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

FCC CFR47 PART 22 & 24 SUBPART CERTIFICATION REPORT

Model Tested	**:**	**SGH-F278**
Additional Model	**:**	**SGH-F270**
FCC ID(Requested)	**:**	**A3LSGHF278**
Report No	**:**	**FF-087-R1**
Job No	**:**	**FF-087**
Date issued	**:**	**May 23, 2008**

- Abstract -

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

Prepared By

JH WOO - Test Engineer

Authorized By

WW 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 ELECRONICS CO., LTD.
• Address	:	416 Maetan3-Dong, Yeongtong-gu, Suwon City Gyeonggi-Do, Korea 443-742
• Attention	:	SungJoo KIM, Engineering Manager (QA Lab)
• FCC ID	:	A3LSGHF278
• Additional Model	:	SGH-F270
• Quantity	:	Quantity production is planned
• Emission Designators	:	247KGXW(GSM850), 240KG7W(GSM850 EDGE) 243KGXW(GSM1900), 240KG7W(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	:	0.416 W ERP GSM850 (26.19dBm) 1.607 W EIRP GSM1900 (32.06dBm) 0.188 W ERP GSM850 EDGE(22.74dBm) 0.723 W EIRP GSM1900 EDGE(28.59dBm)
• FCC Classification(s)	:	Licensed Portable Tx Held to Ear (PCE)
• Equipment (EUT) Type	:	Dual-Band GSM/EDGE 850/1900 Phone with Bluetooth
• Frequency Tolerance	:	±0.00025% (2.5ppm)
• FCC Rule Part(s)	:	§24(E), §22(H), §2.
• Dates of Test	:	May 07-09, 2008
• Place of Test	:	SAMSUNG Lab,
• Test Report S/N	:	FF-087-R1

2. INTRODUCTION

2.1. General

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

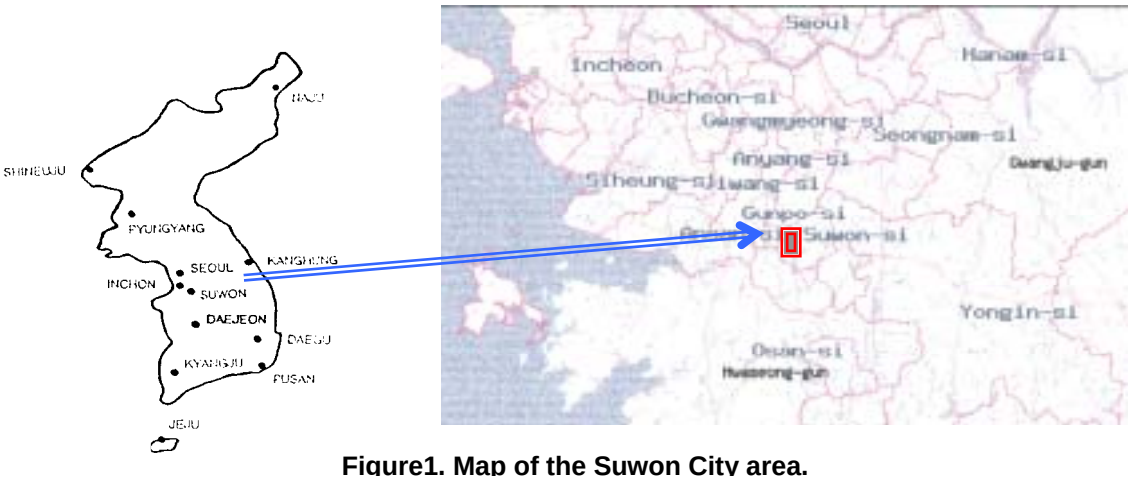


Figure1. Map of the Suwon City area.

Measurement Procedure

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

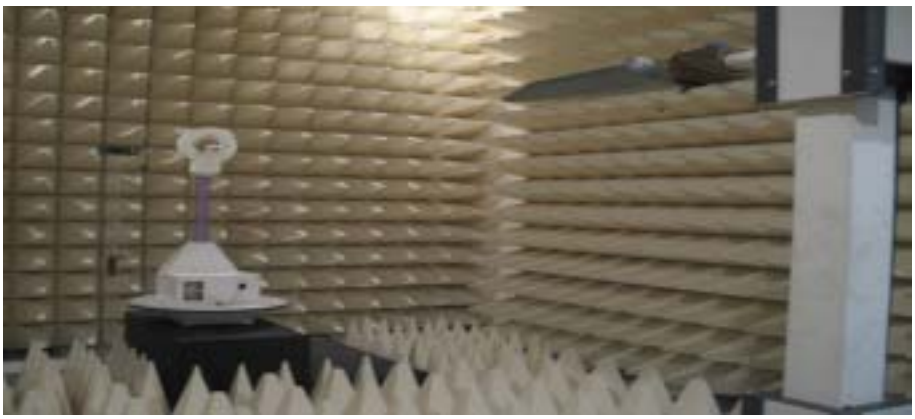


Figure2. Photograph of 3m Fully-Anechoic Chamber

3. MEASURING INSTRUMENT CALIBRATION

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

4. TEST EQUIPMENT LIST

Name Of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/010	2008-10-17
	E4440A(3Hz~26.5GHz)	MY46187454	2009-03-03
	E4440A(3Hz~26.5GHz)	MY41000233	2008-07-23
Signal Generator	SMR20	835197/030	2008-12-05
Network Analyzer	8753E	JP38160590	2008-06-26
Power Sensor	8485A	3318A19924	2008-10-01
Power Meter	E4419B	GB41293846	2008-09-06
Pre-Amplifier	8449B	3008A00691	2008-12-24
Communication test set	8960	GB42230535	2009-01-02
	8960	GB42360886	2008-07-03
Controller	CO2000	CO2000/424	Not Required
Turn Unit	CT0800	CT0800/057	Not Required
Rotating Device	DE3600-RH-PR	DE3600-RH-PR/050	Not Required
Antenna Master	MA4000	MA4000/204	Not Required
Horn Antenna	HF906	100134	2009-10-24
Dipole Antenna	3121C-DB4	9007-588	2008-05-29
Communication test set	CMU200	109162	2008-10-17
Receive Antenna	HL040	353255/019	2008-09-20
Power Supply	E3640A	MY40003594	2008-06-25
Divider	11636B	51946	Not Required
	11636B	51942	Not Required
High Pass Filter	WHK1.0/15G-10SS	1	Not Required
	WHK/3.5/18G-10SS	4	Not Required
Environmental Chamber	SH-241	92000549	2008-11-15
Shielded Fully Anechoic Chamber	CHAMBER	ANT0001	Not Required

5. DESCRIPTION OF TESTS

5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power

Test Set-up for the ERP/EIRP TEST

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

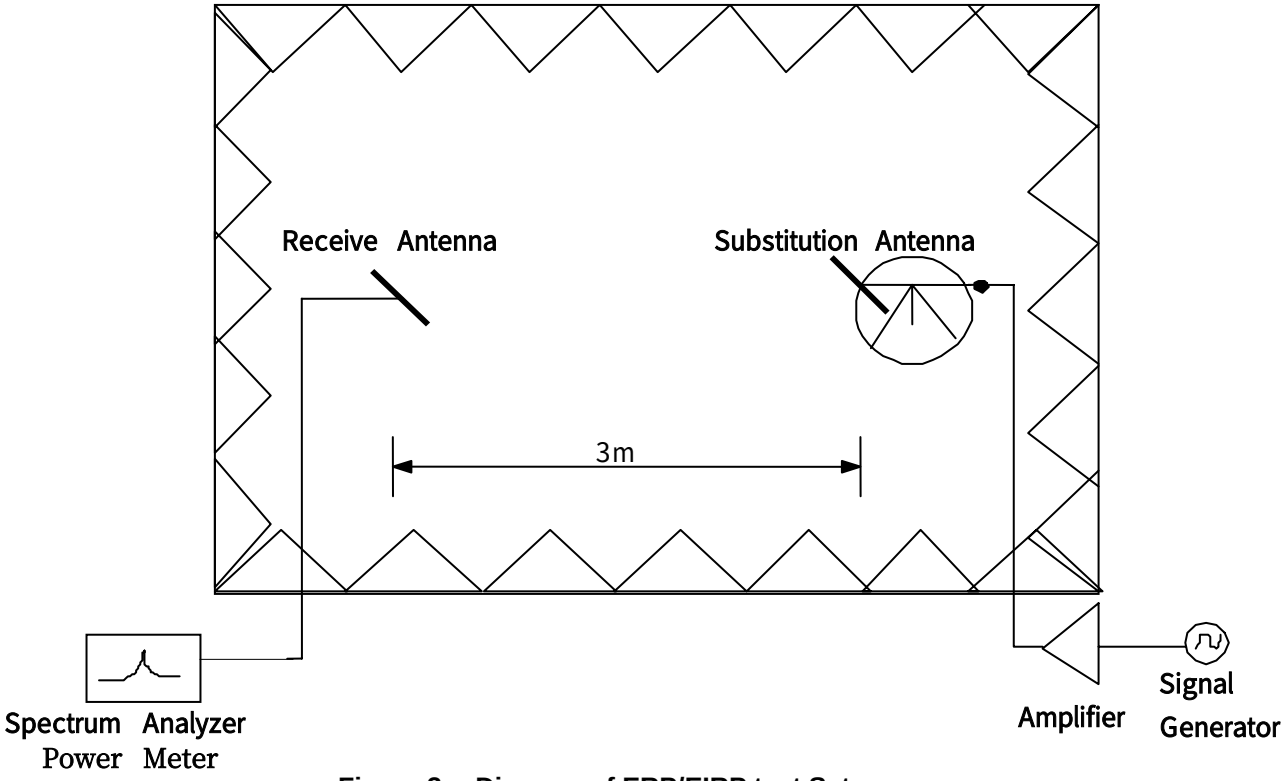


Figure 3. Diagram of ERP/EIRP test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. For GSM signals, an average detector is used, with RBW=VBW=3MHz, SPAN=10MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of dipole is measured. The ERP and EIRP are recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

5.2. Radiated Spurious & Harmonic Emission

Test Set-up for the Radiated Emission TEST

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

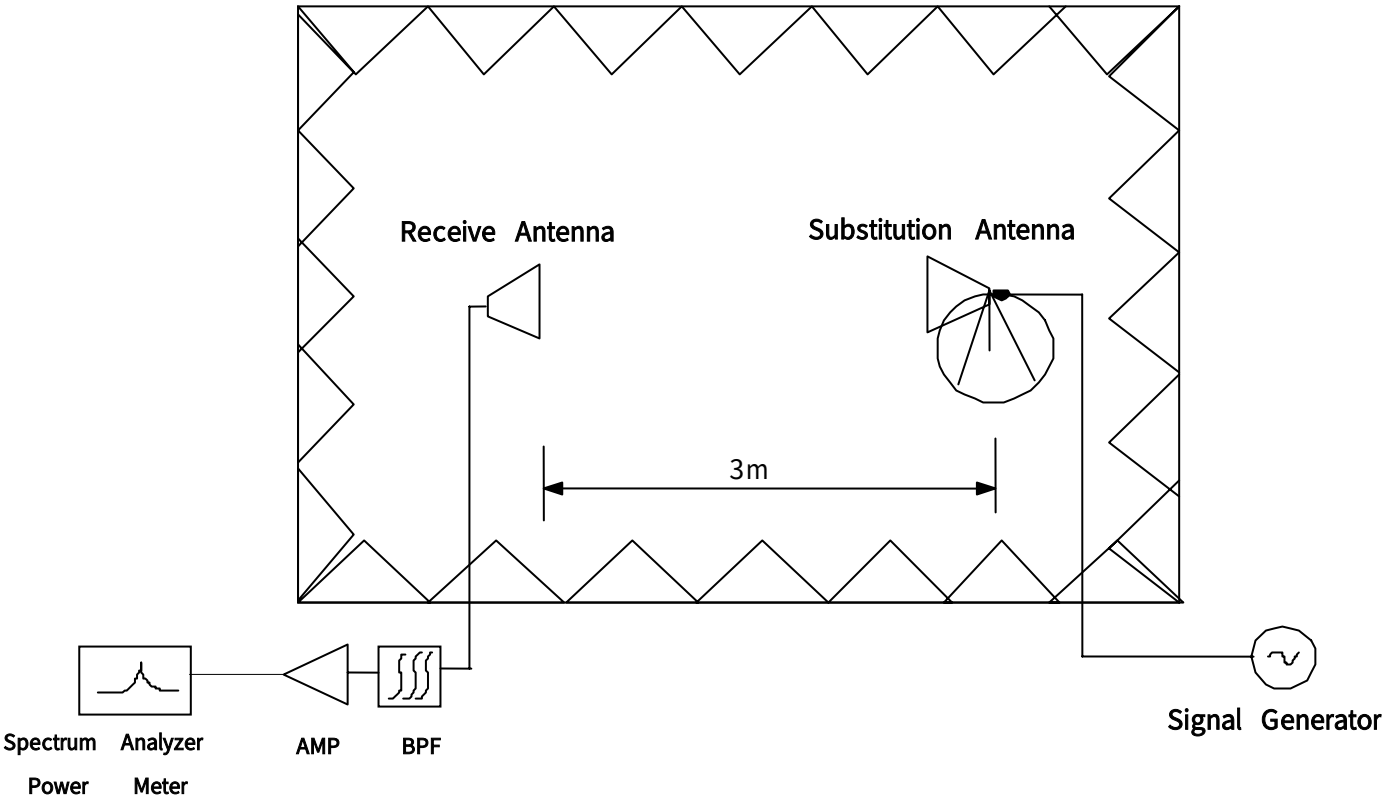


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. The Spectrum was investigated from 30MHz to the 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 25.5dBm –(-24.8)= 50.3dBc .

5.3. Occupied Bandwidth

Test Procedure

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

5.4. Spurious and Harmonic Emission at Antenna Terminal

5.4.1. Occupied Bandwidth Emission Limits

(a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB.

(b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.

(c) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

(d) The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

BLOCK	Freq. Range (MHz) 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

5.4.2. Conducted Spurious Emission

Minimum standard:

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

43 + 10log (0.416 W) = 39.19 dB
26.19 dBm – 39.19 dB = -13 dBm

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

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

Test Procedure:

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

Plots are shown herein.

5.5. Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

a.) Temperature: The temperature is carried from -30°C to +60°C using an environmental chamber.
b.) Primary Supply Voltage: The primary supply voltage is varied from 85% to 115% of the voltage normally at the input to the device or at the power supply terminals if cables are not normally supplied.

