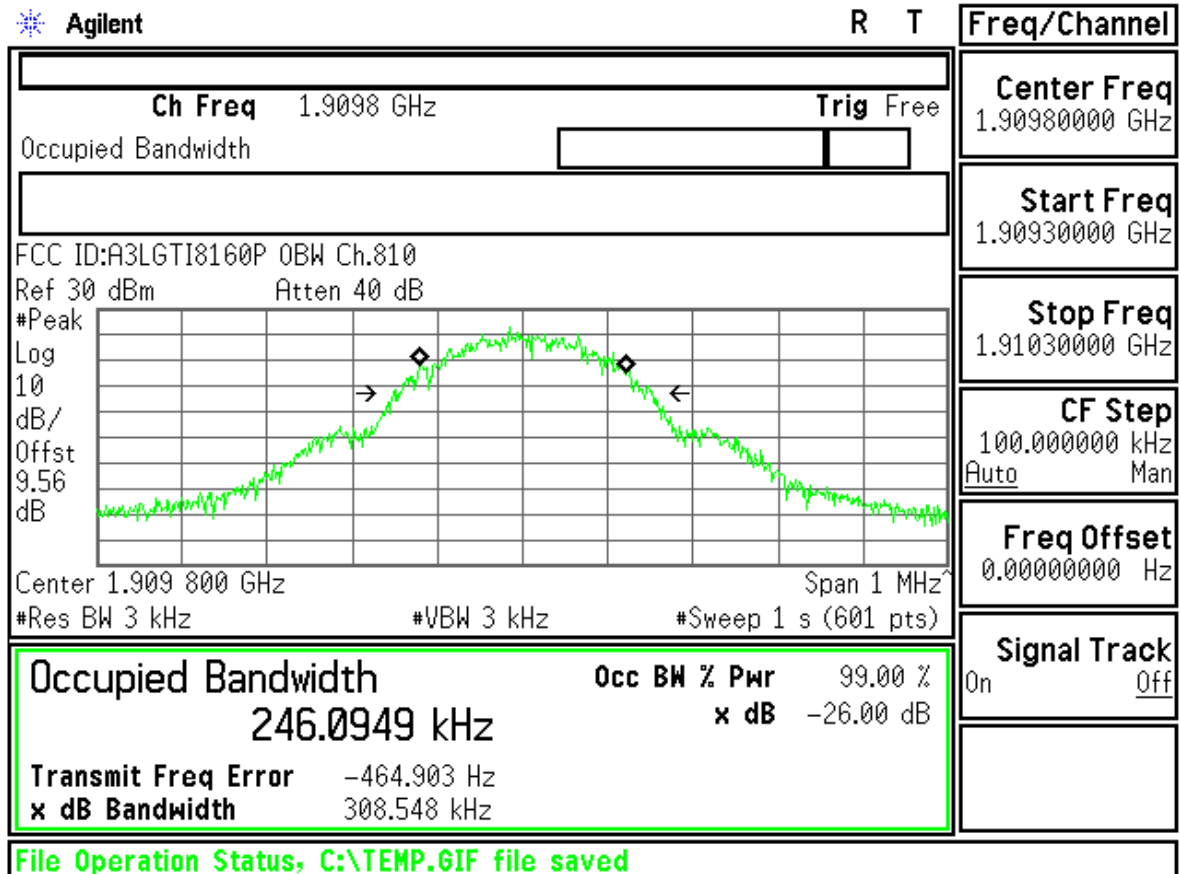
Start Freq
 1.87950000 GHz

Stop Freq
 1.88050000 GHz

CF Step
 100.000000 kHz
 Auto Man

Freq Offset
 0.00000000 Hz

Signal Track
 On Off

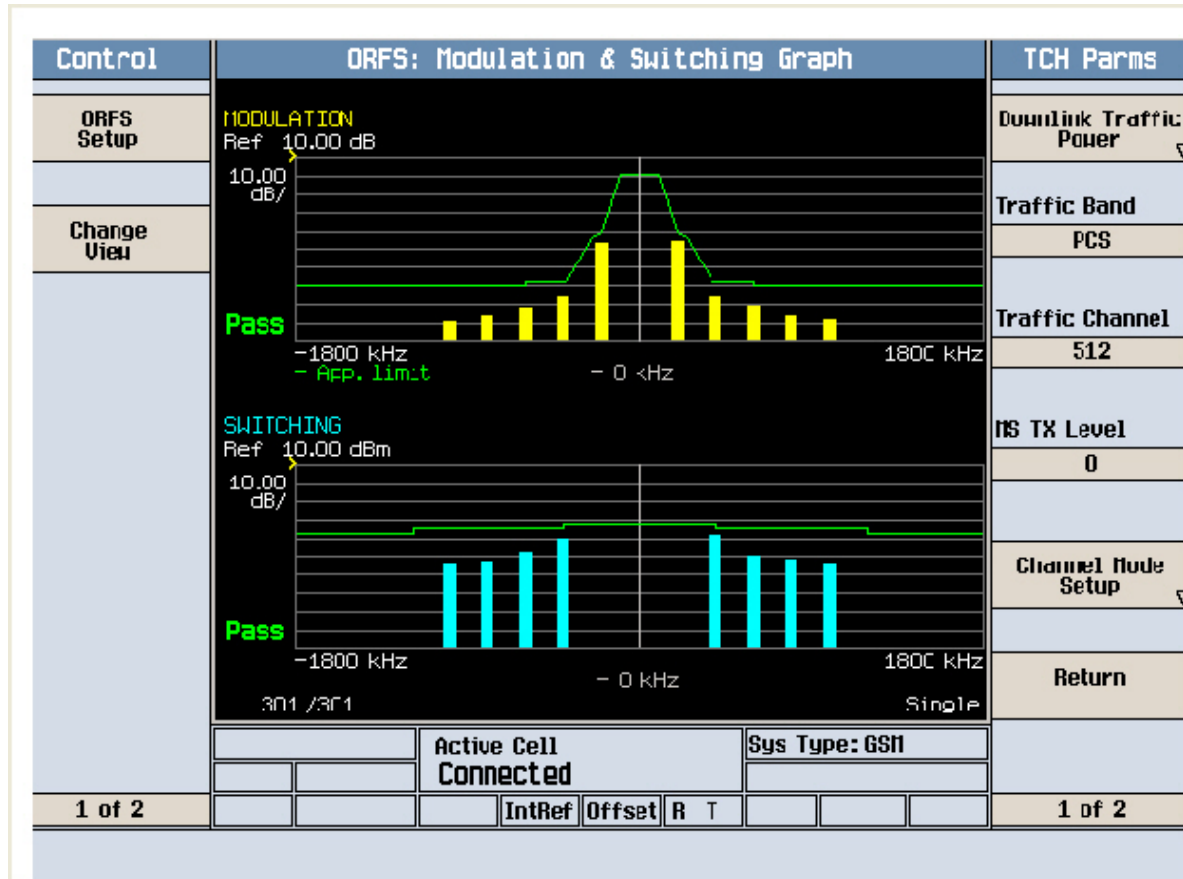
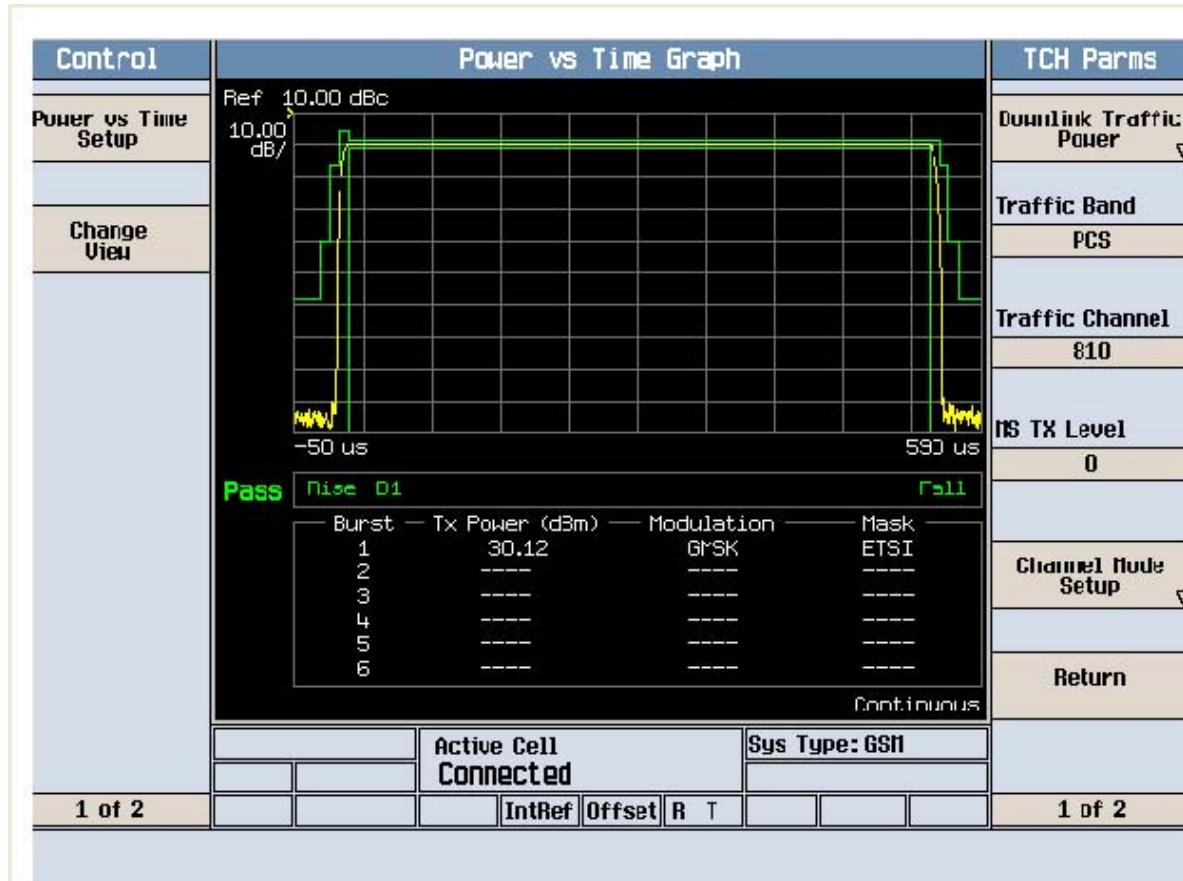