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

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature(25°C to 27°C to provide a reference).
2. The equipment is subjected to an overnight “soak” at -30°C without any power applied.
3. After the overnight “soak” at -30°C (Usually 14~16 hours), the equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within a three minute interval after applying to the transmitter.
4. Frequency measurements are made at 10°C interval up to room temperature. At least a period of one and one half-hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency measurements are at 10 intervals starting at -30°C up to +60°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

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

6. TEST DATA

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

Supply Voltage : 3.7VDC
Modulation : GSM850

■ **Reference level**

Frequency (MHz)	Output (dBm)	Polarization (H/V)	S/A (dBm)	Ant gain (dBi)	Ref level (dBm)
824.20	26.00	H	-11.06	-0.67	-10.39
		V	-10.95	-0.67	-10.28
836.60	26.00	H	-11.46	-0.73	-10.73
		V	-10.86	-0.73	-10.13
848.80	26.00	H	-12.86	-0.79	-12.07
		V	-11.91	-0.79	-11.12

■ **Result (Slide Up)**

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-10.66	H	290/80	25.73	0.374	Standard
836.60	-10.54	H	291/80	26.19	0.416	Standard
848.80	-11.99	H	290/80	26.08	0.406	Standard

■ **EDGE Result (Slide Up)**

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
836.60	-14.00	H	290/80	22.74	0.188	Standard

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

- All modes of operation were investigated, and the worst-case results are reported.
Radiated measurements at 3 meters by Substitution Method

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

Supply Voltage : 3.7VDC

Modulation : PCS 1900

■**Reference level**

Frequency (MHz)	Output (dBm)	Polarization (H/V)	S/A (dBm)	Ant gain (dBi)	Ref level (dBm)
1850.20	32.00	H	-6.55	9.70	-17.24
		V	-6.69	9.70	-16.39
1880.00	31.00	H	-8.01	9.70	-17.71
		V	-7.83	9.70	-17.53
1909.80	31.00	H	-8.17	9.70	-17.87
		V	-7.76	9.70	-17.46

■**Result (Slide Up)**

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-17.18	H	300/180	32.06	1.607	Standard
1880.00	-17.22	H	310/180	31.49	1.409	Standard
1909.80	-17.91	H	311/180	30.96	1.247	Standard

■**EDGE Result (Slide Up)**

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-20.65	H	300/180	28.59	0.723	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 : 26.19 dBm = 0.416 W

Modulation Signal : GSM850

Limit : 43 + 10log$_{10}$(P) = 39.19 dBc

■ **Result** (Slide Up)

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
128	2	1648.40	-50.83	66.46	V
	3	2472.60	-58.58	68.90	H
	4	3296.80	-65.03	72.08	H
	5	4121.00	-58.42	62.12	H
	6	4945.20	-64.75	66.58	H
	7	5769.40	-	-	-
190	2	1673.20	-52.81	67.63	V
	3	2509.80	-56.78	67.29	H
	4	3346.40	-62.90	70.04	V
	5	4183.00	-62.99	67.34	H
	6	5019.60	-63.98	65.21	V
	7	5856.20	-	-	-
251	2	1697.60	-50.81	65.17	H
	3	2546.40	-55.55	65.89	V
	4	3395.20	-59.73	66.59	V
	5	4244.00	-59.77	63.84	V
	6	5092.80	-63.35	64.56	V
	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 : 32.06 dBm = 1.607 W

Modulation Signal : GSM1900

Limit : 43 + 10log$_{10}$(P) = 45.06 dBc

■ **Result (Slide Up)**

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
512	2	3700.40	-49.20	57.44	H
	3	5550.60	-65.59	69.28	V
	4	7400.80	-65.10	64.22	H
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-51.78	59.34	H
	3	5640.00	-67.55	71.31	H
	4	7520.00	-64.75	64.12	V
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-50.93	58.84	H
	3	5729.40	-66.80	69.89	H
	4	7639.20	-62.17	60.75	V
	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 : 2008. 05. 09

Test Engineer : JH WOO

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

CH	Har	Frequency (MHz)	① Tx C/L dB	②Tx Horn Gain dBi	③Tx Level dBm	④ ESI Level : H dBm	④ ESI Level : V dBm	⑤Tested EUT Level : H dBm	⑤Tested EUT Level : H dBm	⑥ Result EUT : H (dBc)	⑥ Result EUT : V (dBc)
128	2	1648.40	-8.82	9.50	-13.70	-25.78	-25.24	-51.05	-50.83	66.46	66.73
	3	2472.60	-11.14	10.70	-12.60	-30.65	-30.96	-58.58	-62.91	68.90	73.09
	4	3296.80	-13.37	12.30	-11.90	-34.30	-34.88	-65.03	-65.30	72.18	72.08
	5	4121.00	-14.90	12.50	-10.60	-37.37	-37.16	-58.42	-64.70	62.12	68.71
	6	4945.20	-16.77	12.70	-8.90	-39.95	-40.17	-64.75	-65.12	66.58	67.22
	7	5769.40	-18.24	12.90	-7.70	-42.25	-42.16	-	-	-	-
190	2	1673.20	-8.89	9.50	-13.60	-26.45	-26.15	-55.17	-52.81	69.68	67.63
	3	2509.80	-11.30	10.70	-12.40	-30.90	-30.96	-56.78	-63.38	67.29	73.81
	4	3346.40	-13.23	12.30	-12.10	-34.28	-34.36	-63.38	-62.90	70.44	70.04
	5	4183.00	-15.03	12.50	-10.50	-36.90	-37.13	-62.99	-63.75	67.34	67.95
	6	5019.60	-17.37	12.70	-8.30	-40.04	-40.64	-69.25	-63.98	70.61	65.21
	7	5856.20	-18.51	12.90	-7.40	-42.75	-42.94	-	-	-	-
251	2	1697.60	-8.86	9.50	-13.60	-26.64	-26.78	-50.81	-54.37	65.17	68.72
	3	2546.40	-11.34	10.70	-12.40	-30.32	-30.81	-57.45	-55.55	68.13	65.89
	4	3395.20	-13.31	12.30	-12.00	-34.25	-34.55	-60.23	-59.73	67.38	66.59
	5	4244.00	-15.10	12.50	-10.40	-37.07	-37.26	-61.34	-59.77	65.44	63.84
	6	5092.80	-17.35	12.70	-8.40	-40.12	-40.75	-66.29	-63.35	67.23	64.56
	7	5941.60	-18.38	12.90	-7.50	-43.10	-42.67	-	-	-	-

6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : 2008. 05. 09

Test Engineer : JH WOO

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

CH	Har	Frequency (MHz)	① Tx C/L dB	②Tx Horn Gain dBi	③Tx Level dBm	④ ESI Level : H dBm	④ ESI Level : V dBm	⑤Tested EUT Level : H dBm	⑤Tested EUT Level : H dBm	⑥ Result EUT : H (dBc)	⑥ Result EUT : V (dBc)
512	2	3700.40	-13.91	12.40	-11.50	-36.82	-36.64	-49.20	-56.32	57.44	64.74
	3	5550.60	-18.04	12.90	-7.90	-41.37	-41.37	-65.82	-65.59	69.51	69.28
	4	7400.80	-20.27	10.50	-3.20	-45.94	-45.35	-65.10	-65.93	64.22	65.64
	5	9251.00	-23.06	11.20	-1.10	-51.85	-49.57	-	-	-	-
	6	11101.20	-25.92	11.60	1.30	-54.92	-54.59	-	-	-	-
	7	12951.40	-28.16	12.90	2.30	-56.76	-56.49	-	-	-	-
661	2	3760.00	-14.05	12.40	-11.40	-37.50	-36.99	-51.78	-54.16	59.34	62.23
	3	5640.00	-18.03	12.90	-7.90	-41.30	-41.76	-67.55	-68.57	71.31	71.87
	4	7520.00	-20.41	10.60	-3.20	-45.54	-45.69	-65.93	-64.75	65.45	64.12
	5	9400.00	-22.44	11.60	-2.20	-51.20	-50.63	-	-	-	-
	6	11280.00	-26.22	12.10	1.10	-54.35	-54.25	-	-	-	-
	7	13160.00	-27.70	12.80	1.90	-57.39	-57.52	-	-	-	-
810	2	3819.60	-14.59	12.40	-10.80	-37.15	-37.91	-50.93	-53.39	58.84	60.54
	3	5729.40	-18.34	13.00	-7.70	-41.97	-41.90	-66.80	-68.52	69.89	71.68
	4	7639.20	-20.39	11.20	-3.80	-46.12	-46.48	-64.30	-62.17	63.24	60.75
	5	9549.00	-23.07	11.70	-1.60	-50.91	-50.34	-	-	-	-
	6	11458.80	-26.21	11.70	1.50	-54.31	-54.64	-	-	-	-
	7	13368.60	-27.83	12.30	2.50	-58.60	-58.83	-	-	-	-

6.7. Frequency Stability

6.7.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

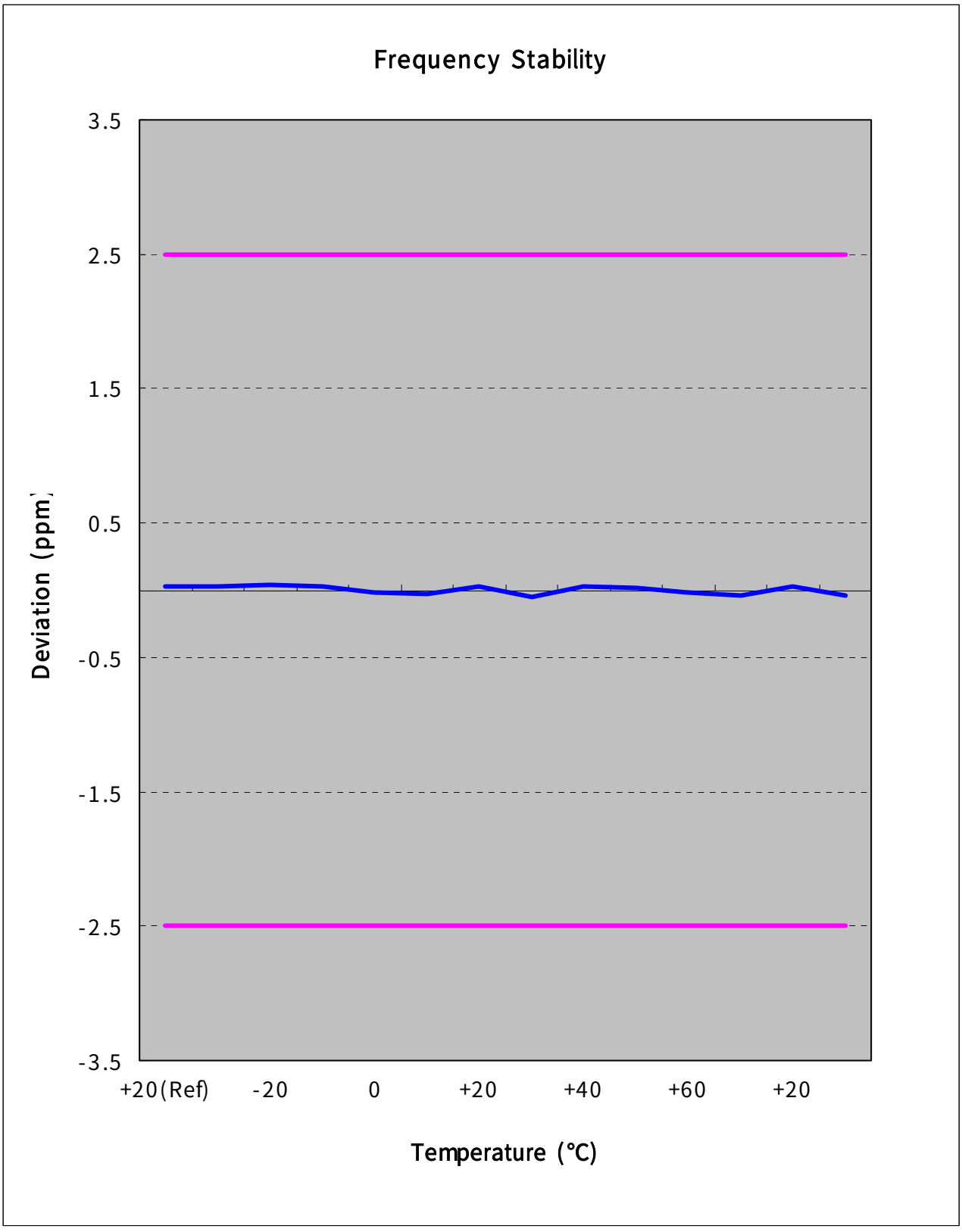
Deviation Limit : ±0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	27.90	836,600,028	0.000003	0.033
100%		-30	24.81	836,600,025	0.000003	0.030
100%		-20	29.00	836,600,029	0.000003	0.035
100%		-10	27.00	836,600,027	0.000003	0.032
100%		0	-17.97	836,599,982	-0.000002	-0.021
100%		+10	-19.75	836,599,980	-0.000002	-0.024
100%		+20	27.90	836,600,028	0.000003	0.033
100%		+30	-39.13	836,599,961	-0.000005	-0.047
100%		+40	19.22	836,600,019	0.000002	0.023
100%		+50	18.20	836,600,018	0.000002	0.022
100%		+60	-10.41	836,599,990	-0.000001	-0.012
85%	3.35	+20	-30.81	836,599,969	-0.000004	-0.037
115%	4.26	+20	23.02	836,600,023	0.000003	0.028
Batt.Endpoint	3.35	+20	-30.81	836,599,969	-0.000004	-0.037