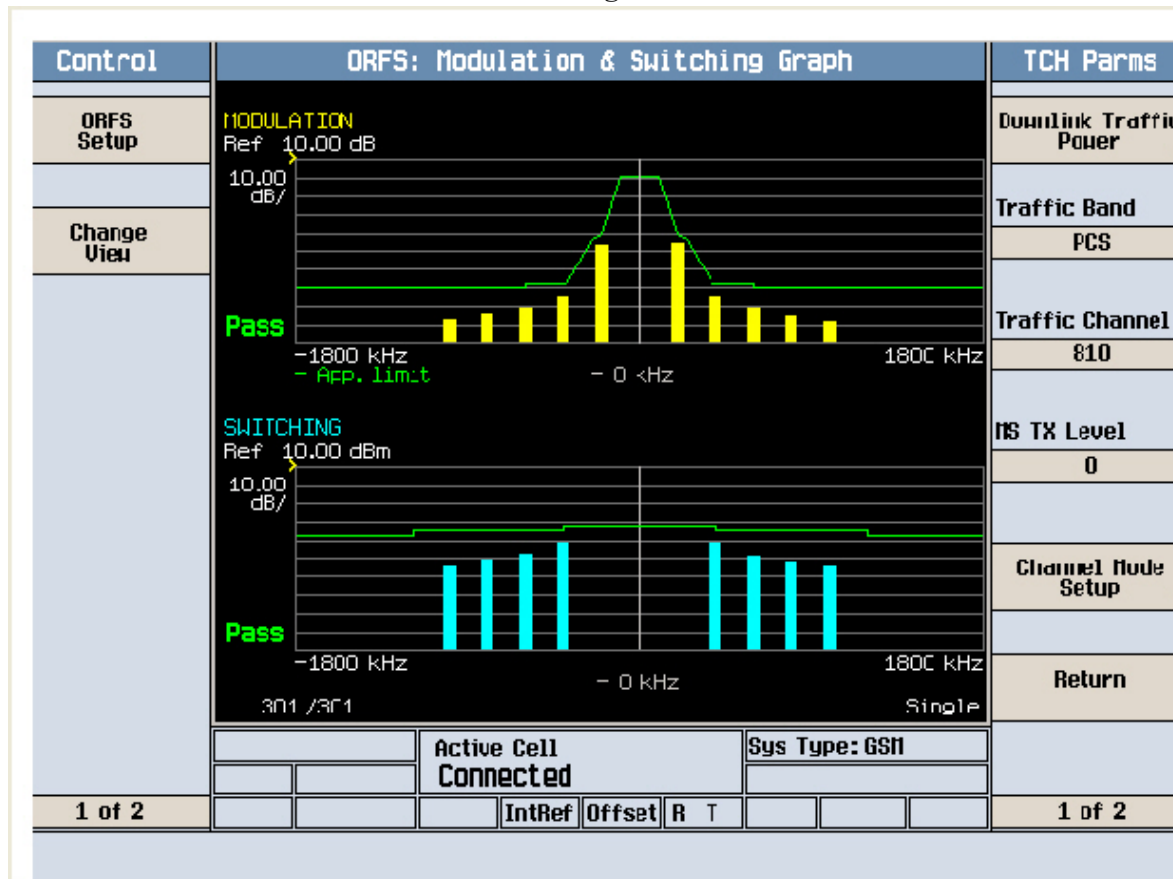
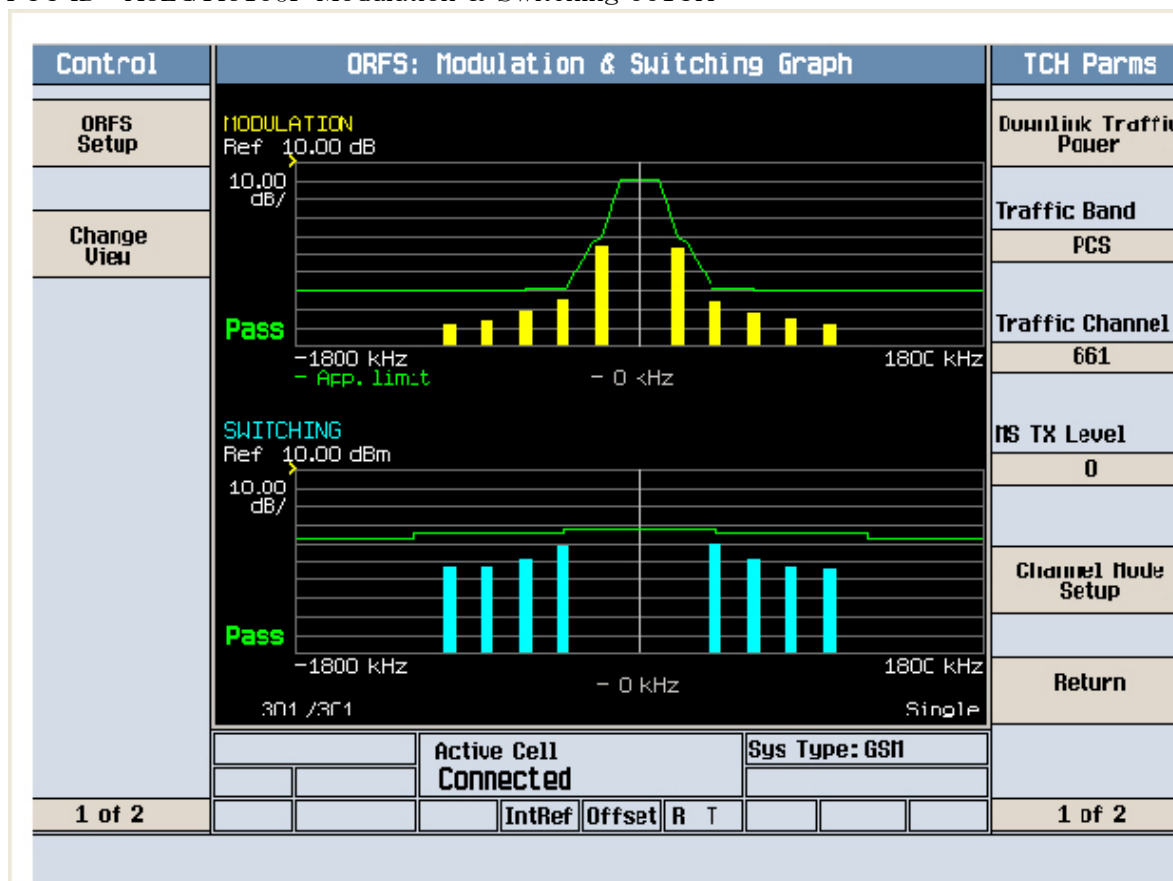
FCC ID : A3LGTI8160P Transmit Power 512CH

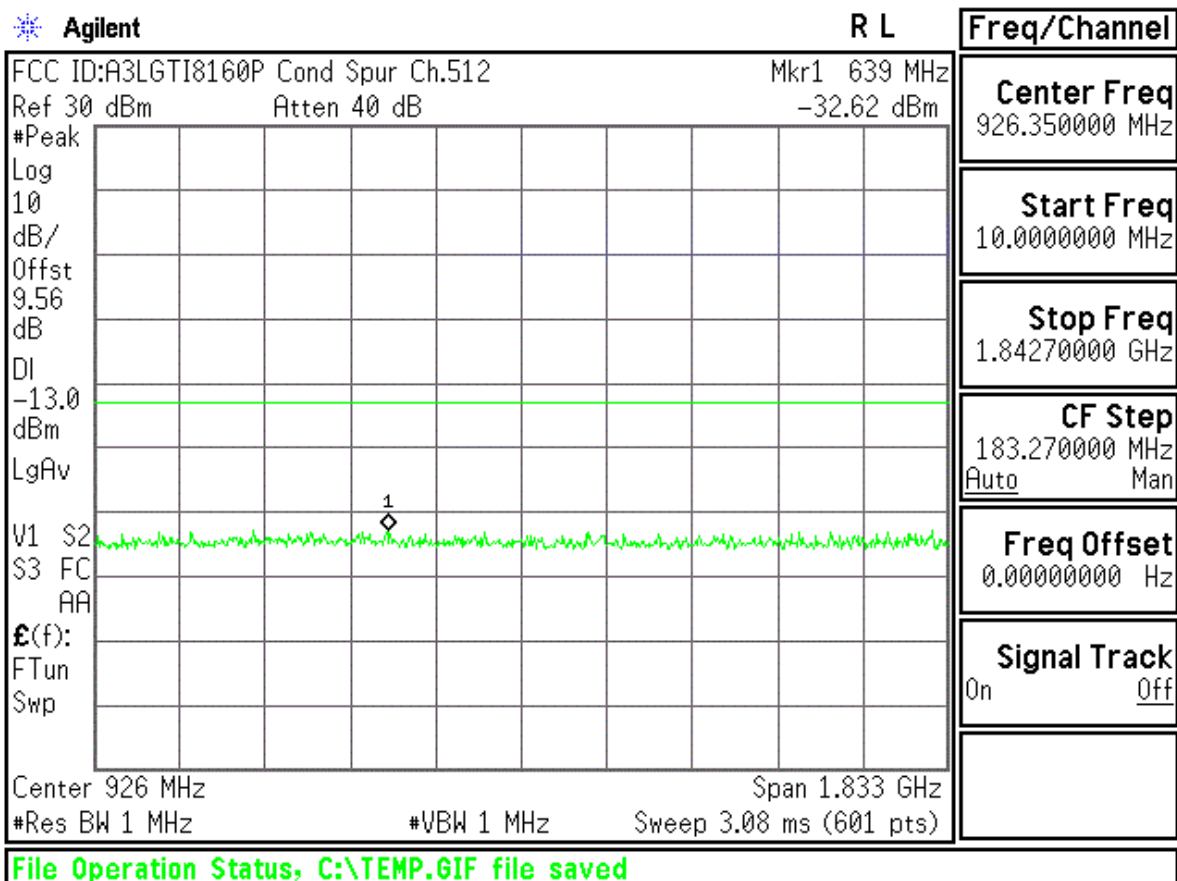
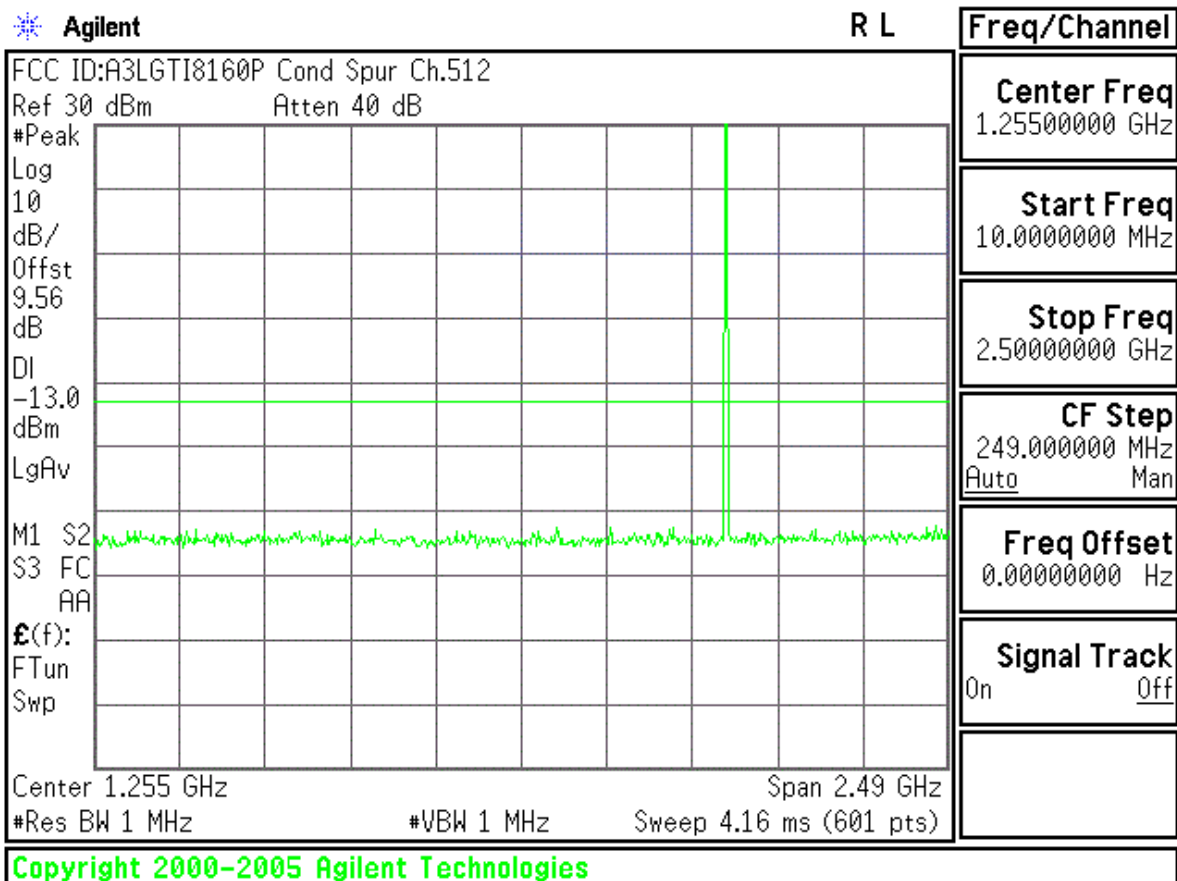
Measurement/Instrument Screen																																										
Control		Transmit Power									TCH Parms																															
Transmit Power Setup		<table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td><td>Burst 5</td><td>Burst 6</td></tr><tr><td>BP</td><td>30.02</td><td>----</td><td>----</td><td>----</td><td>----</td><td>----</td></tr><tr><td>ECP</td><td>30.02</td><td>----</td><td>----</td><td>----</td><td>----</td><td>----</td></tr></table>										Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	BP	30.02	----	----	----	----	----	ECP	30.02	----	----	----	----	----	Downlink Traffic Power										
	Burst 1										Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																											
BP	30.02										----	----	----	----	----																											
ECP	30.02										----	----	----	----	----																											
		Traffic Band																																								
		PCS																																								
		Traffic Channel																																								
		Single									512																															
		Phase & Frequency Error									MS TX Level																															
Swap Window Positions		<table><tr><td></td><td>Peak Phase °</td><td colspan="2">RMS Phase °</td><td colspan="2">Frequency Hz</td></tr><tr><td>Minimum</td><td>2.81</td><td colspan="2">1.06</td><td colspan="2">-20.81</td></tr><tr><td>Maximum</td><td>5.50</td><td colspan="2">1.53</td><td colspan="2">12.78</td></tr><tr><td>Average</td><td>3.79</td><td colspan="2">1.24</td><td colspan="2">-3.01</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td colspan="2">Pass</td><td colspan="2">Pass</td></tr></table>										Peak Phase °	RMS Phase °		Frequency Hz		Minimum	2.81	1.06		-20.81		Maximum	5.50	1.53		12.78		Average	3.79	1.24		-3.01		Pass/Fail	Pass	Pass		Pass		0	
												Peak Phase °	RMS Phase °		Frequency Hz																											
											Minimum	2.81	1.06		-20.81																											
											Maximum	5.50	1.53		12.78																											
											Average	3.79	1.24		-3.01																											
Pass/Fail	Pass	Pass		Pass																																						
		50 / 50									Channel Mode Setup																															
		Single									Return																															
		<table><tr><td colspan="2"></td><td colspan="4">Active Cell Connected</td><td colspan="3">Sys Type: GSM</td></tr><tr><td></td><td></td><td colspan="4"></td><td colspan="3"></td></tr></table>											Active Cell Connected				Sys Type: GSM																									
		Active Cell Connected				Sys Type: GSM																																				
1 of 2		<table><tr><td></td><td></td><td></td><td>IntRef</td><td>Offset</td><td>R</td><td>T</td><td></td><td></td><td></td></tr></table>												IntRef	Offset	R	T				1 of 2																					
			IntRef	Offset	R	T																																				

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	30.04	----	----	----	----	----																							
	ECP	30.04	----	----	----	----	----																							
								Traffic Band																						
								PCS																						
								Traffic Channel																						
								661																						
								MS TX Level																						
								0																						
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							Return																							
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		Peak Phase °	RMS Phase °	Frequency Hz																										
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	Pass/Fail	Pass	Pass	Pass																										
	50 / 50							Single																						
			Active Cell Connected			Sys Type: GSM																								
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Measurement/Instrument Screen																														
Control	Transmit Power							TCH Parms																						
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		Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																							
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		Peak Phase °	RMS Phase °	Frequency Hz																										
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	Pass/Fail	Pass	Pass	Pass																										
	50 / 50							Single																						
			Active Cell Connected			Sys Type: GSM																								
	1 of 2			IntRef	Offset	R T			1 of 2																					



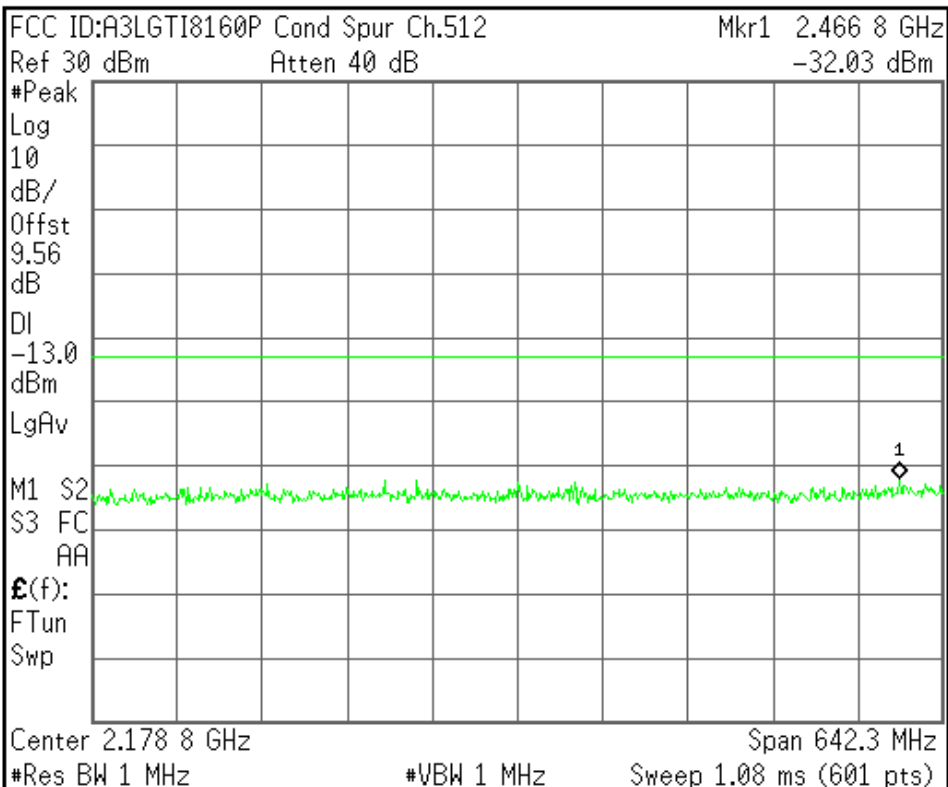




Agilent

R L

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

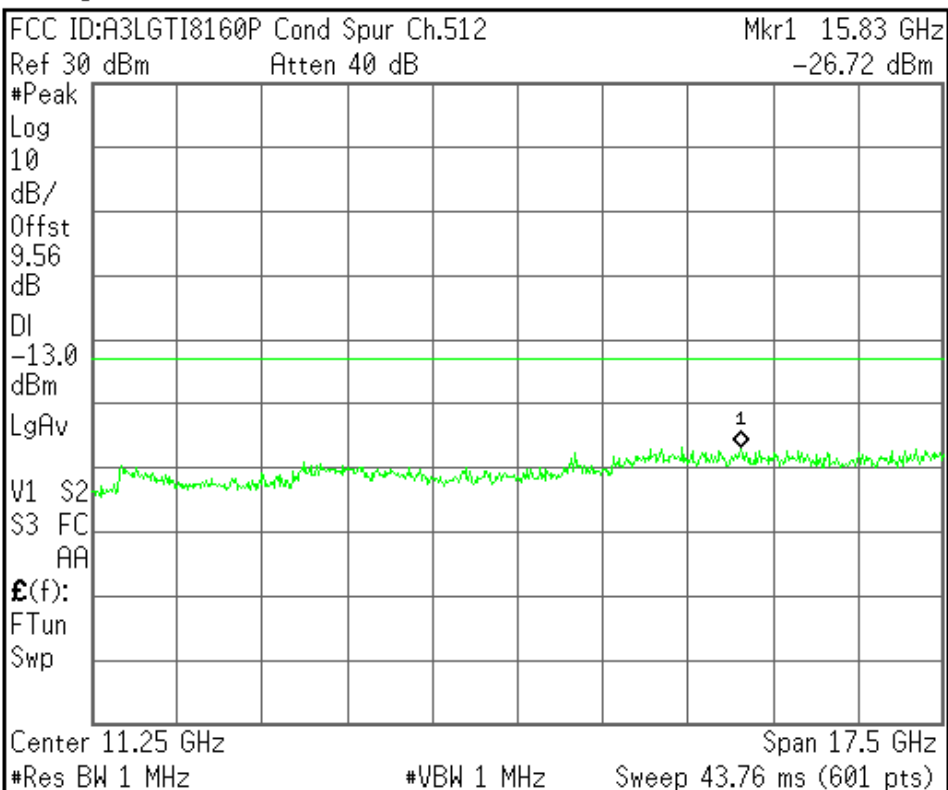
Signal Track
On Off

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 L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.661

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

M1 S2

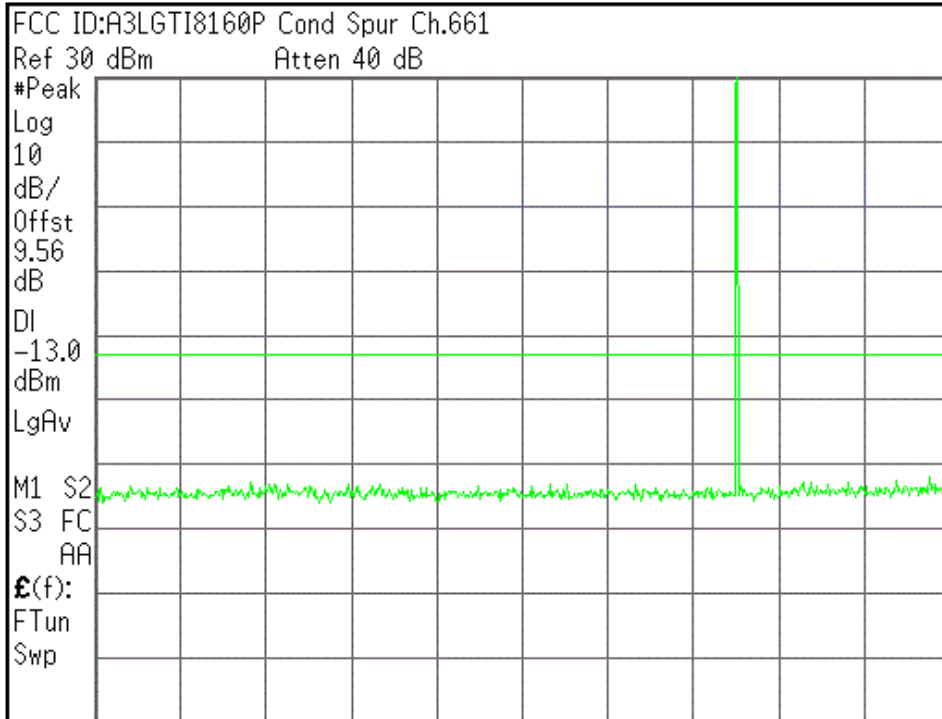
S3 FC

AA

$\mathcal{E}(f)$:

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

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

Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.661

Mkr1 1.581 GHz

Ref 30 dBm

Atten 40 dB

-30.65 dBm

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

V1 S2

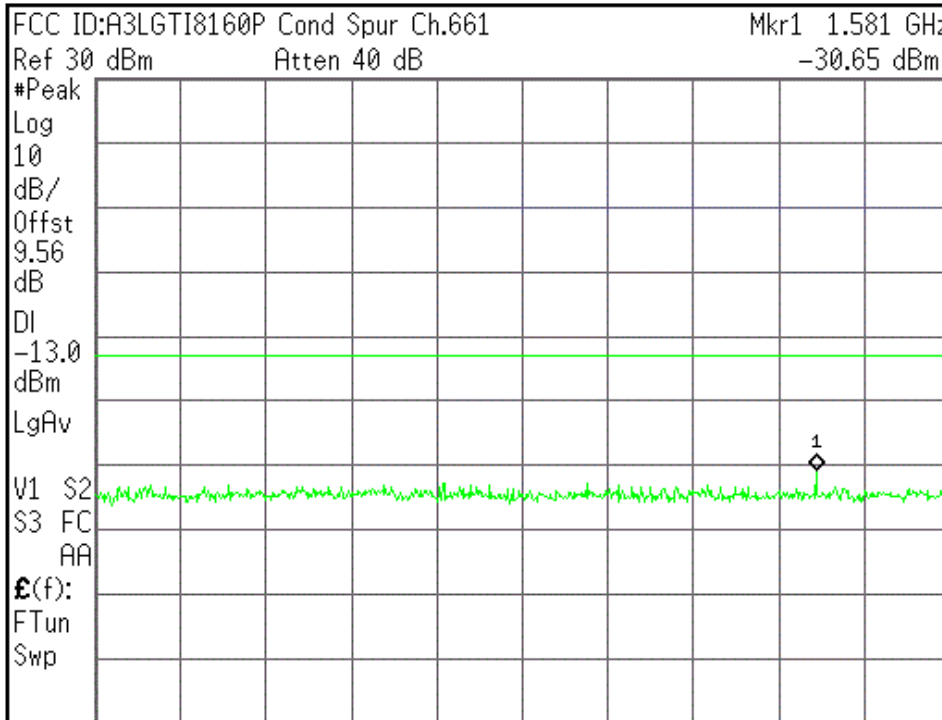
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



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
10.0000000 MHz

Stop Freq
1.87250000 GHz

CF Step
186.250000 MHz
Auto Man

Freq Offset
0.00000000 Hz

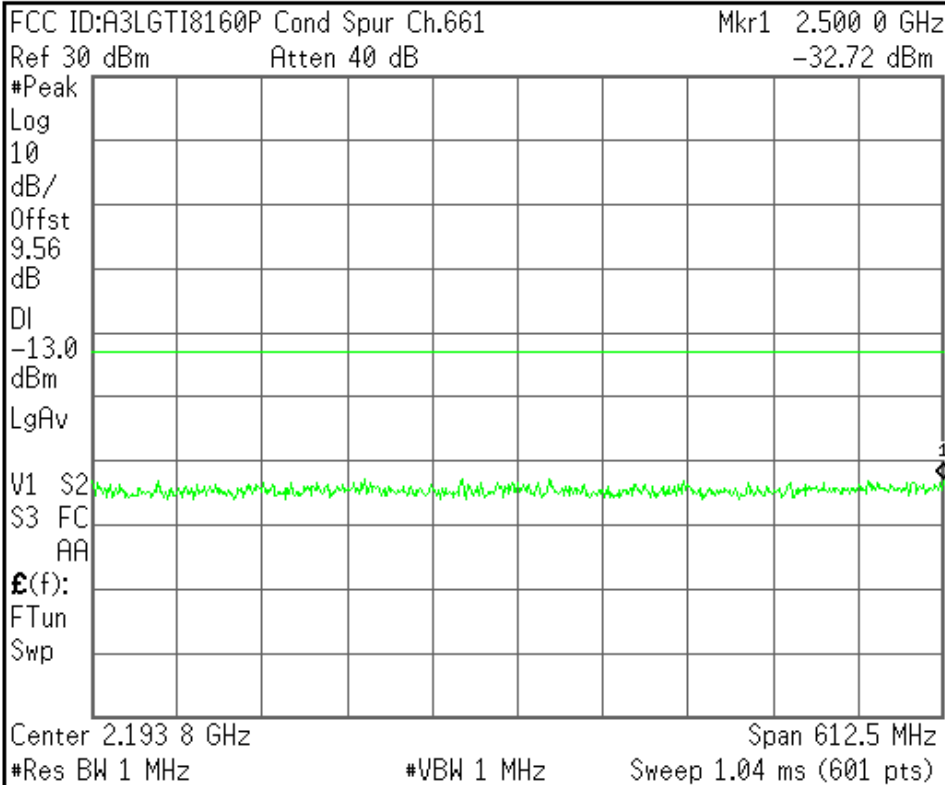
Signal Track
On Off

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

Agilent

R L

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

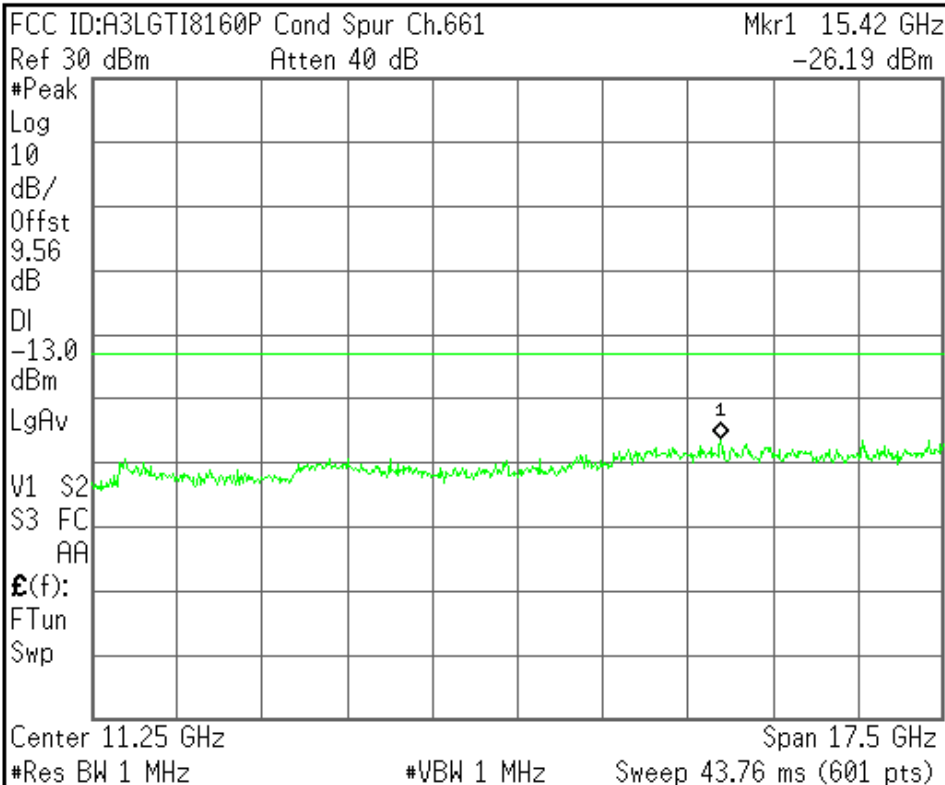
Signal Track
On Off

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

Agilent

R L

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 L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.810

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

M1 S2

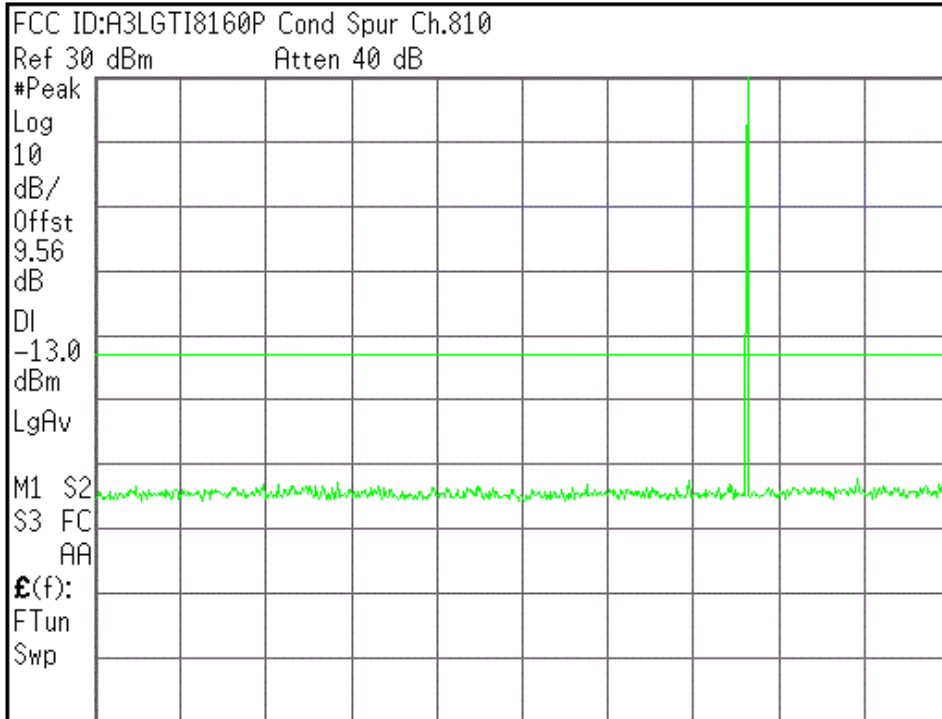
S3 FC

AA

$\mathcal{E}(f)$:

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

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

Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Cond Spur Ch.810

Ref 30 dBm

Atten 40 dB

Mkr1 294 MHz

-32.56 dBm

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

V1 S2

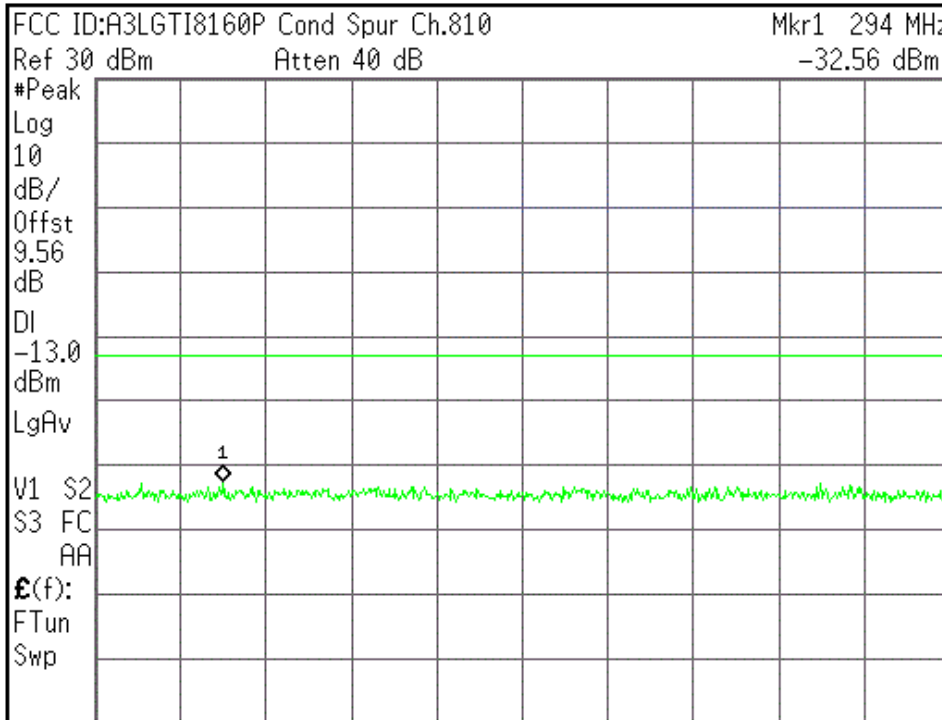
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 956 MHz

Span 1.892 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 3.16 ms (601 pts)