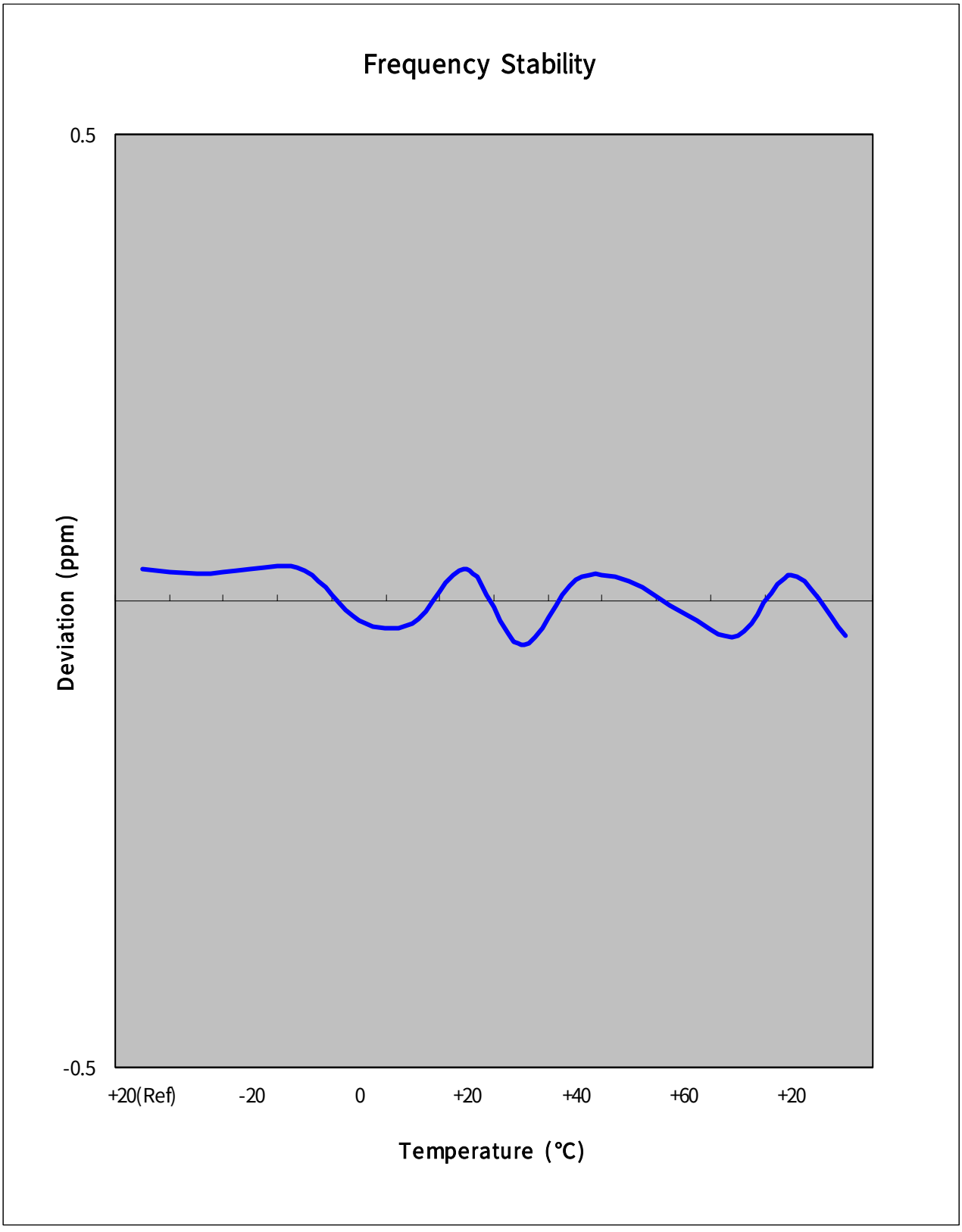
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.2. GSM850 Frequency Stability Graph



Zoom IN


Frequency Stability
0.5
-0.5
Deviation (ppm)
+20(Ref)
-20
0
+20
+40
+60
+20
Temperature (°C)

6.7.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

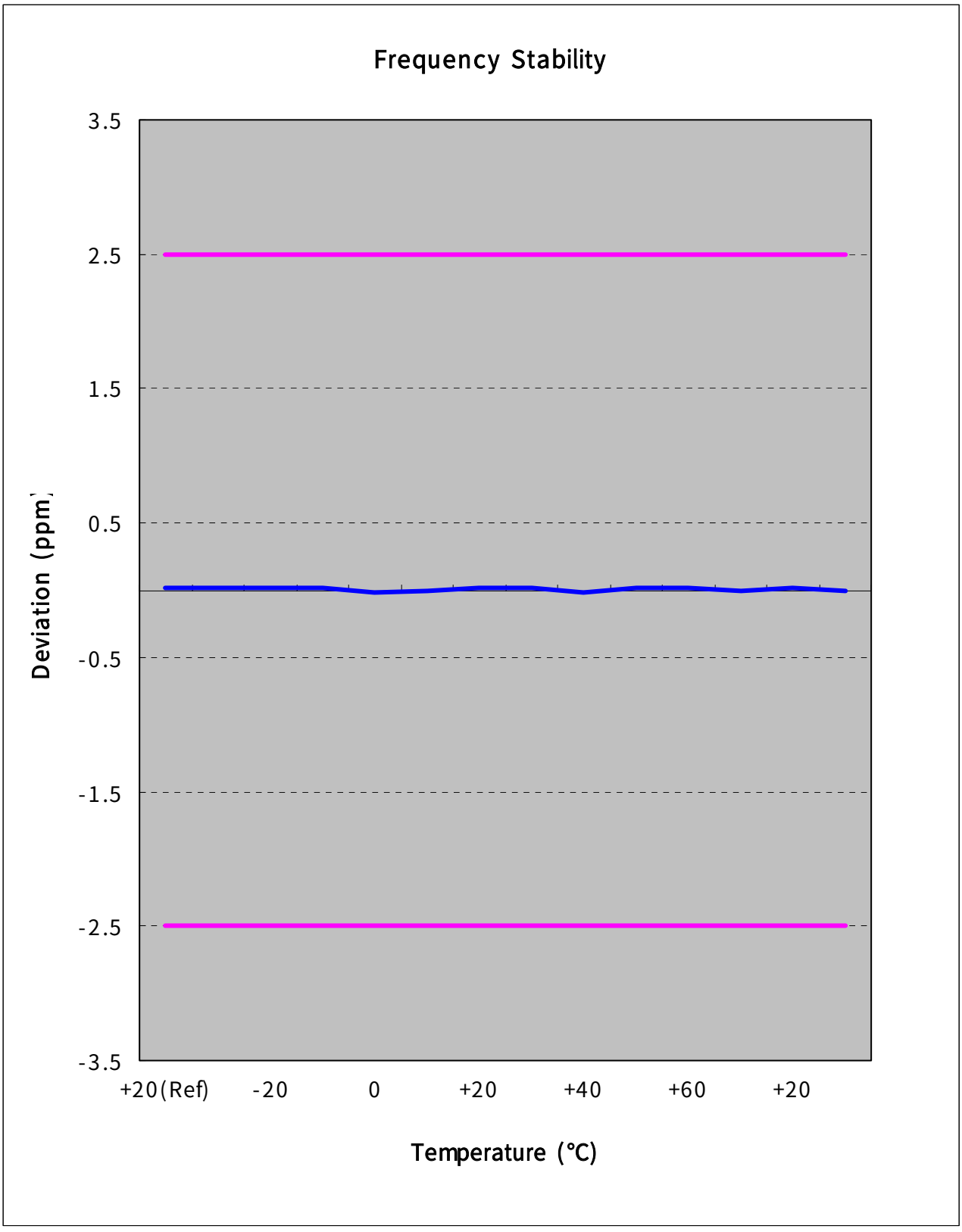
Deviation Limit : ±0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	26.71	1,880,000,027	0.000001	0.014
100%		-30	31.30	1,880,000,031	0.000002	0.017
100%		-20	27.83	1,880,000,028	0.000001	0.015
100%		-10	24.10	1,880,000,024	0.000001	0.013
100%		0	-29.82	1,879,999,970	-0.000002	-0.016
100%		+10	-14.98	1,879,999,985	-0.000001	-0.008
100%		+20	26.71	1,880,000,027	0.000001	0.014
100%		+30	23.38	1,880,000,023	0.000001	0.012
100%		+40	-23.87	1,879,999,976	-0.000001	-0.013
100%		+50	21.28	1,880,000,021	0.000001	0.011
100%		+60	31.44	1,880,000,031	0.000002	0.017
85%	3.35	+20	-19.50	1,879,999,981	-0.000001	-0.010
115%	4.26	+20	31.06	1,880,000,031	0.000002	0.017
Batt.Endpoint	3.35	+20	-19.50	1,879,999,981	-0.000001	-0.010

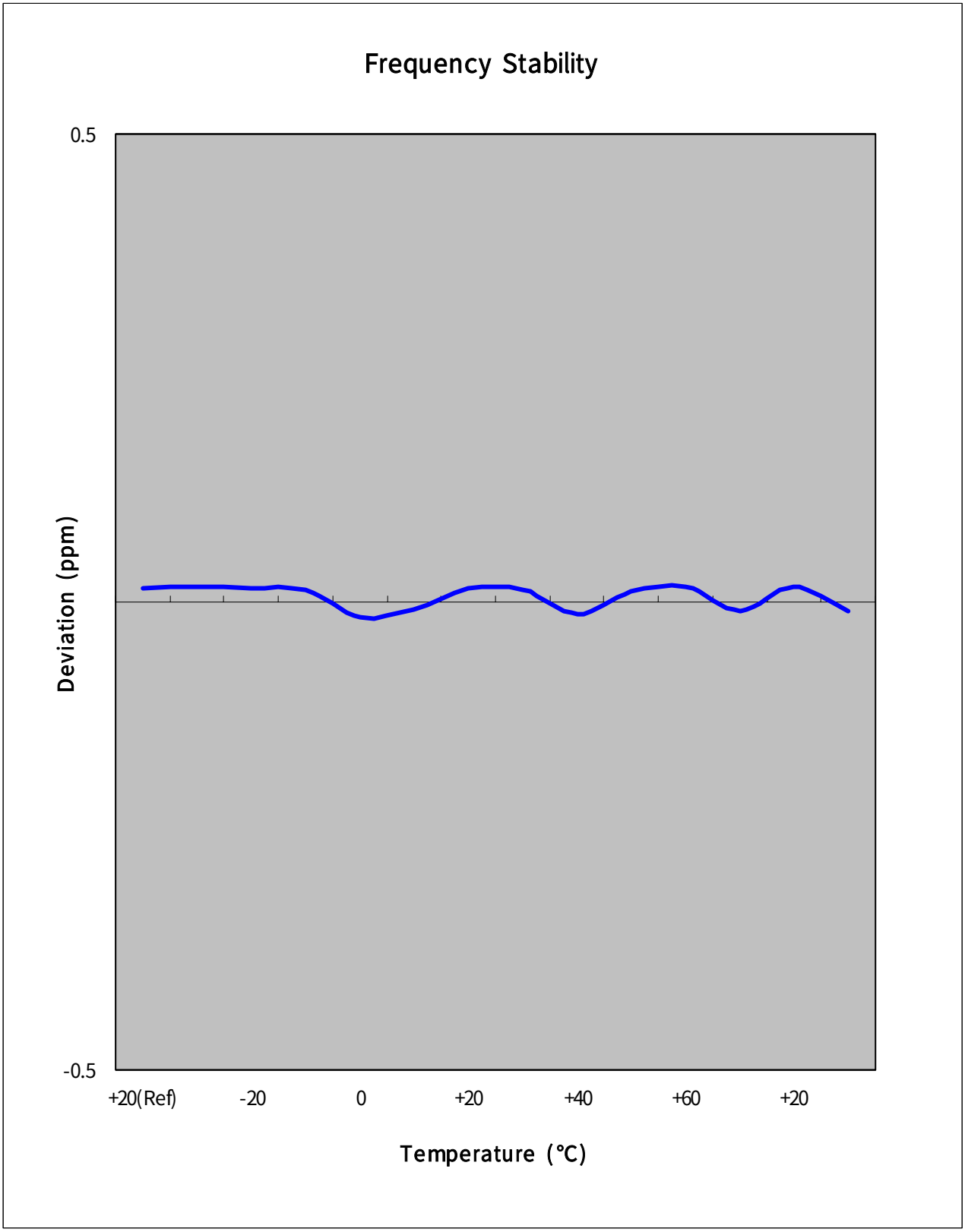
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.4. GSM1900 Frequency Stability Graph



Zoom IN

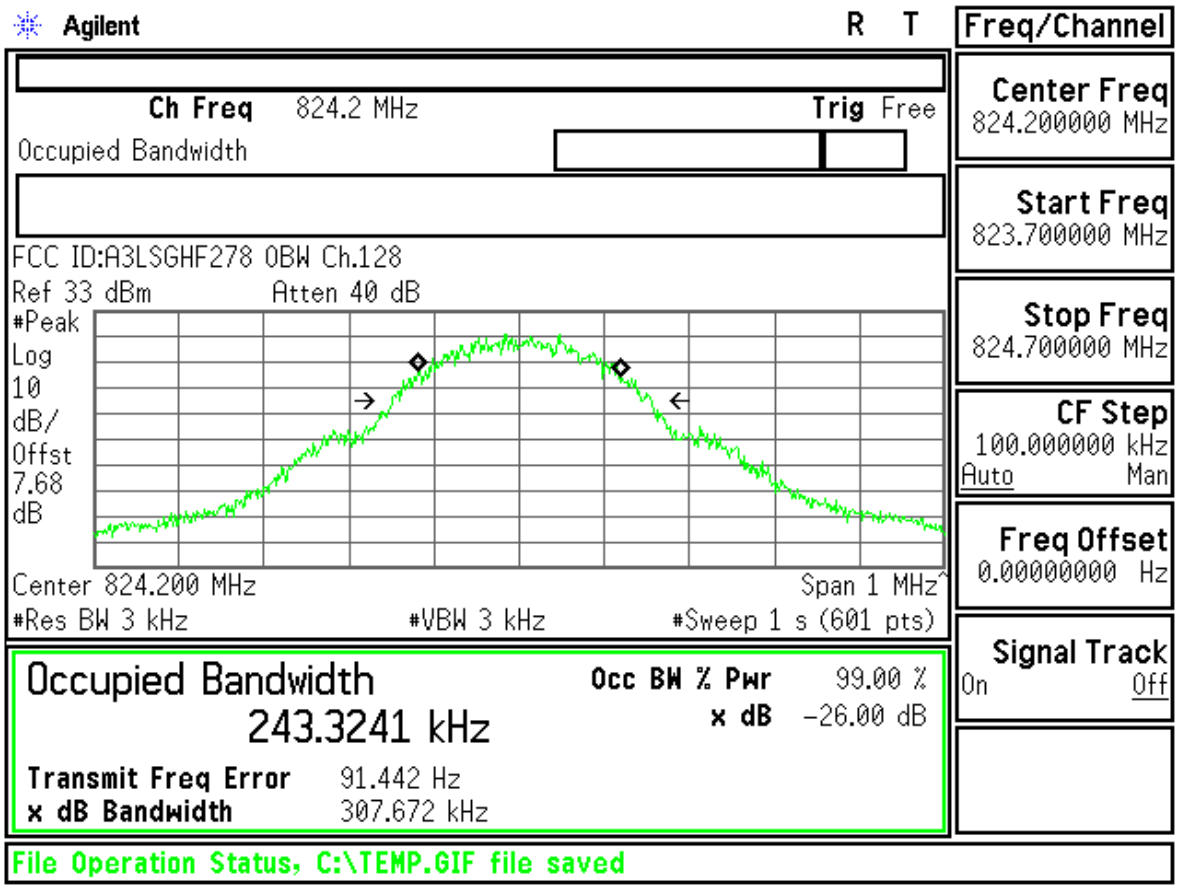

Frequency Stability
0.5
-0.5
Deviation (ppm)
+20(Ref)
-20
0
+20
+40
+60
+20
Temperature (℃)

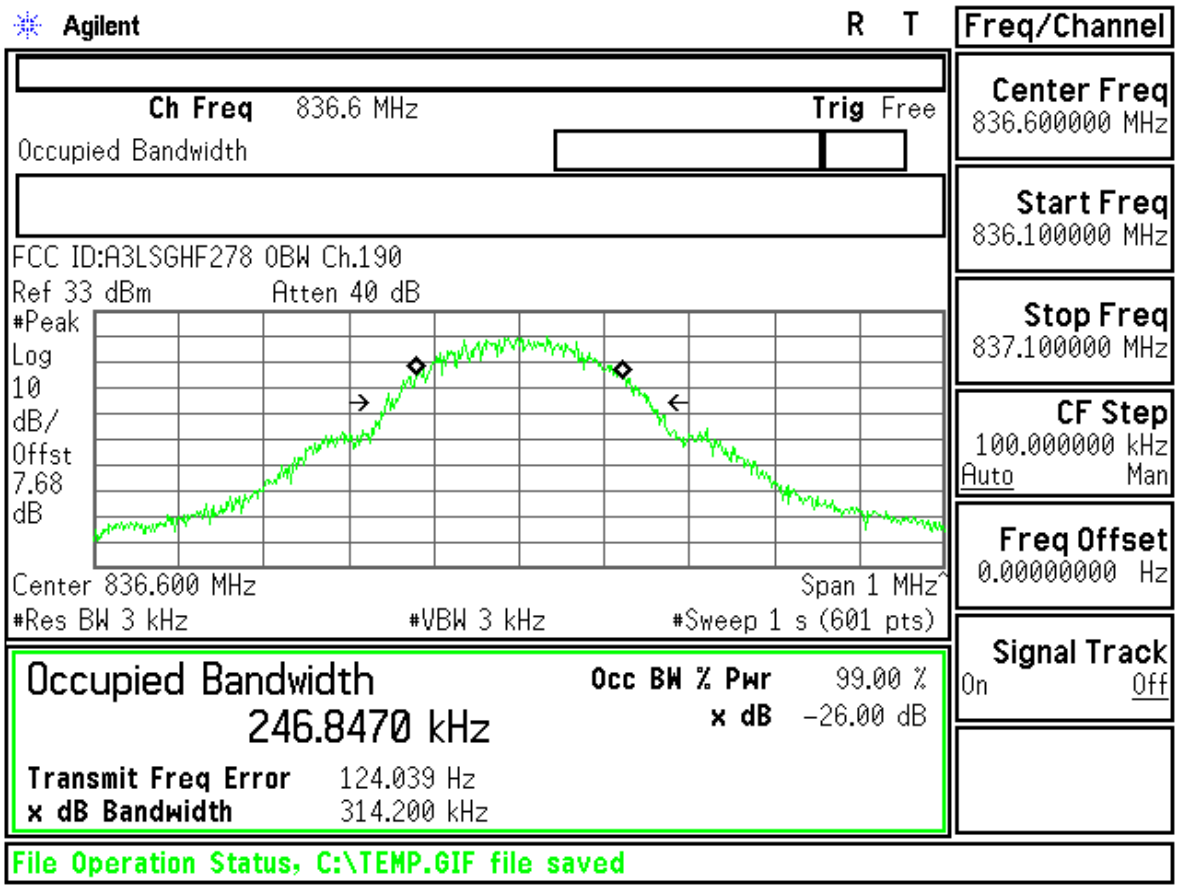
7. CONCLUSION

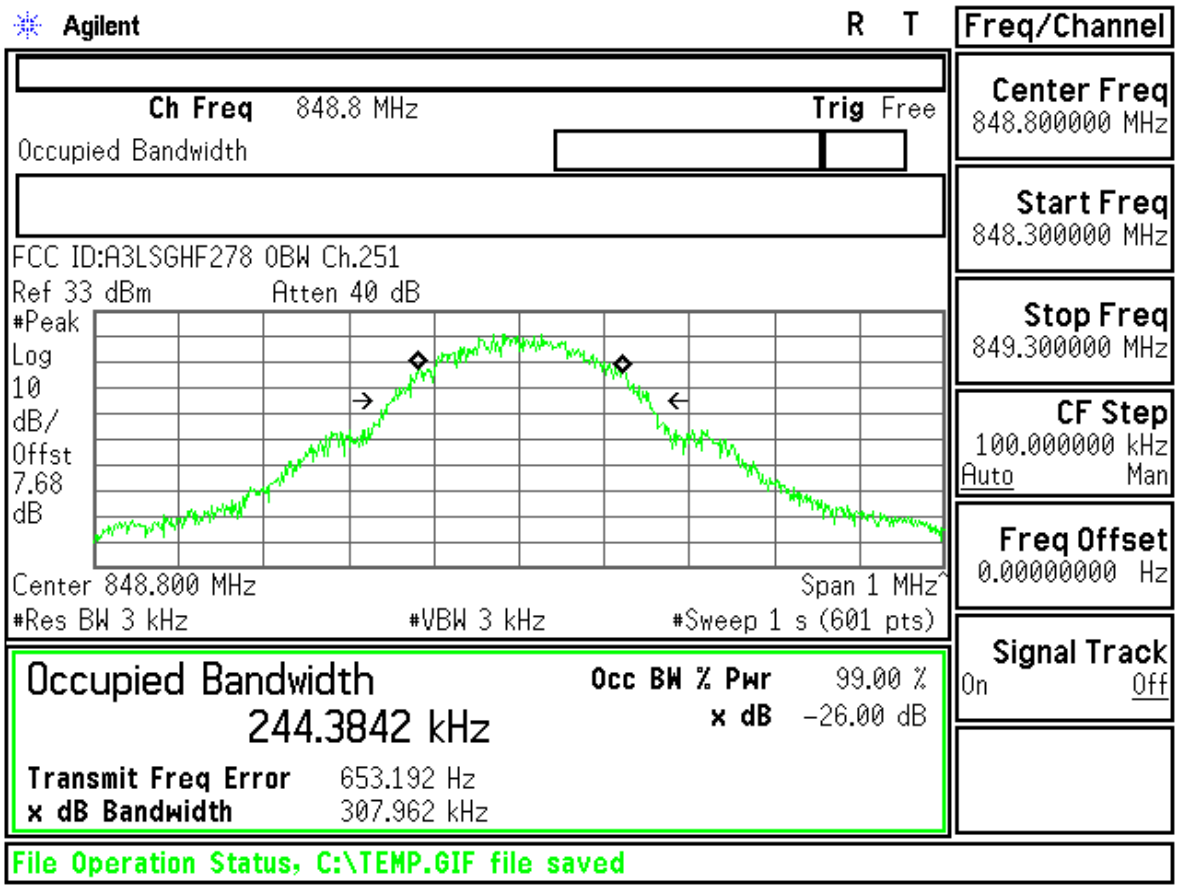
The data collected shows that the SAMSUNG Dual-Band GSM/EDGE 850/1900 Phone with Bluetooth.
FCC ID : A3LSGHF278 complies with all the requirements of Parts 2,22,24 of the FCC Rules.

8. TEST PLOTS

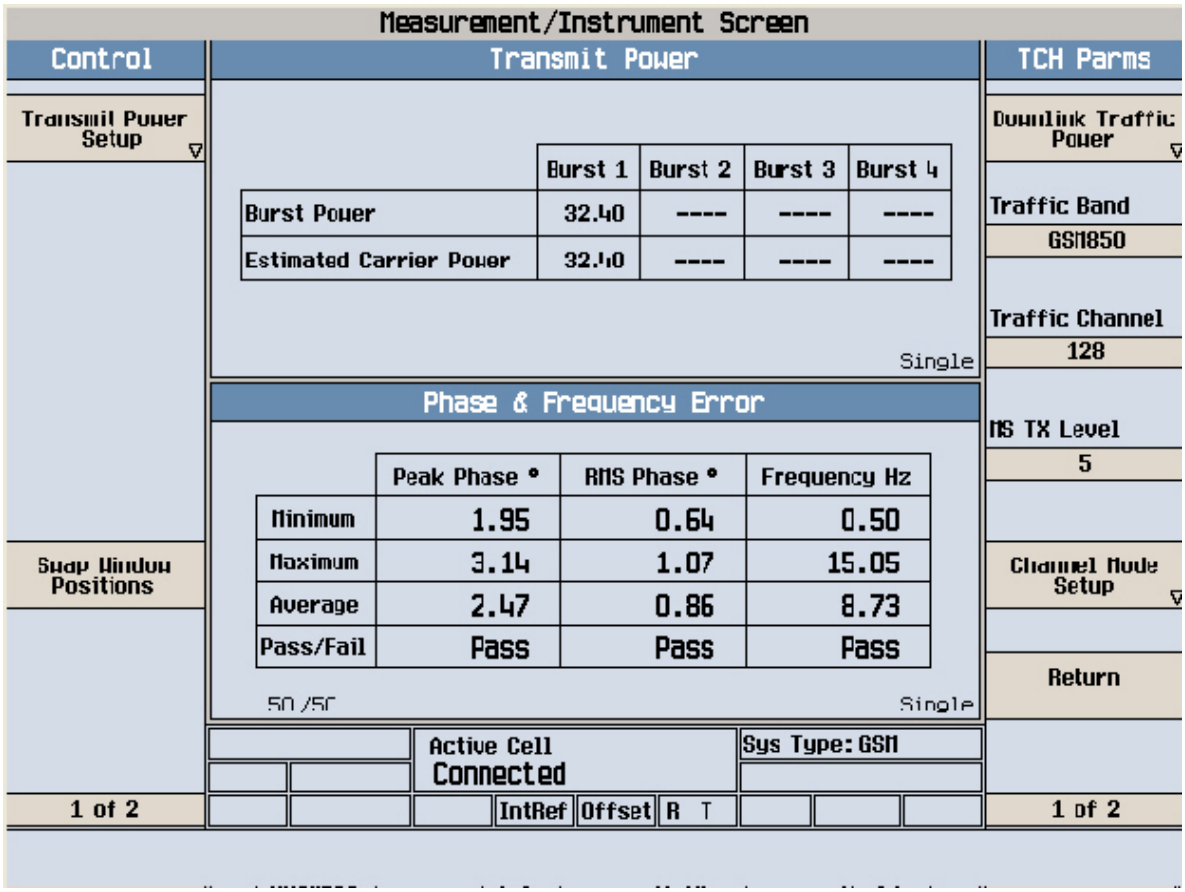
GSM850


Agilent
R T
Freq/Channel
Ch Freq 824.2 MHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.128
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 824.200 MHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
243.3241 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 91.442 Hz
x dB Bandwidth 307.672 kHz
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

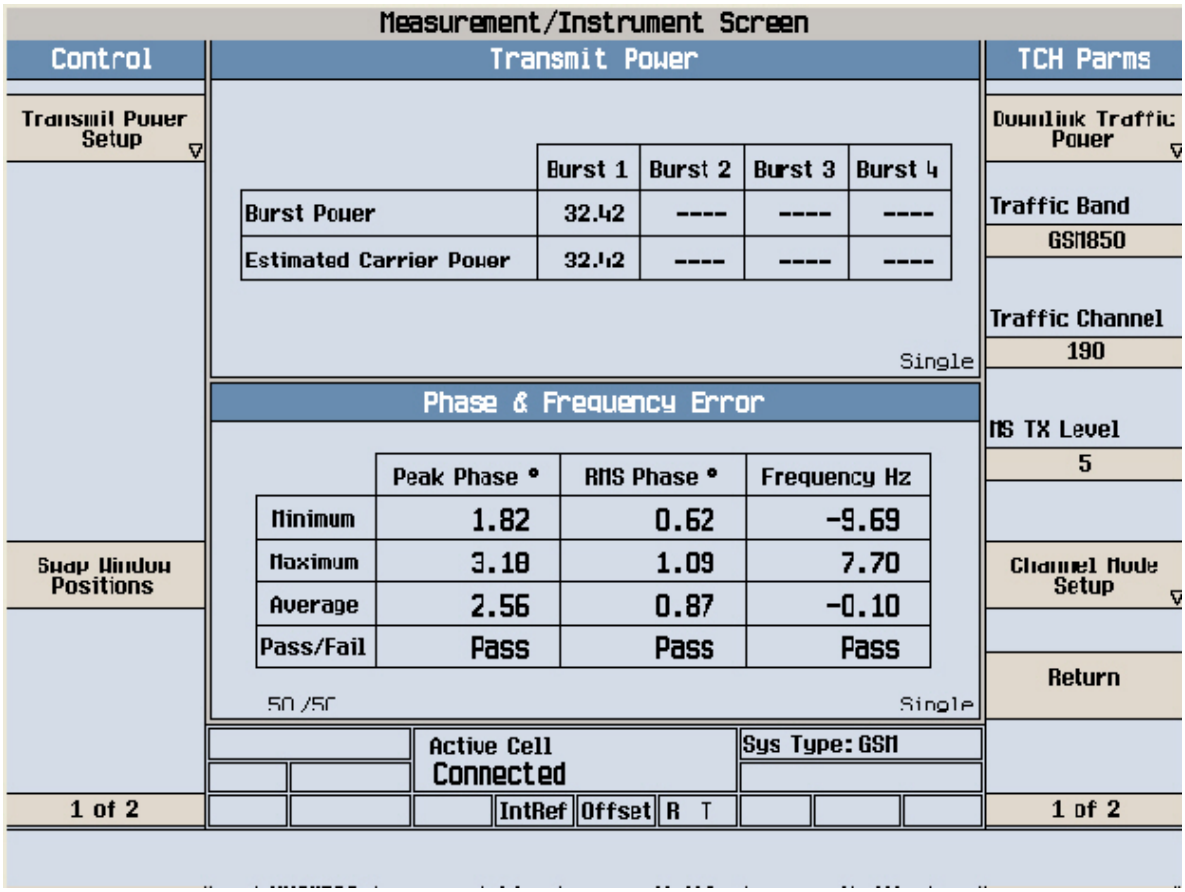

Agilent
R T
Freq/Channel
Ch Freq 836.6 MHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.190
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 836.600 MHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
246.8470 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 124.039 Hz
x dB Bandwidth 314.200 kHz
Center Freq
836.600000 MHz
Start Freq
836.100000 MHz
Stop Freq
837.100000 MHz
CF Step
100.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
File Operation Status, C:\TEMP.GIF file saved