Center Freq
956.150000 MHz

Start Freq
10.0000000 MHz

Stop Freq
1.90230000 GHz

CF Step
189.230000 MHz
Auto Man

Freq Offset
0.00000000 Hz

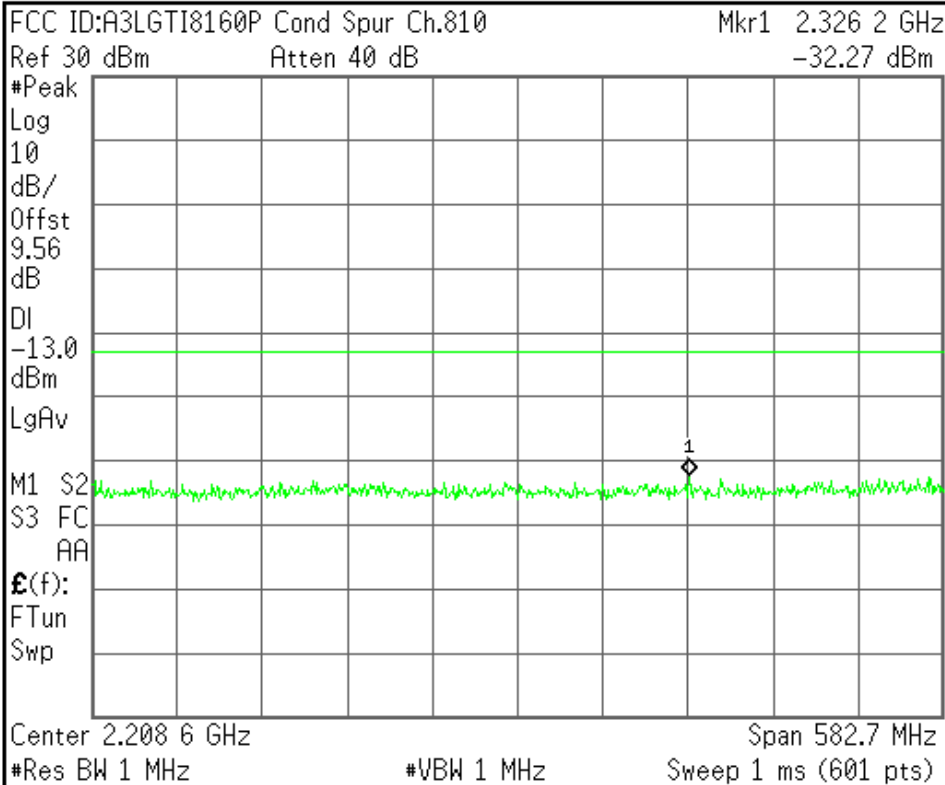
Signal Track
On Off

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

Agilent

R L

Freq/Channel



Center Freq
2.20865000 GHz

Start Freq
1.91730000 GHz

Stop Freq
2.50000000 GHz

CF Step
58.2700000 MHz
Auto Man

Freq Offset
0.00000000 Hz

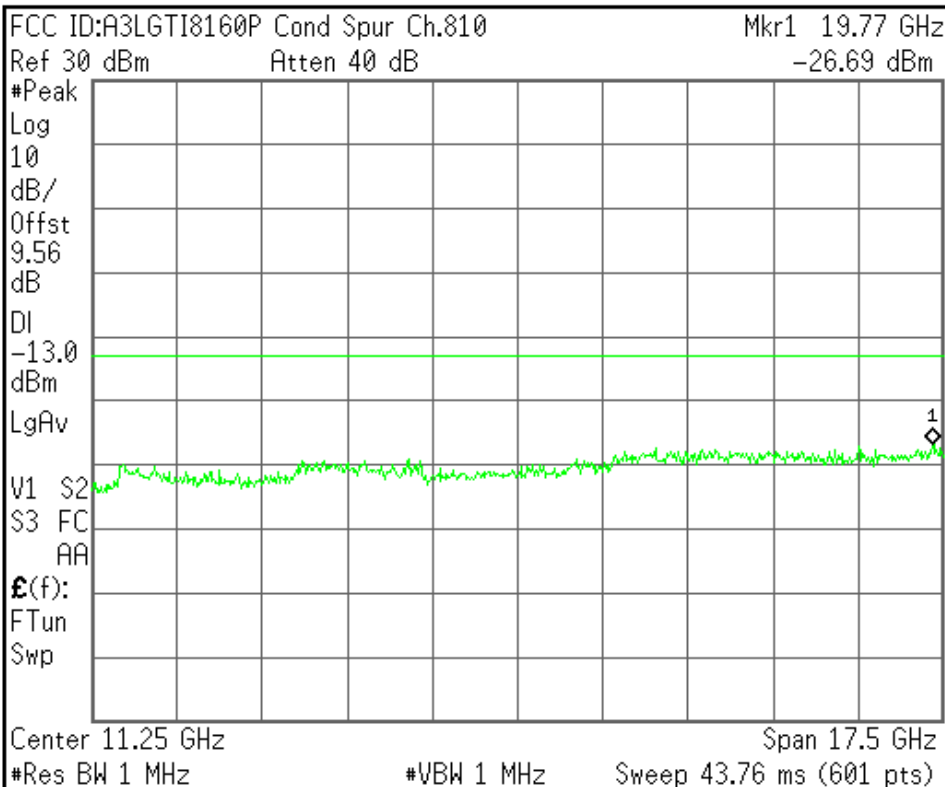
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.512

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

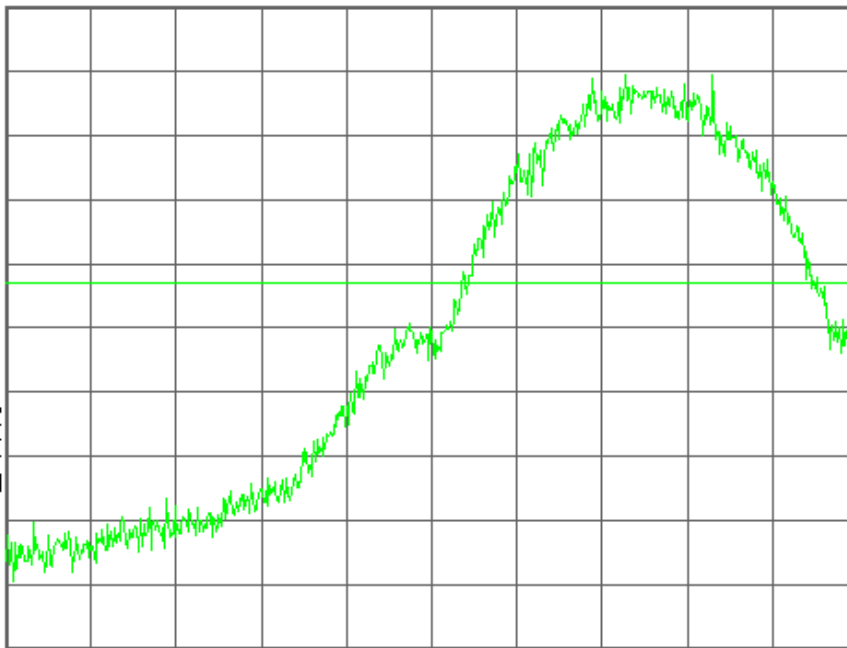
S3 FC

AA

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:A3LGTI8160P Band Edge Ch.512

Mkr1 1.849 973 3 GHz

Ref 30 dBm

Atten 40 dB

-18.54 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

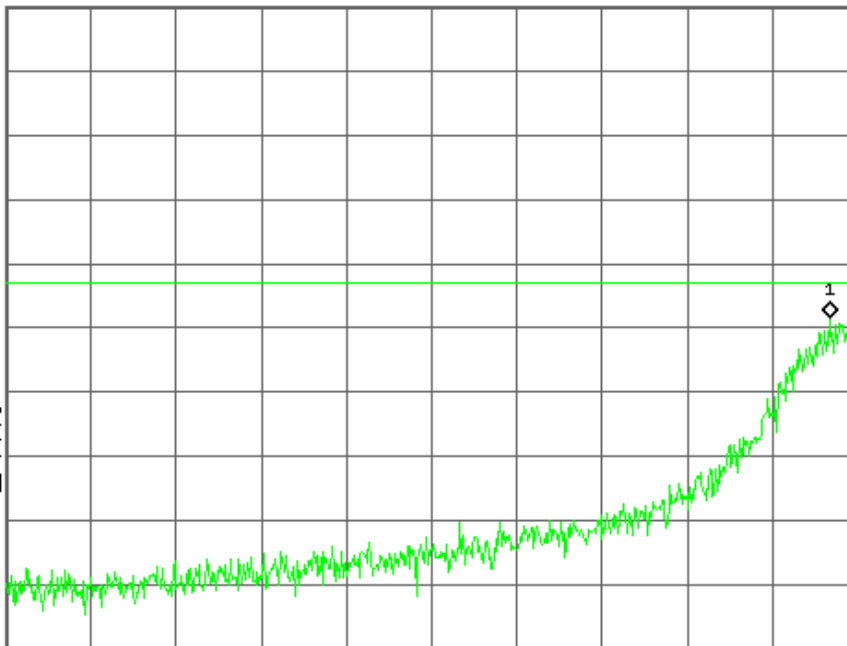
S3 FC

AA

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 L

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.810

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

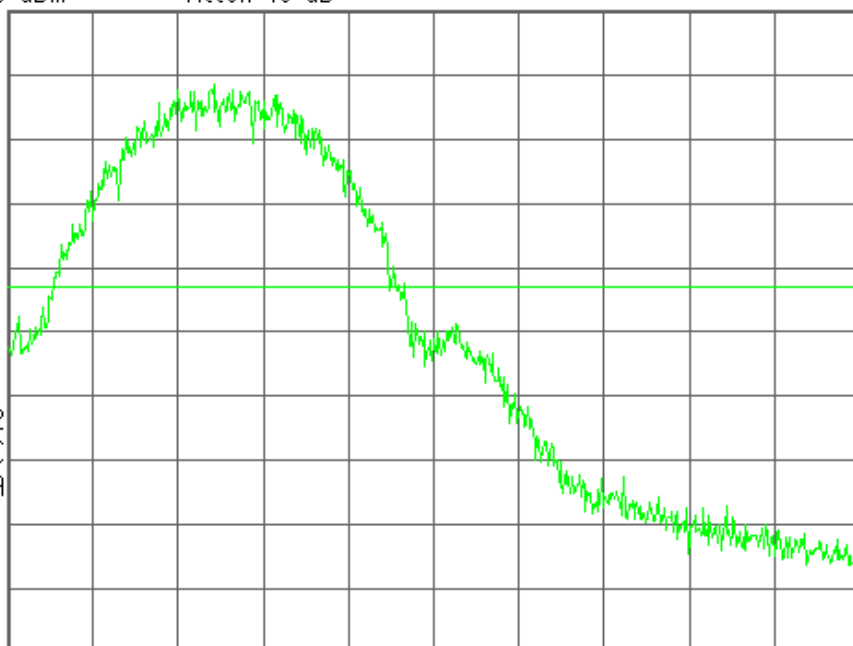
S3 FC

AA

$E(f)$:

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:A3LGTI8160P Band Edge Ch.810

Mkr1 1.910 003 7 GHz

Ref 30 dBm

Atten 40 dB

-18.09 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

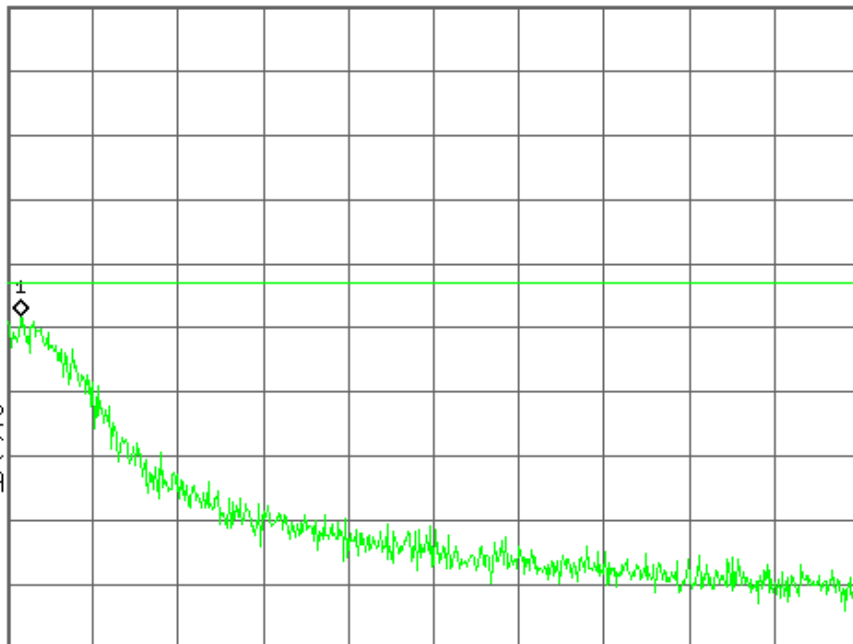
S3 FC

AA

$E(f)$:

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

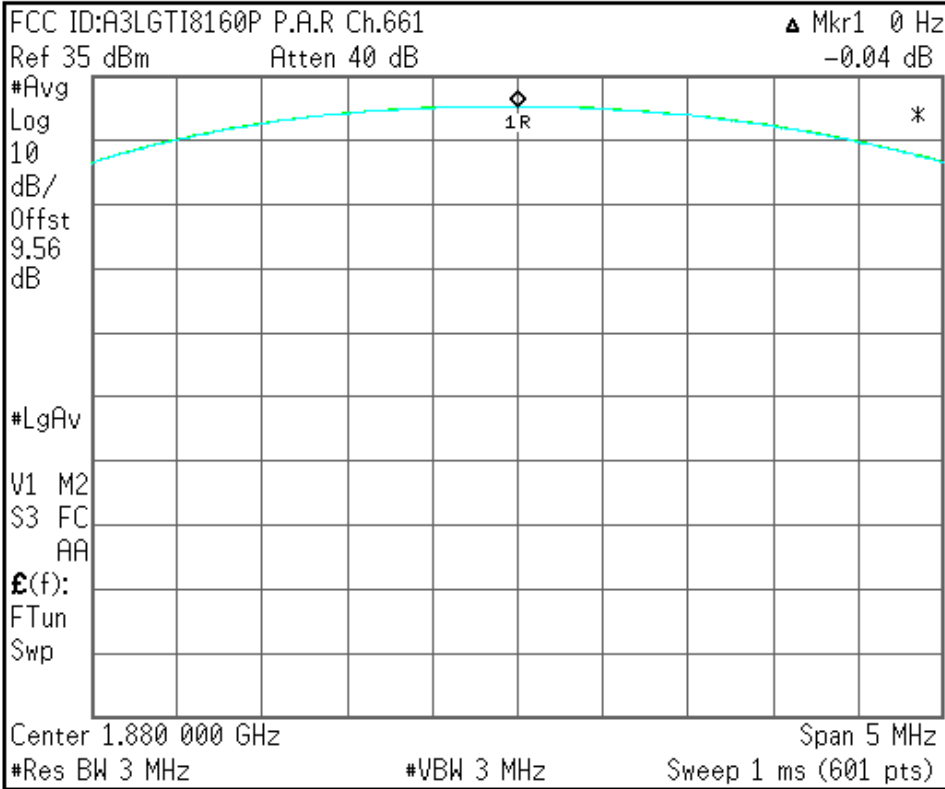
Signal Track
On Off

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

Agilent

R L

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

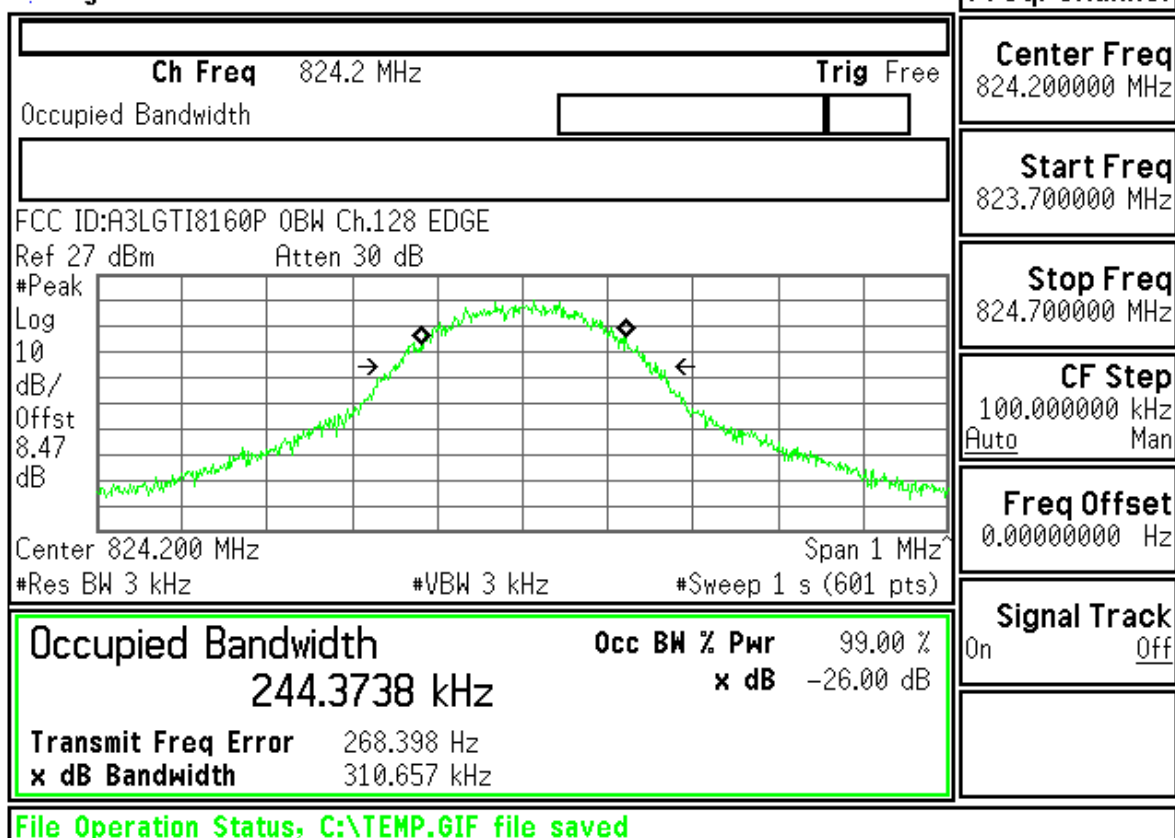
Signal Track
 On Off

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



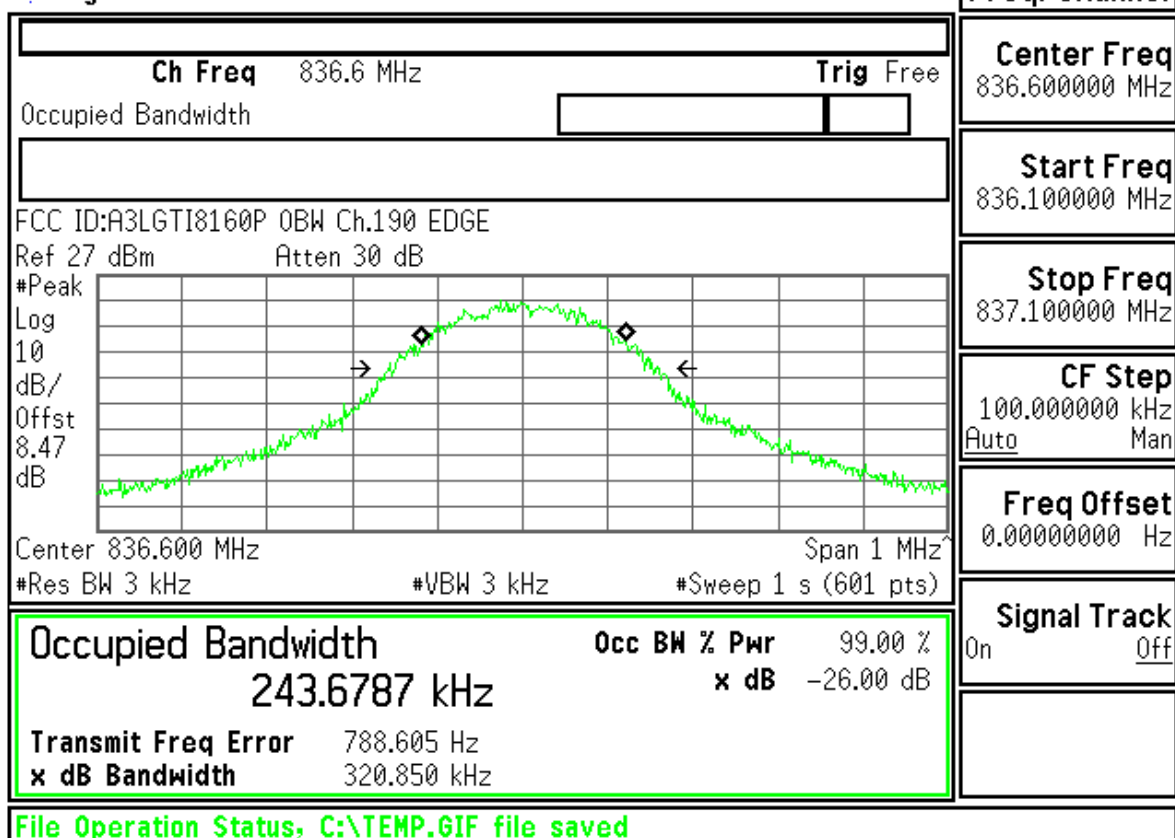
Agilent

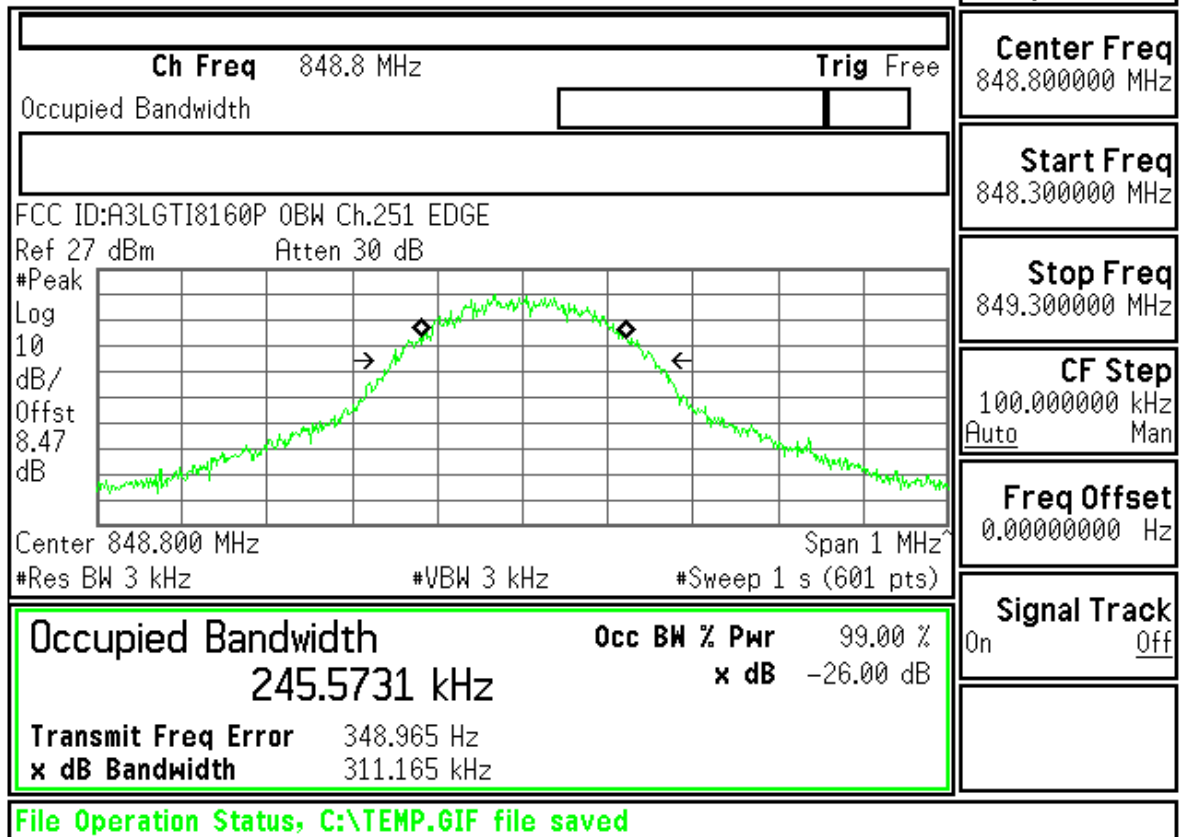
R T



Agilent

R T





Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.128 EDGE

Ref 27 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

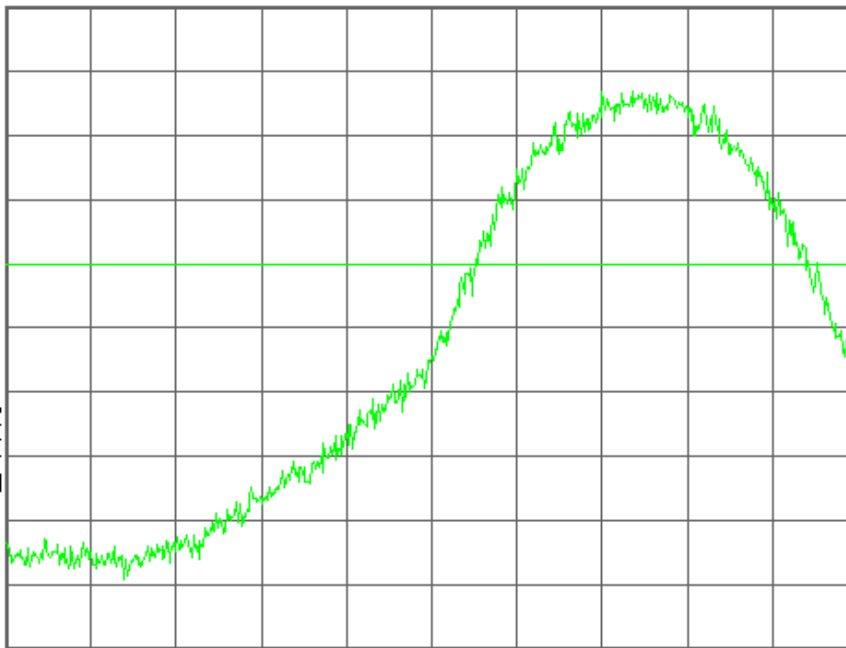
S3 FC

AA

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:A3LGTI8160P Band Edge Ch.128 EDGE

Mkr1 824.000 0 MHz

Ref 27 dBm

Atten 30 dB

-26.30 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

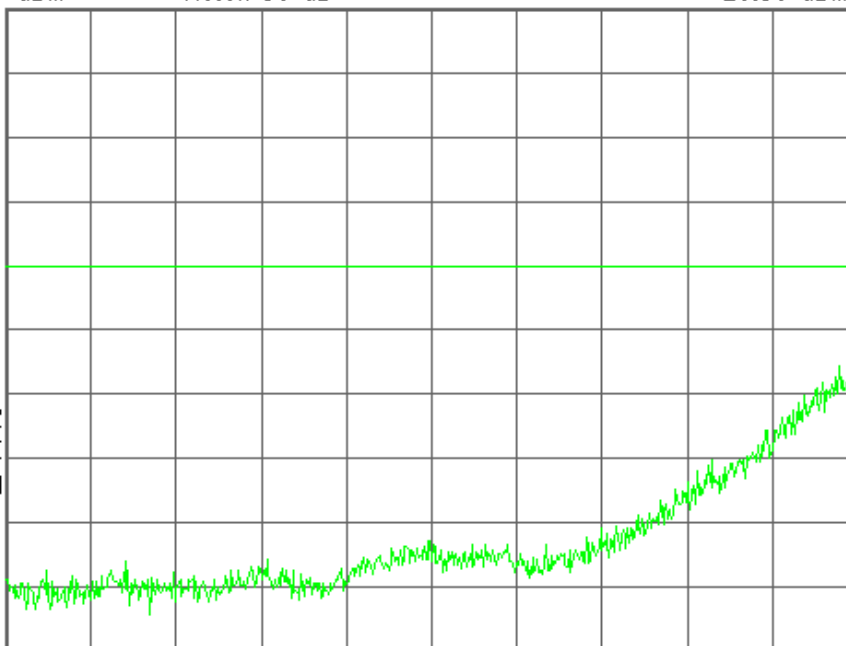
S3 FC

AA

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:A3LGTI8160P Band Edge Ch.251 EDGE

Ref 27 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

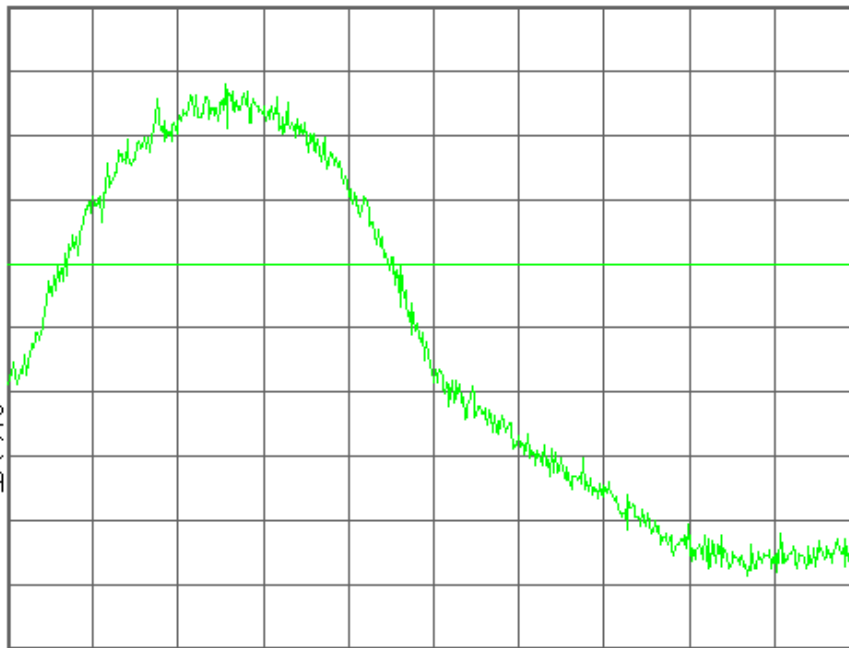
S3 FC

AA

$E(f)$:

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:A3LGTI8160P Band Edge Ch.251 EDGE

Mkr1 849.000 0 MHz

Ref 27 dBm

Atten 30 dB

-27.49 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

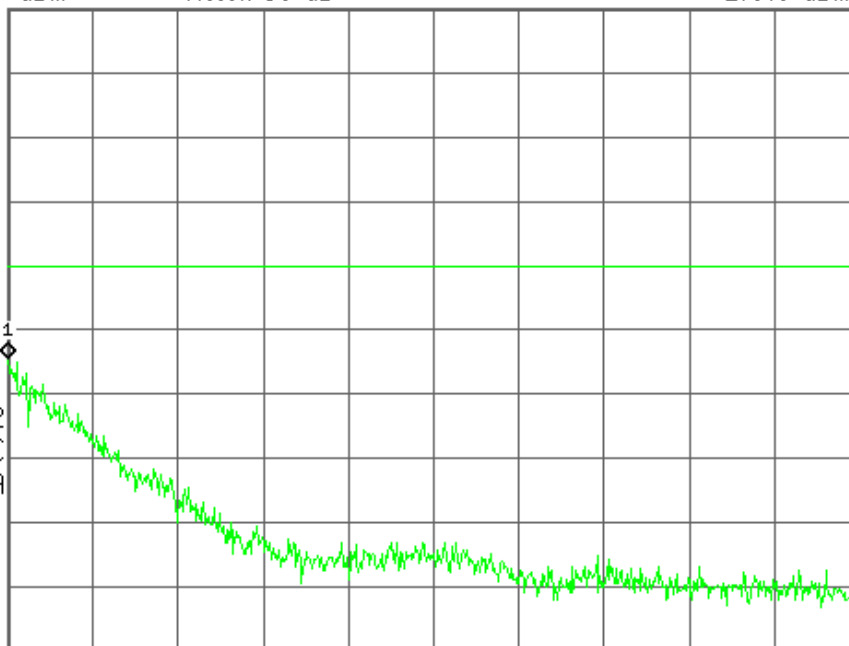
S3 FC

AA

$E(f)$:

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

Agilent R T

Ch Freq 1.8502 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LGTI8160P 0BW Ch.512 EDGE

Ref 26 dBm Atten 30 dB

#Peak Log 10 dB/ Offst 9.56 dB

Center 1.850 200 GHz Span 1 MHz

#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

Occupied Bandwidth 244.5088 kHz

Occ BW % Pwr 99.00 %

x dB Bandwidth -26.00 dB

Transmit Freq Error -1.039 kHz

x dB Bandwidth 307.187 kHz

Center Freq 1.85020000 GHz

Start Freq 1.84970000 GHz

Stop Freq 1.85070000 GHz

CF Step 100.000000 kHz

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: A3LGTI8160P 0BW Ch.661 EDGE

Ref 26 dBm Atten 30 dB

#Peak Log 10 dB/ Offst 9.56 dB

Center 1.880 000 GHz Span 1 MHz

#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

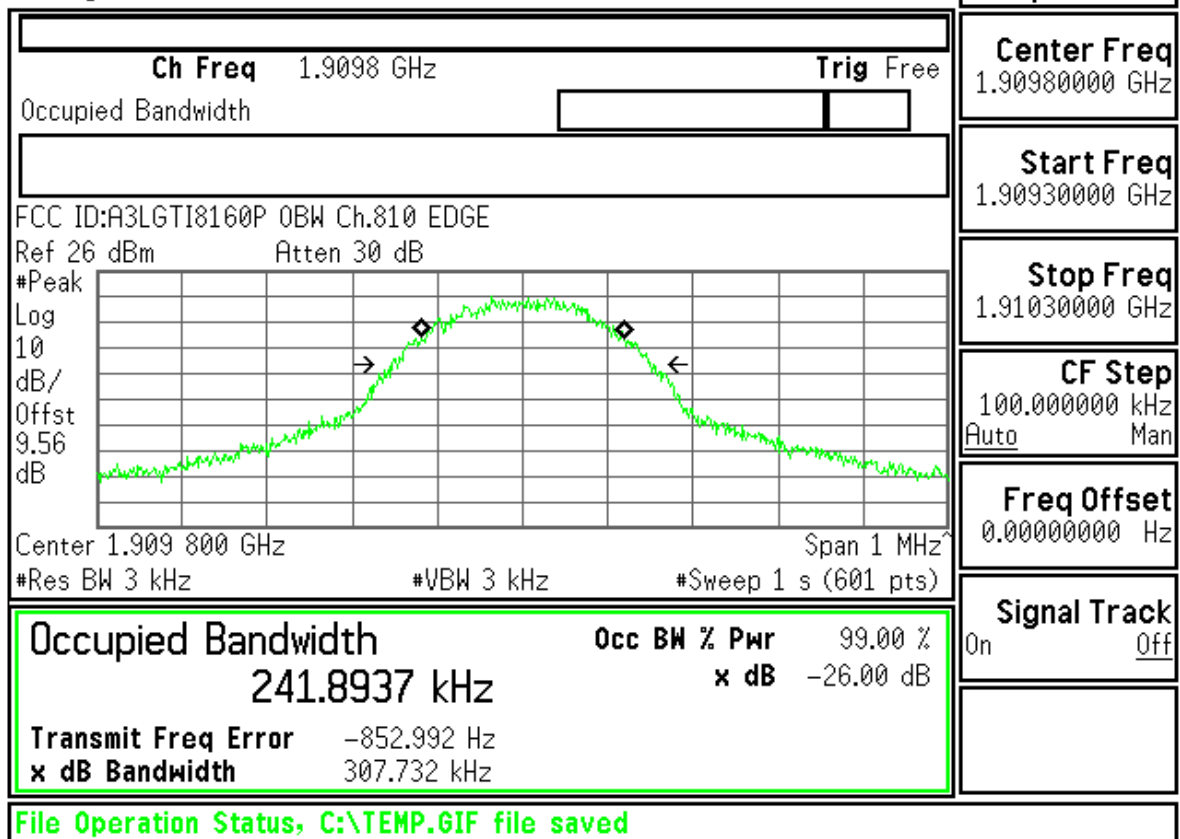
Occupied Bandwidth 241.8769 kHz **Occ BW % Pwr** 99.00 %