Agilent
R T
Freq/Channel
Ch Freq 848.8 MHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.251
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 848.800 MHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
244.3842 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 653.192 Hz
x dB Bandwidth 307.962 kHz
File Operation Status, C:\TEMP.GIF file saved
Center Freq
848.800000 MHz
Start Freq
848.300000 MHz
Stop Freq
849.300000 MHz
CF Step
100.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off

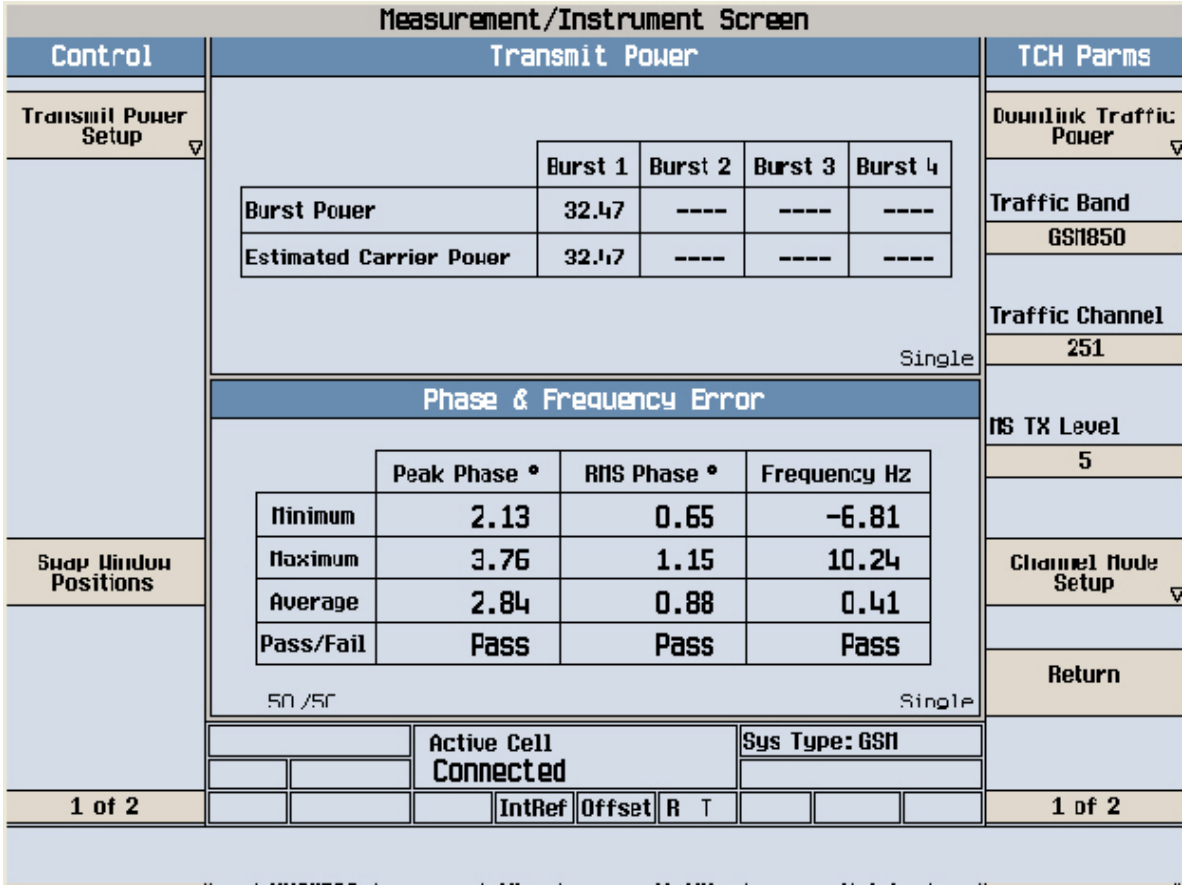
FCC ID : A3LSGHF278 Transmit Power 128CH



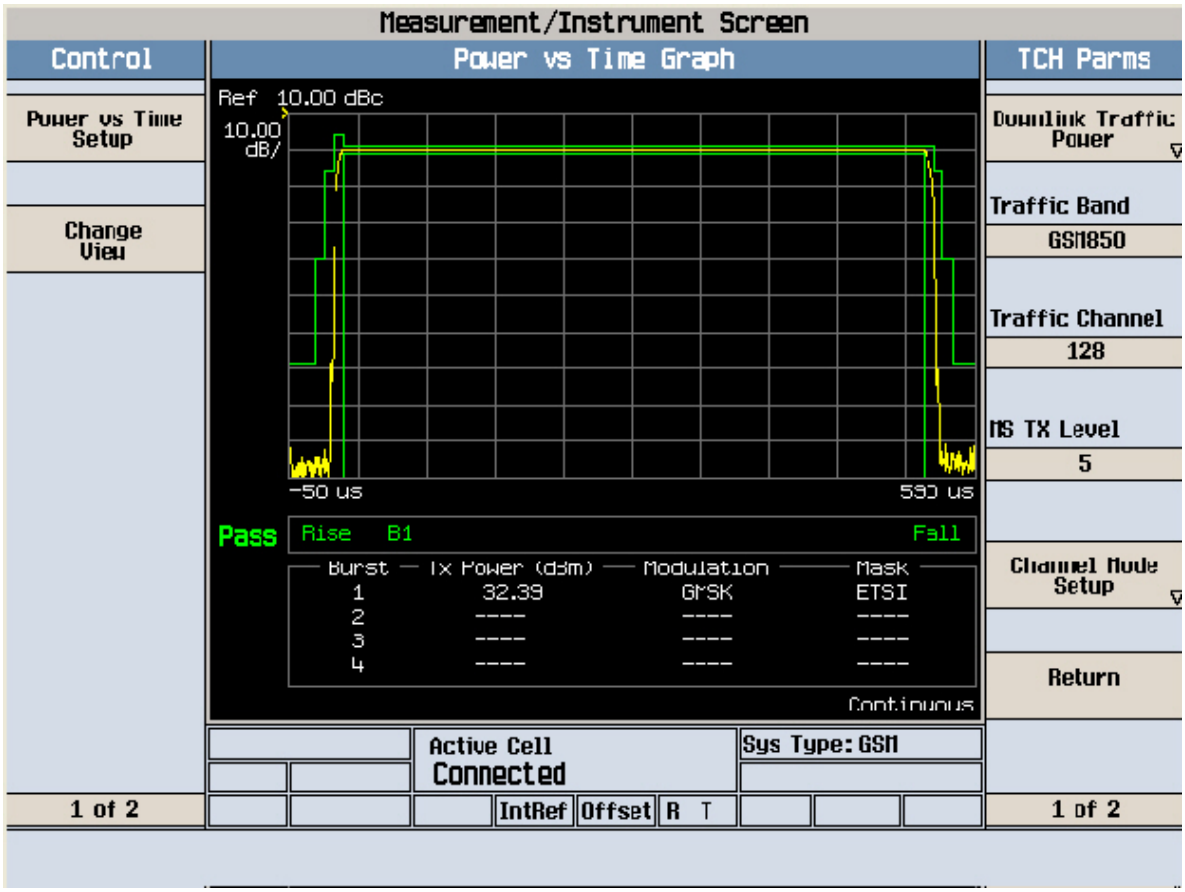
FCC ID : A3LSGHF278 Transmit Power 190CH



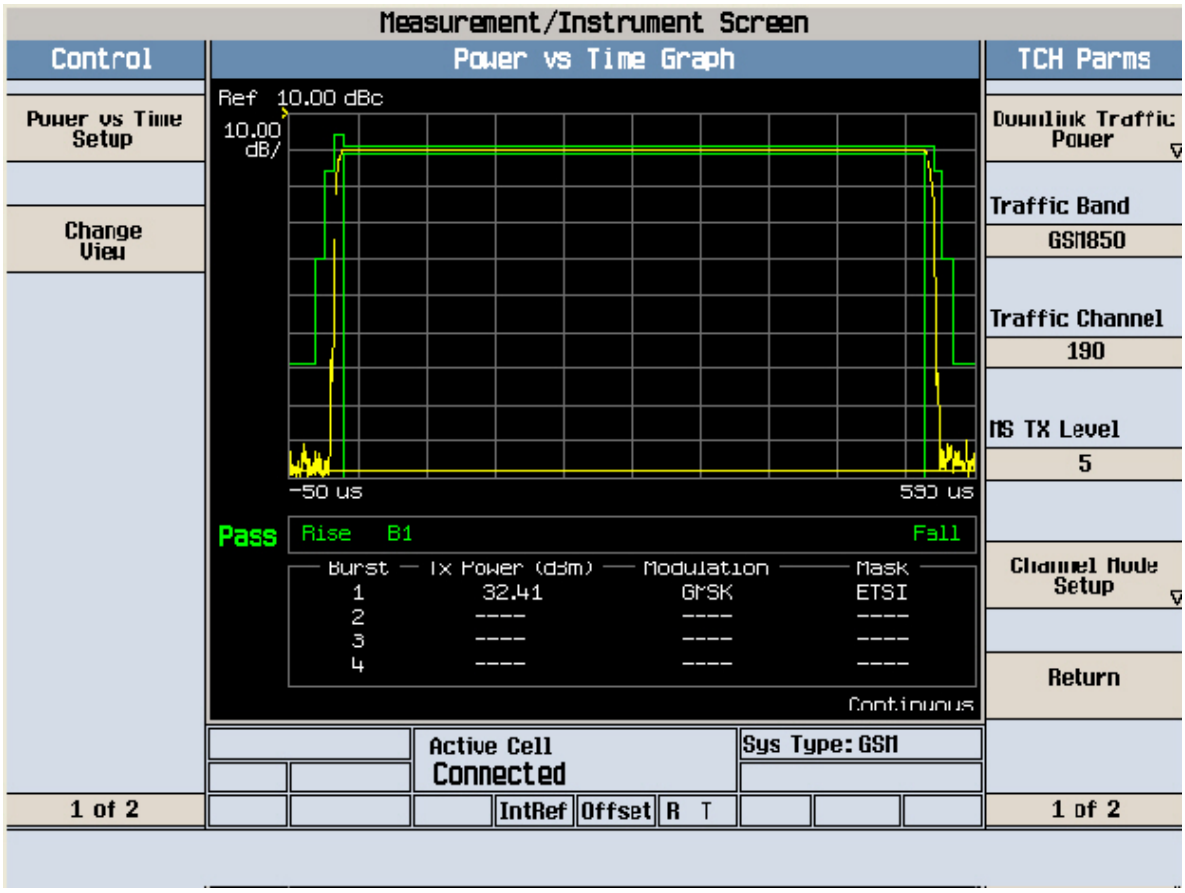
FCC ID : A3LSGHF278 Transmit Power 251CH



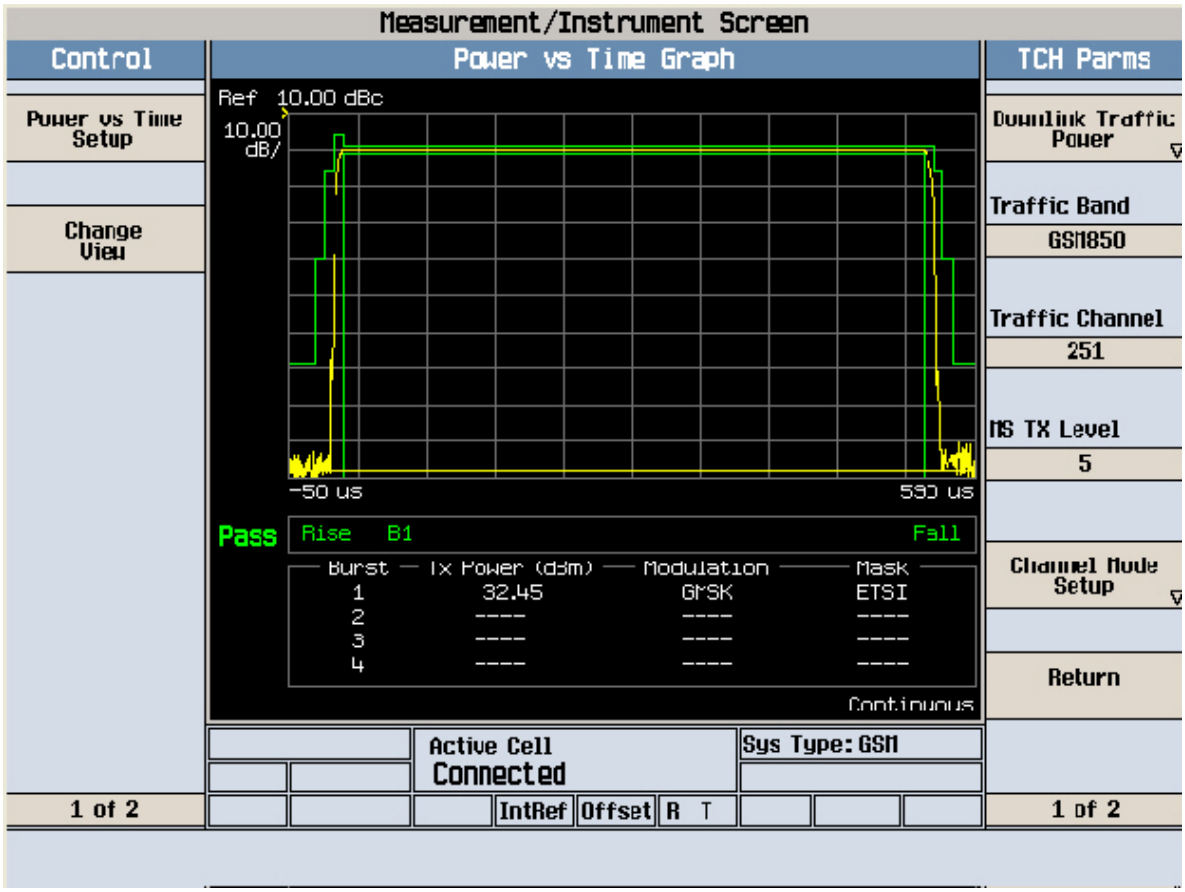
FCC ID : A3LSGHF278 GMSK Power vs Time 128CH



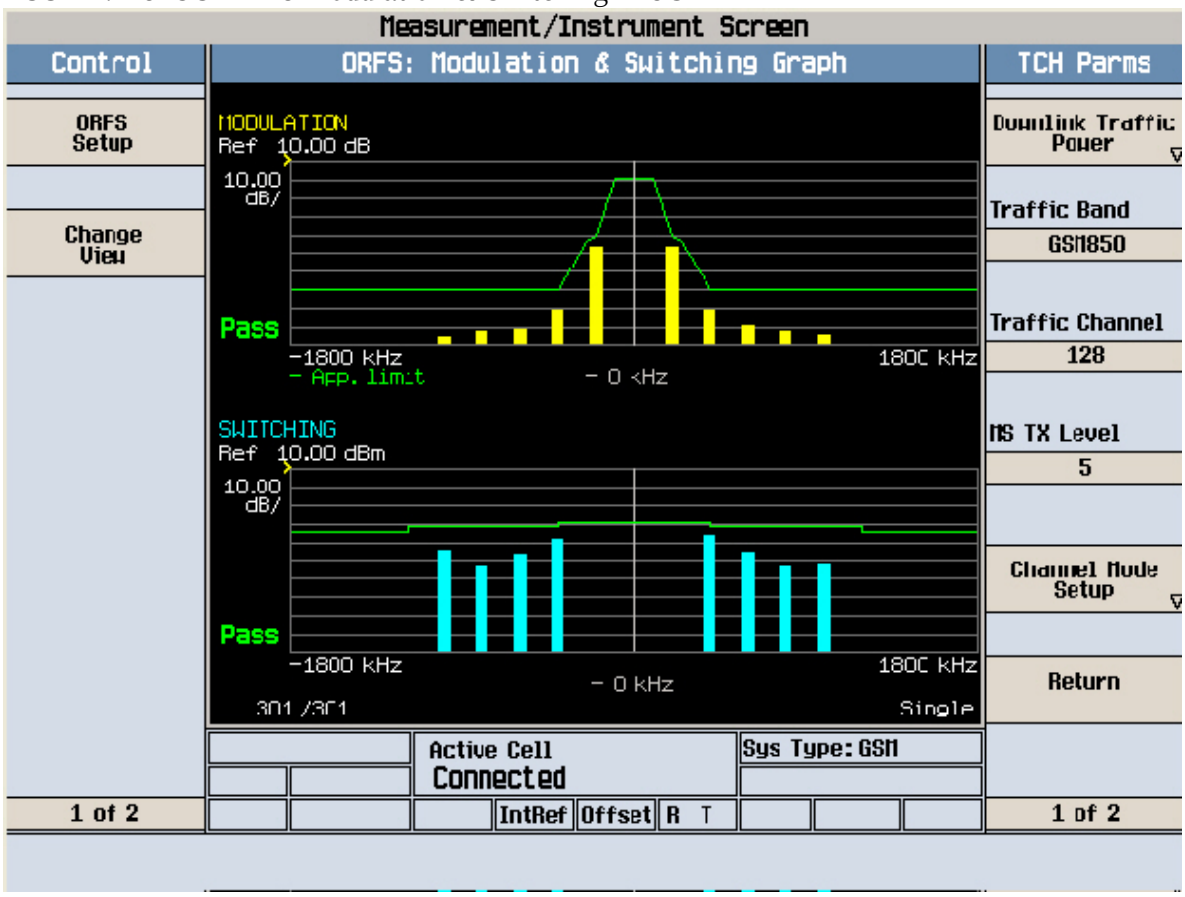
FCC ID : A3LSGHF278 GMSK Power vs Time 190CH



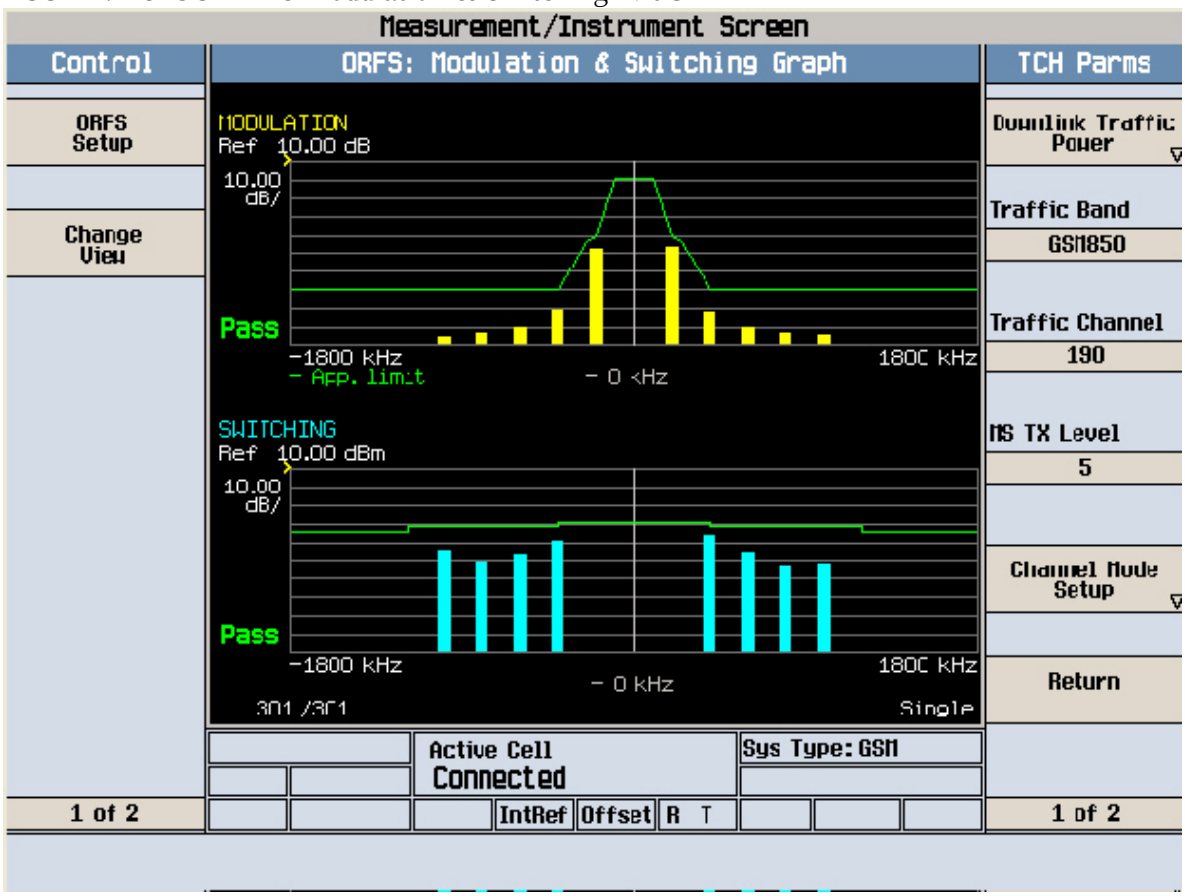
FCC ID : A3LSGHF278 GMSK Power vs Time 251CH

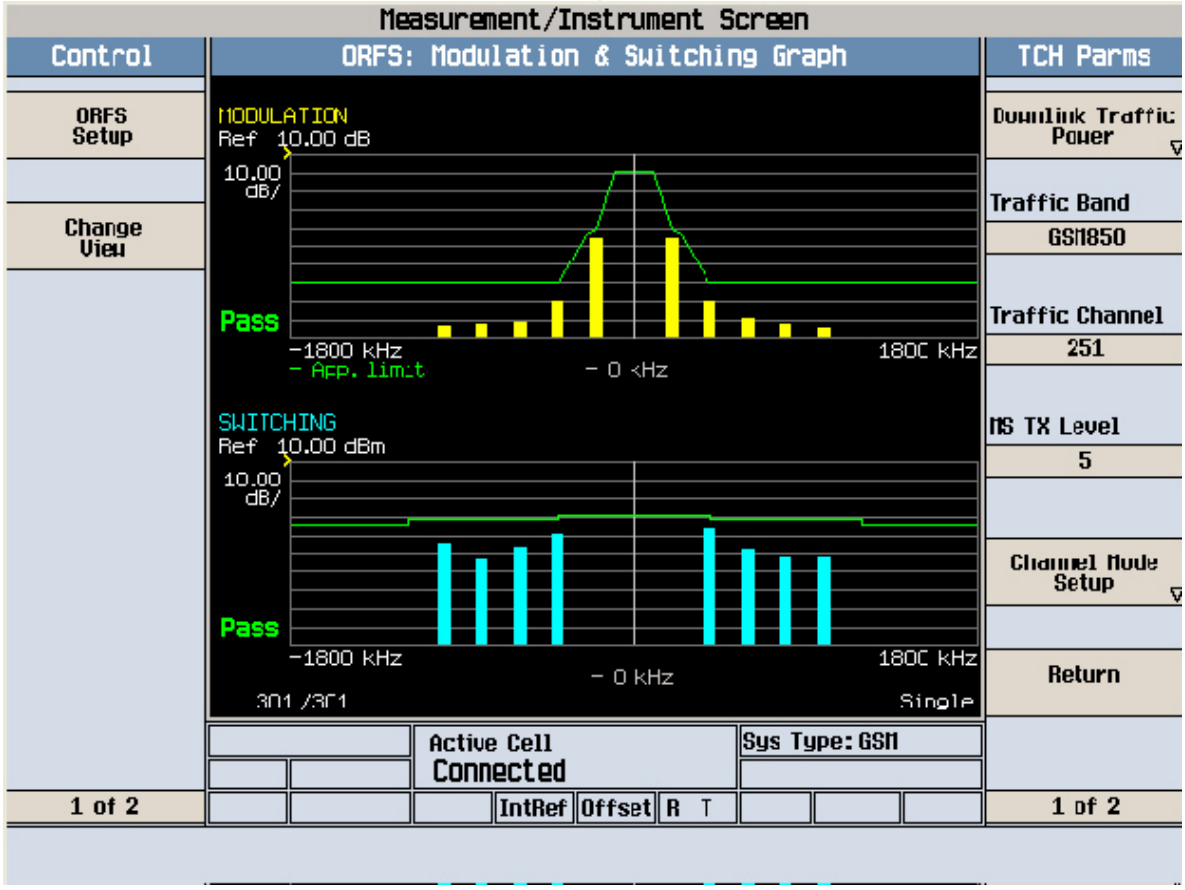


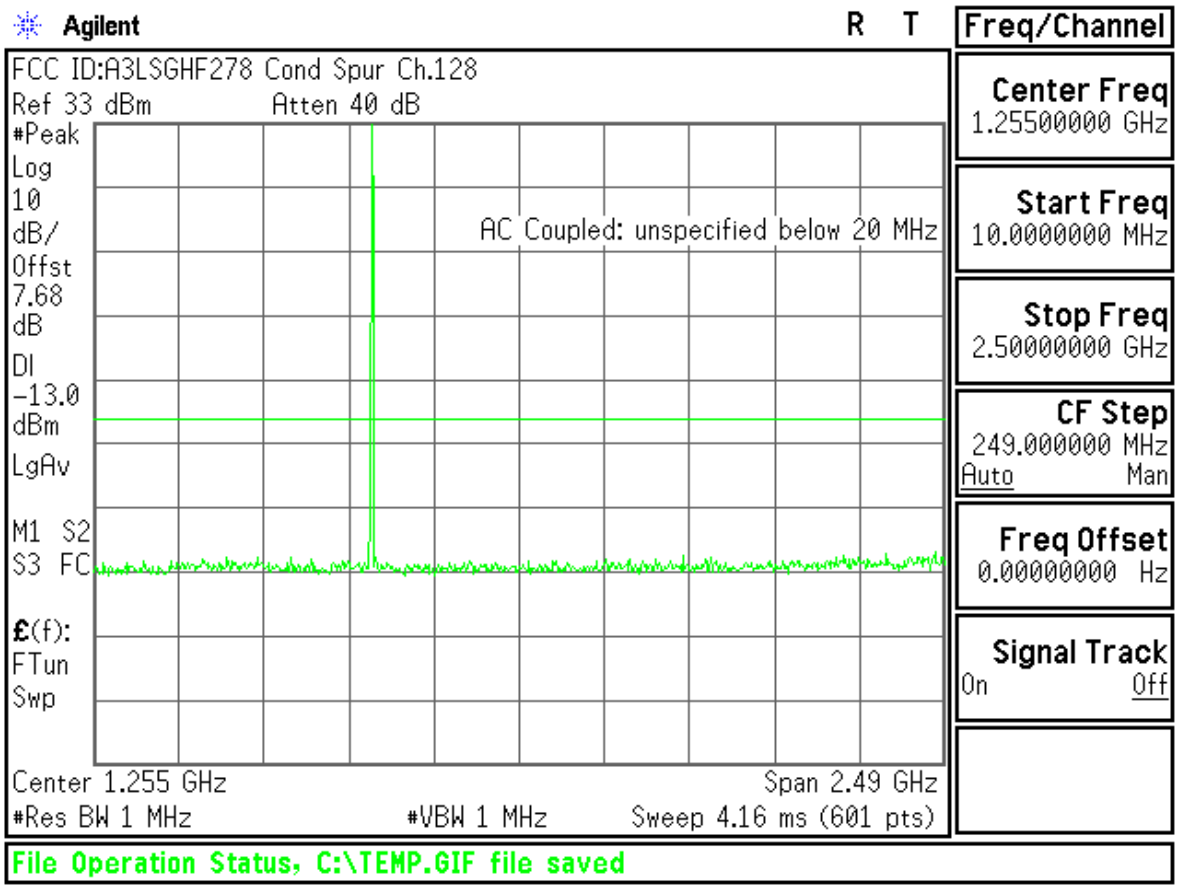
FCC ID : A3LSGHF278 Modulation & Switching 128CH