Transmit Freq Error -703.980 Hz **x dB** -26.00 dB

x dB Bandwidth 308.330 kHz

Signal Track On Off

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



Agilent

R L

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.512 EDGE

Ref 26 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

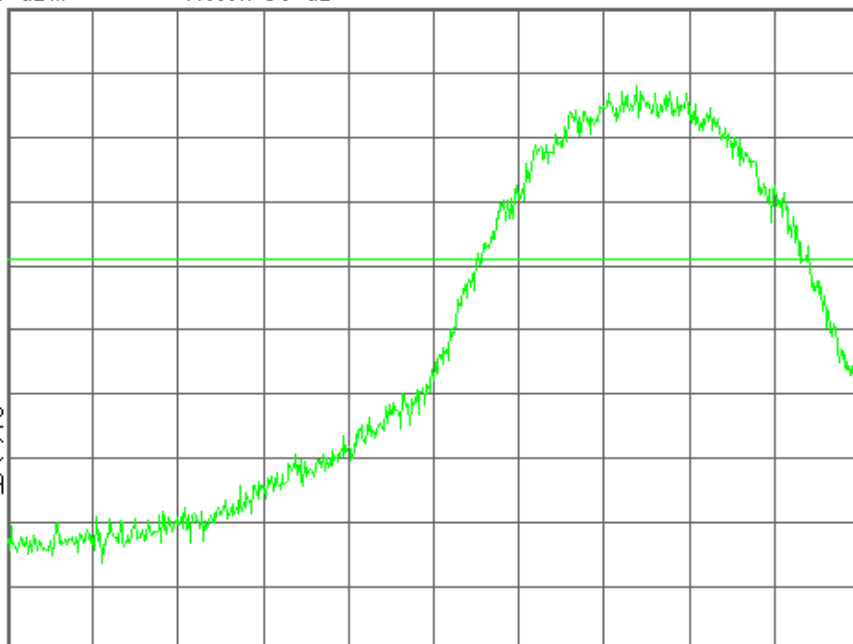
S3 FC

AA

$E(f)$:

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
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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Agilent

R T

Freq/Channel

FCC ID:A3LGTI8160P Band Edge Ch.512 EDGE

Mkr1 1.850 000 0 GHz

Ref 26 dBm

Atten 30 dB

-28.03 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

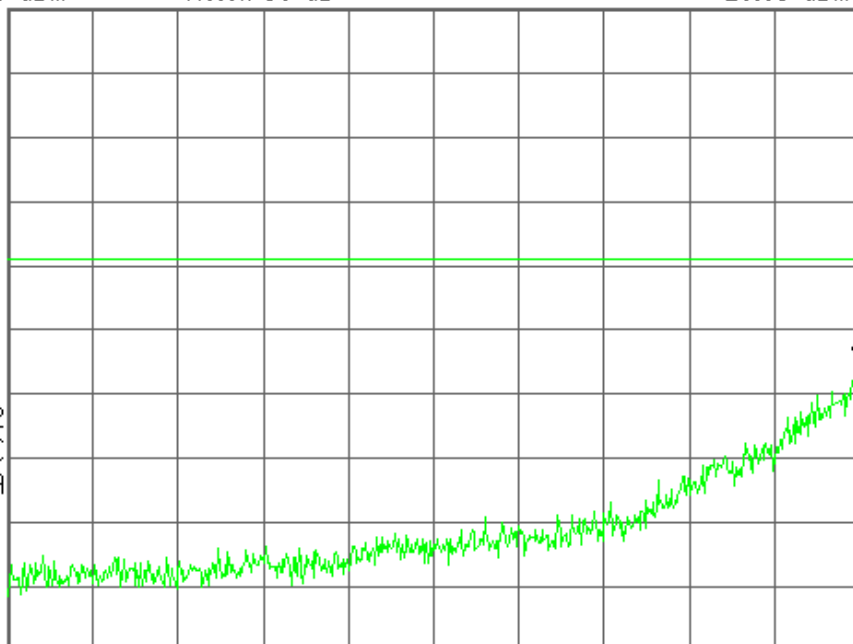
S3 FC

AA

$E(f)$:

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
81.00000000 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:A3LGTI8160P Band Edge Ch.810 EDGE

Ref 26 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

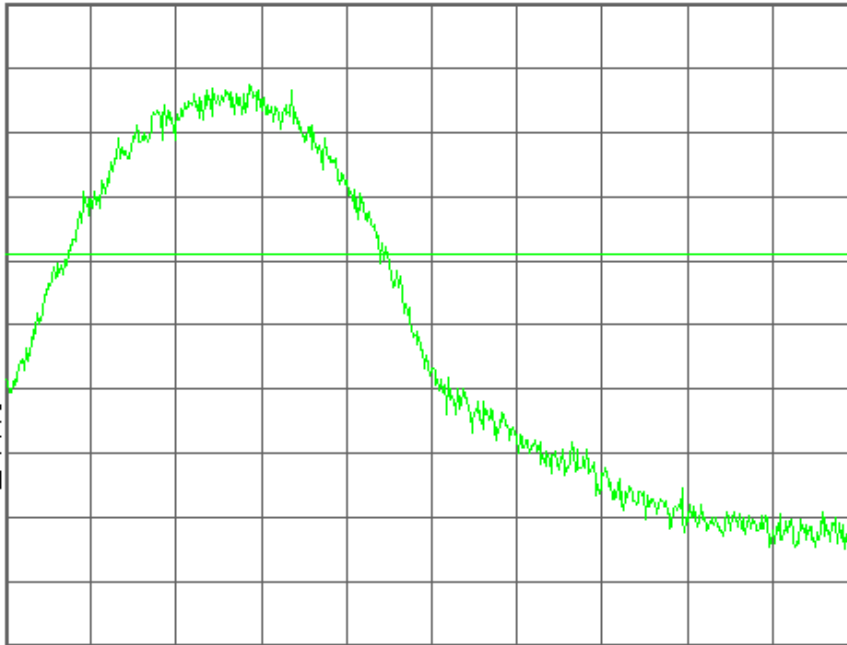
S3 FC

AA

$\mathcal{E}(f)$:

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:A3LGTI8160P Band Edge Ch.810 EDGE

Mkr1 1.909 991 1 GHz

Ref 26 dBm

Atten 30 dB

-26.59 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

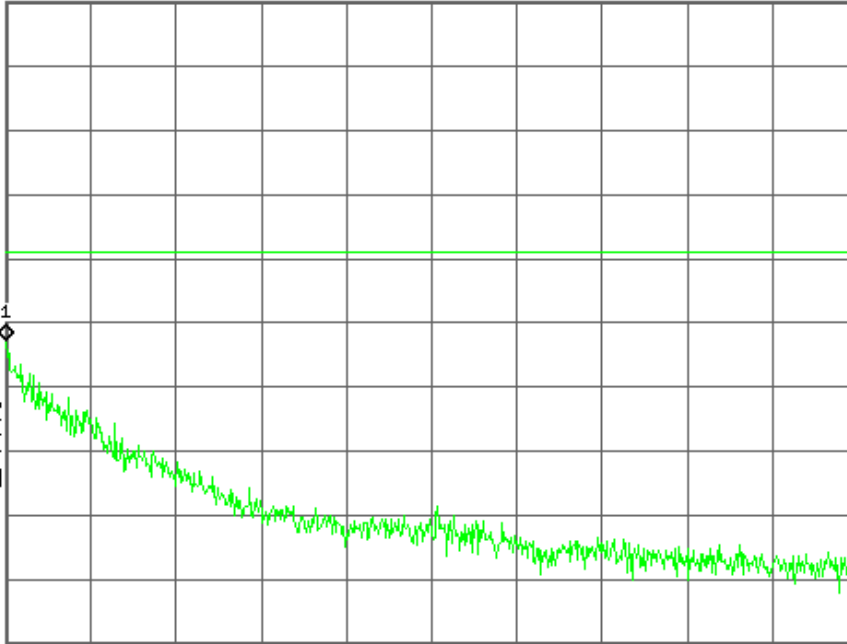
S3 FC

AA

$\mathcal{E}(f)$:

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

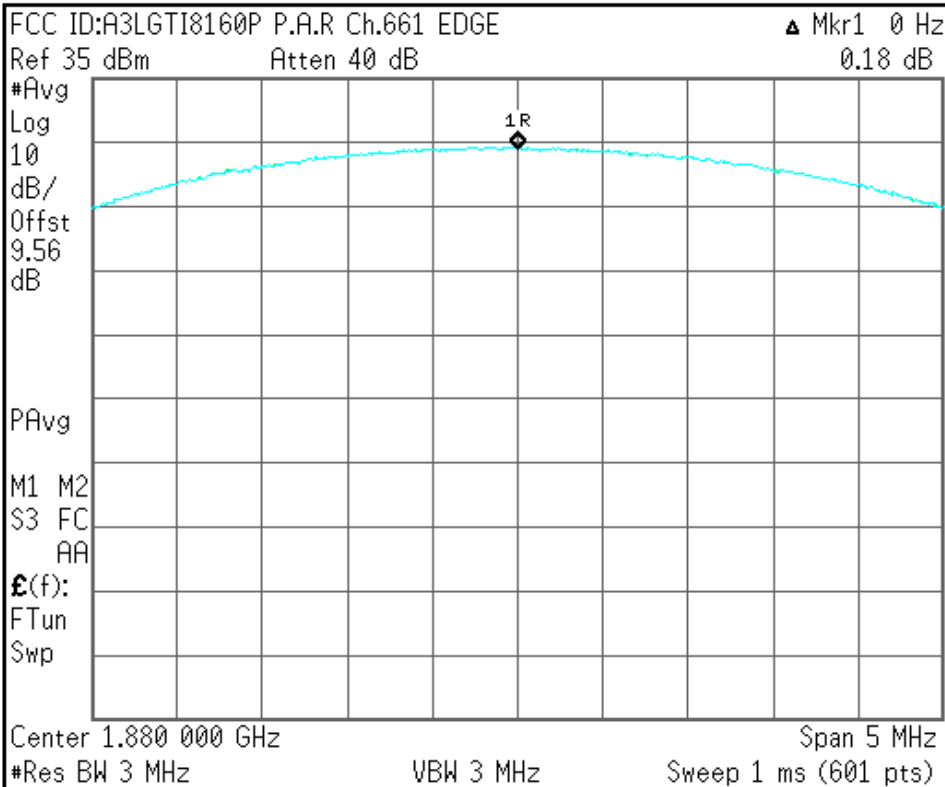
Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



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