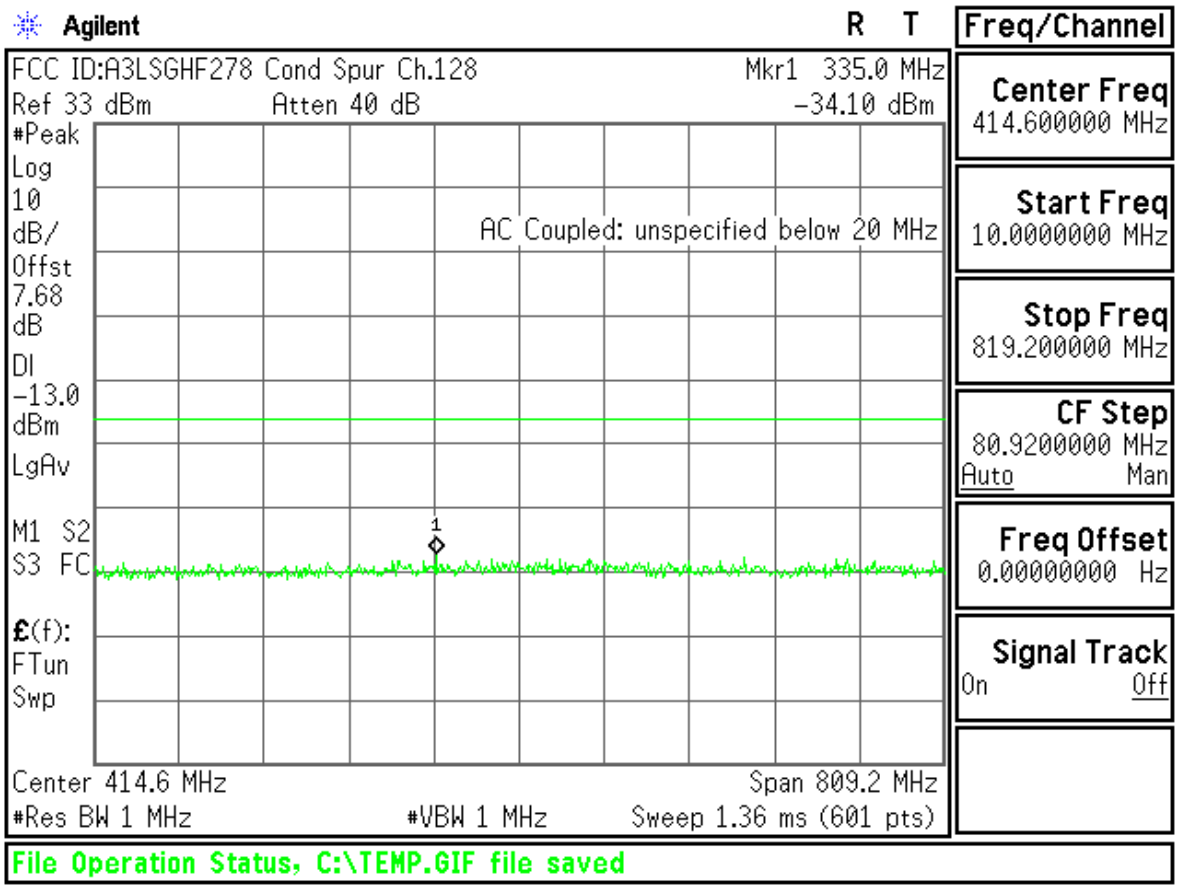


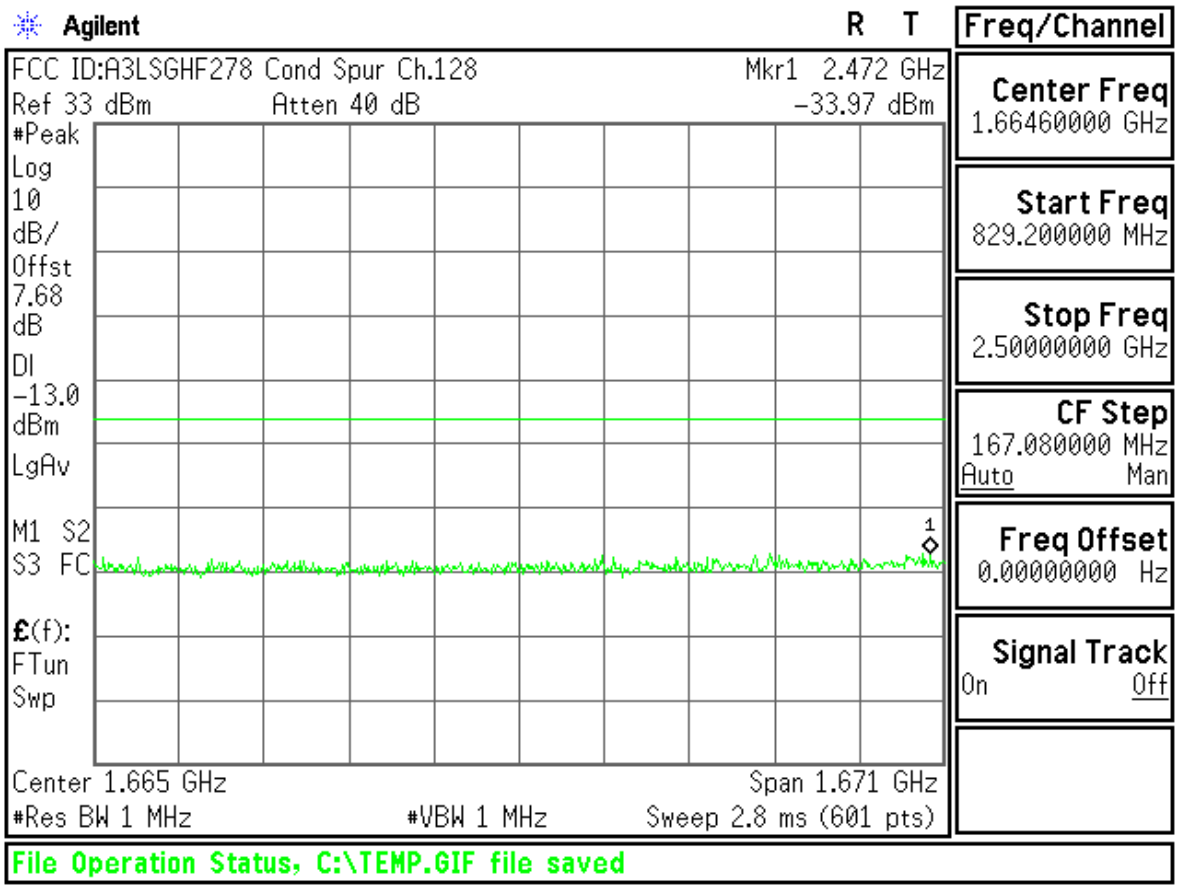
FCC ID : A3LSGHF278 Modulation & Switching 190CH

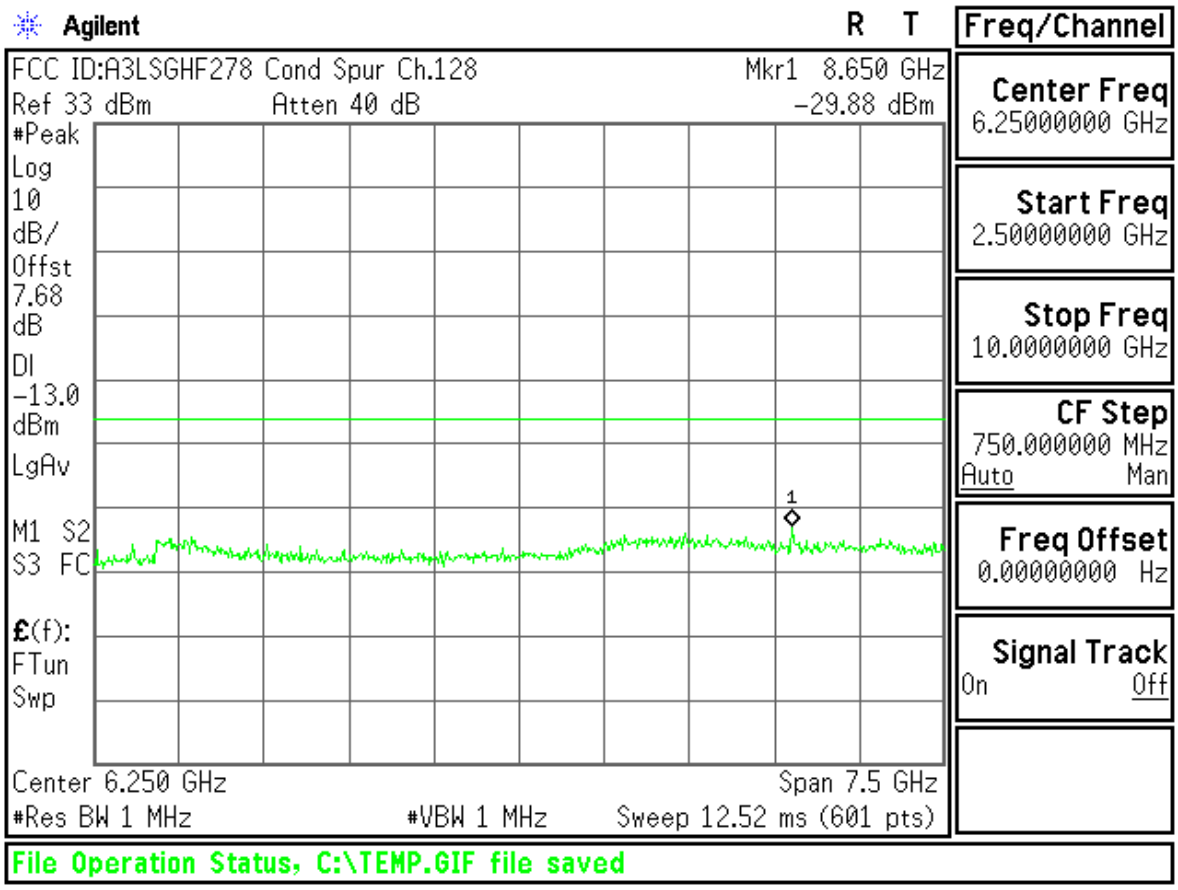


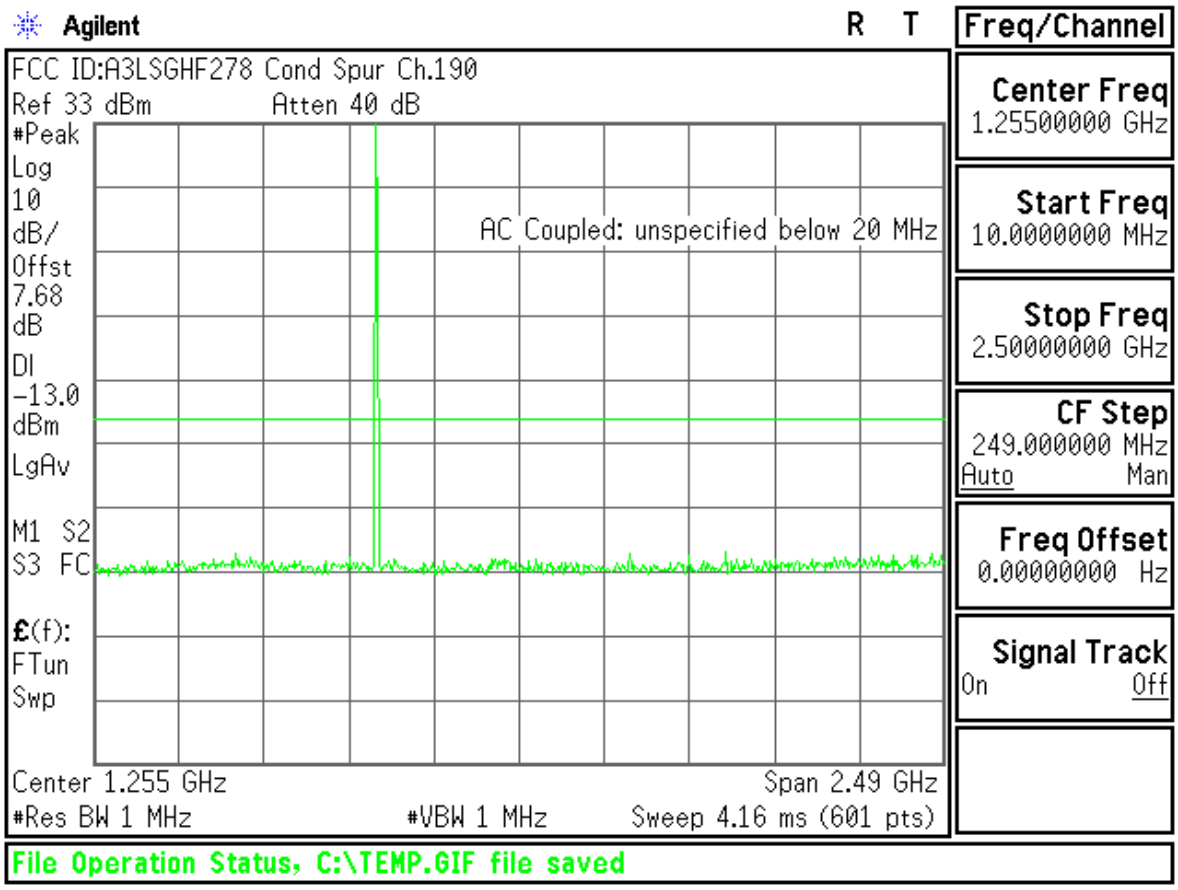

Measurement/Instrument Screen
Control
ORFS: Modulation & Switching Graph
TCH Parms
ORFS Setup
Change View
MODULATION
Ref 10.00 dB
10.00 dB/
Pass
-1800 kHz
- App. limit
- 0 kHz
180C kHz
SWITCHING
Ref 10.00 dBm
10.00 dB/
Pass
-1800 kHz
- 0 kHz
180C kHz
Single
Downlink Traffic Power
Traffic Band
GSM850
Traffic Channel
251
MS TX Level
5
Channel Mode Setup
Return
Active Cell
Connected
Sys Type: GSM
IntRef
Offset
R T
1 of 2
1 of 2

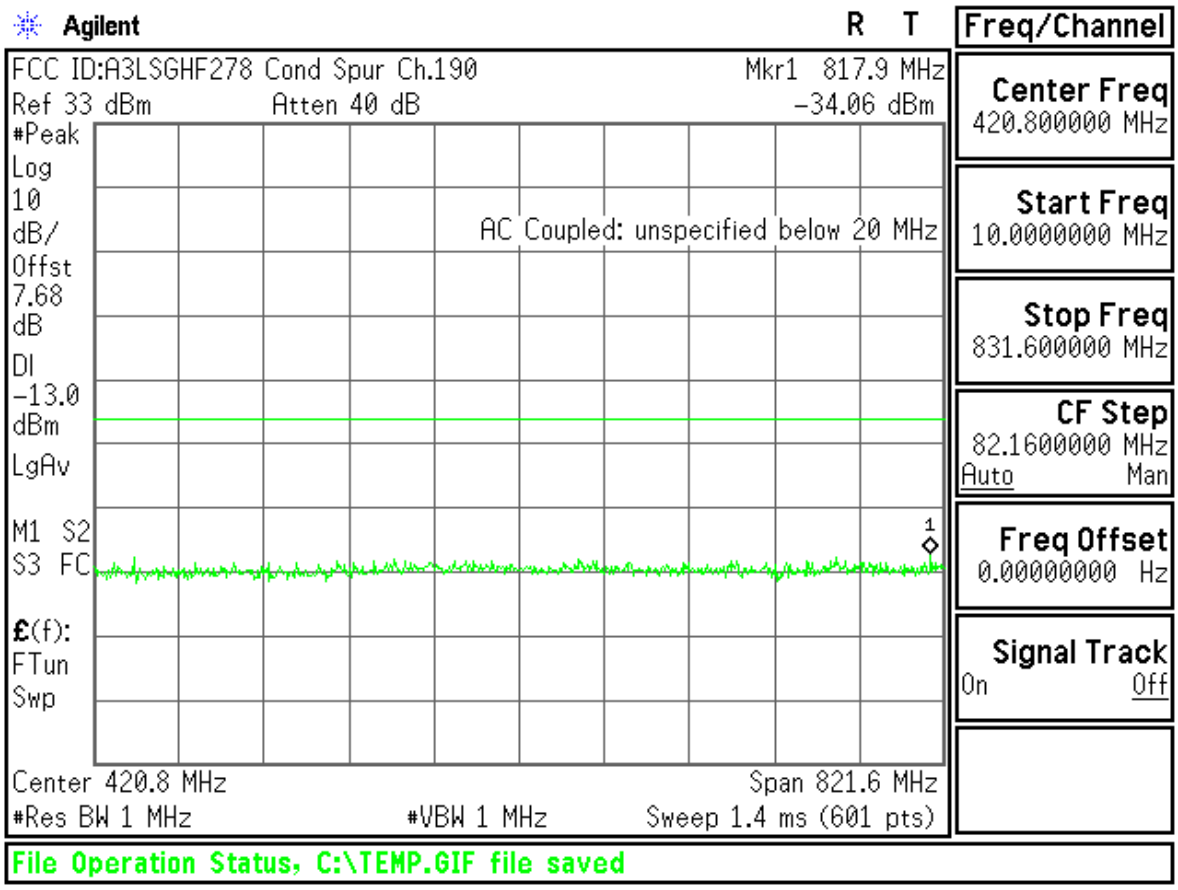

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.128
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Freq/Channel
Center Freq
1.25500000 GHz
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

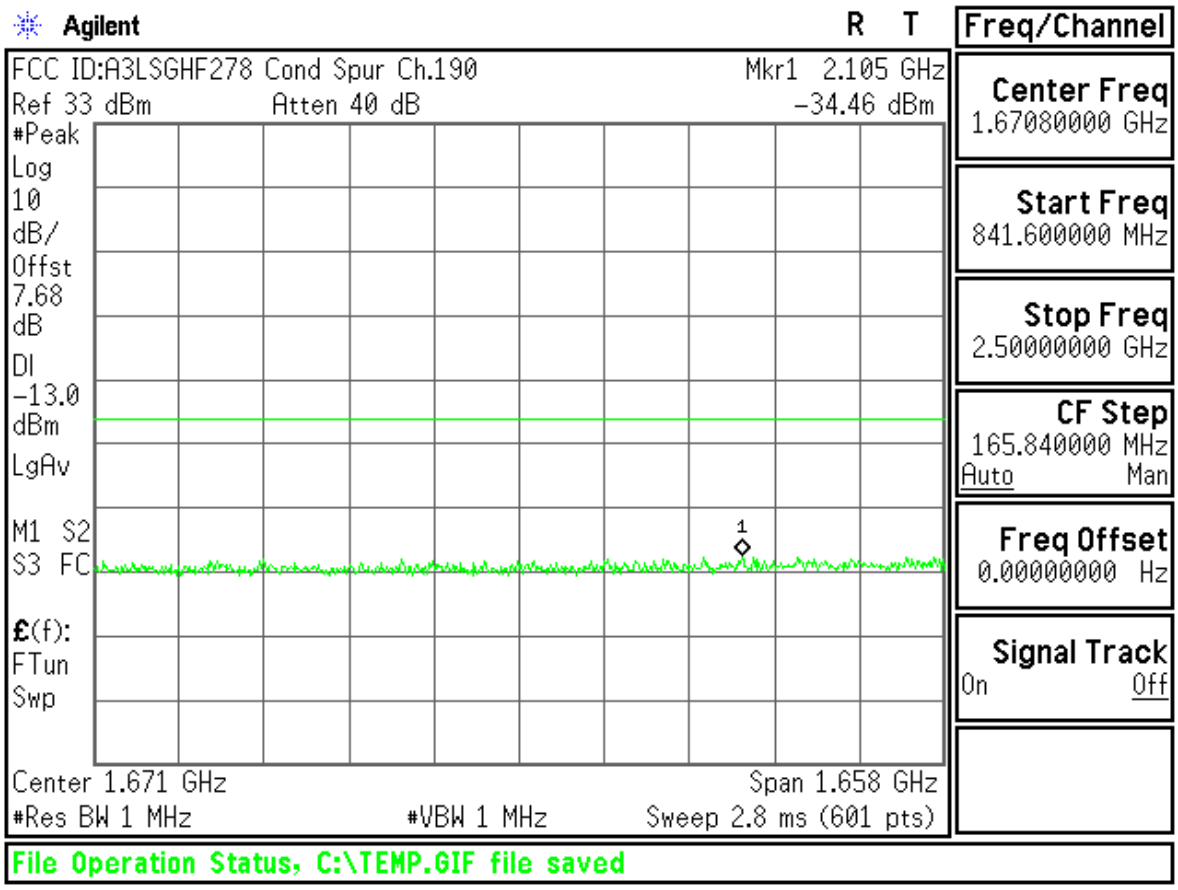

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.128
Mkr1 335.0 MHz
Ref 33 dBm
Atten 40 dB
-34.10 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
1
AC Coupled: unspecified below 20 MHz
Center 414.6 MHz
Span 809.2 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1.36 ms (601 pts)
Freq/Channel
Center Freq
414.600000 MHz
Start Freq
10.0000000 MHz
Stop Freq
819.200000 MHz
CF Step
80.9200000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
File Operation Status, C:\TEMP.GIF file saved

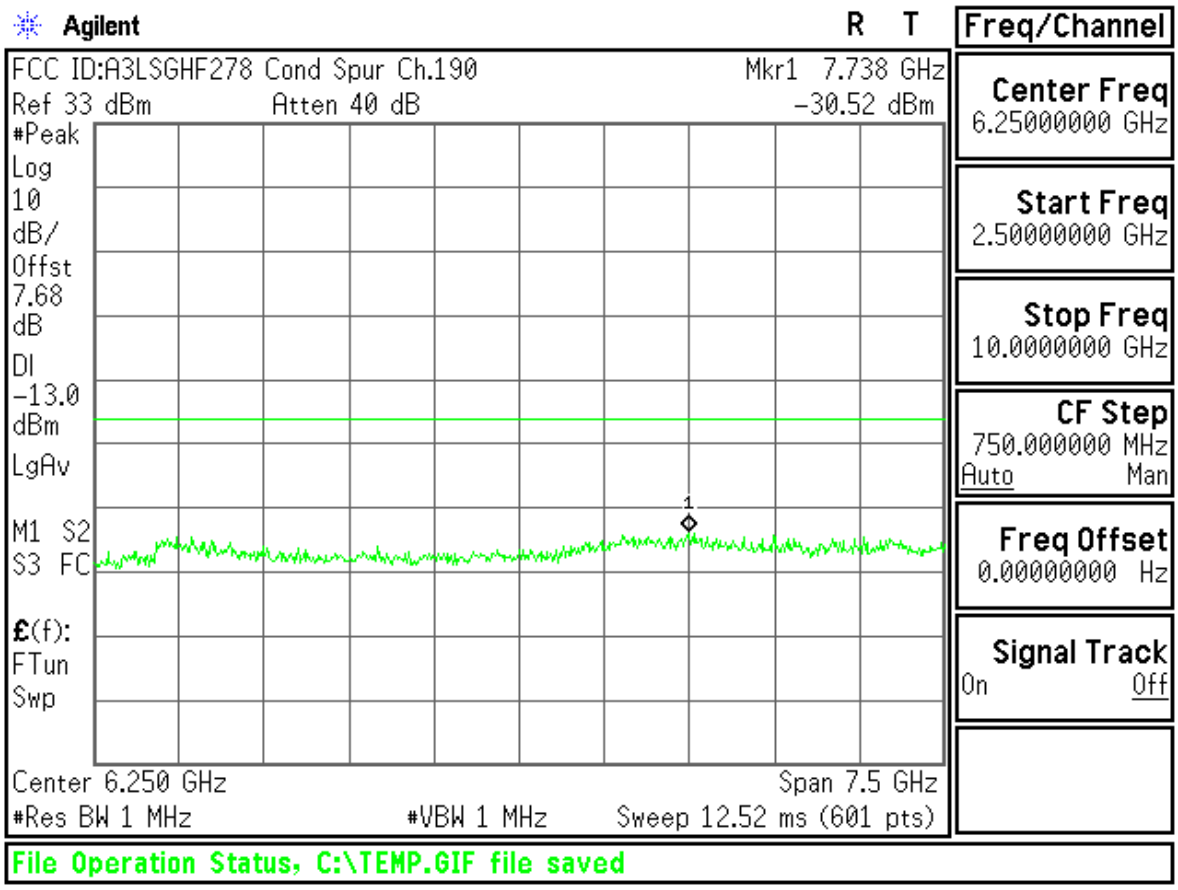

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.128
Mkr1 2.472 GHz
Ref 33 dBm
Atten 40 dB
-33.97 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
1.66460000 GHz
Start Freq
829.200000 MHz
Stop Freq
2.50000000 GHz
CF Step
167.080000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 1.665 GHz
Span 1.671 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 2.8 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved

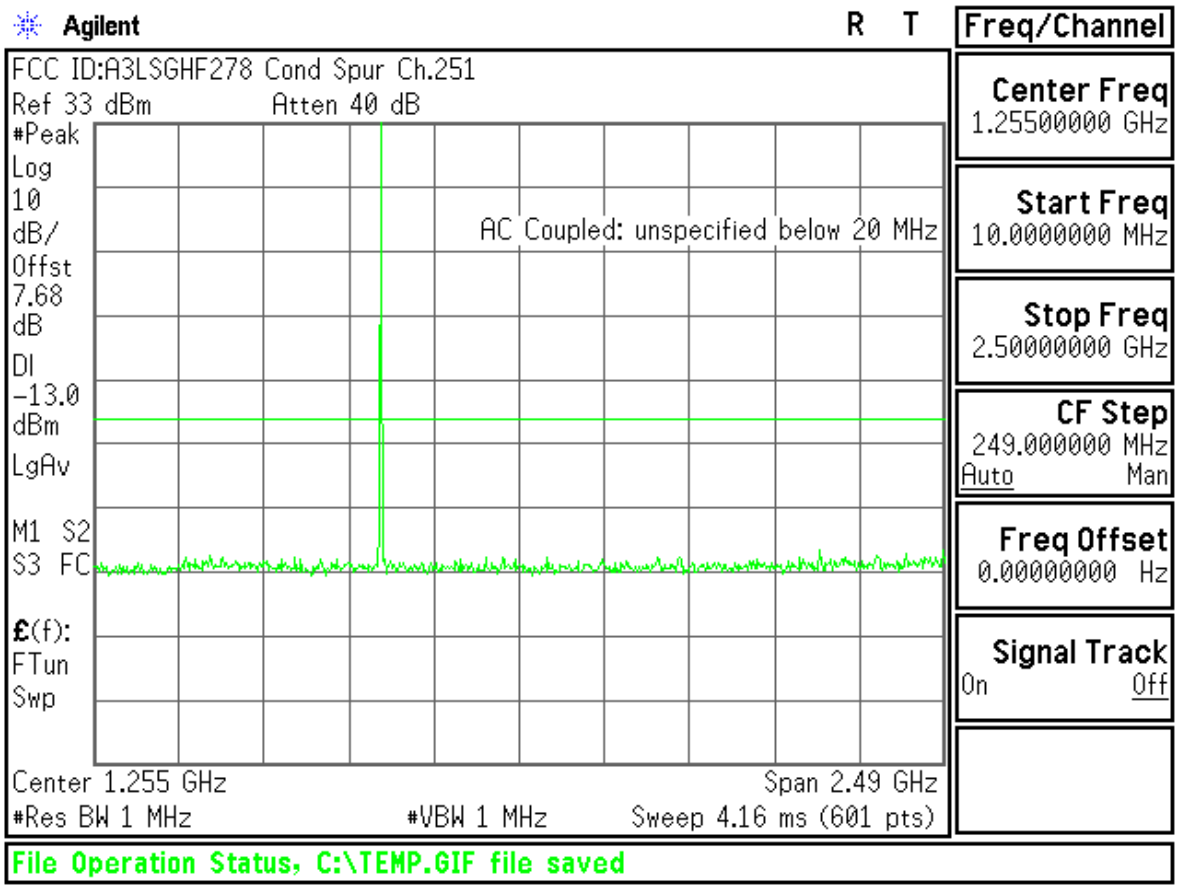

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.128
Mkr1 8.650 GHz
Ref 33 dBm
Atten 40 dB
-29.88 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
6.25000000 GHz
Start Freq
2.50000000 GHz
Stop Freq
10.0000000 GHz
CF Step
750.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 6.250 GHz
Span 7.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 12.52 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved

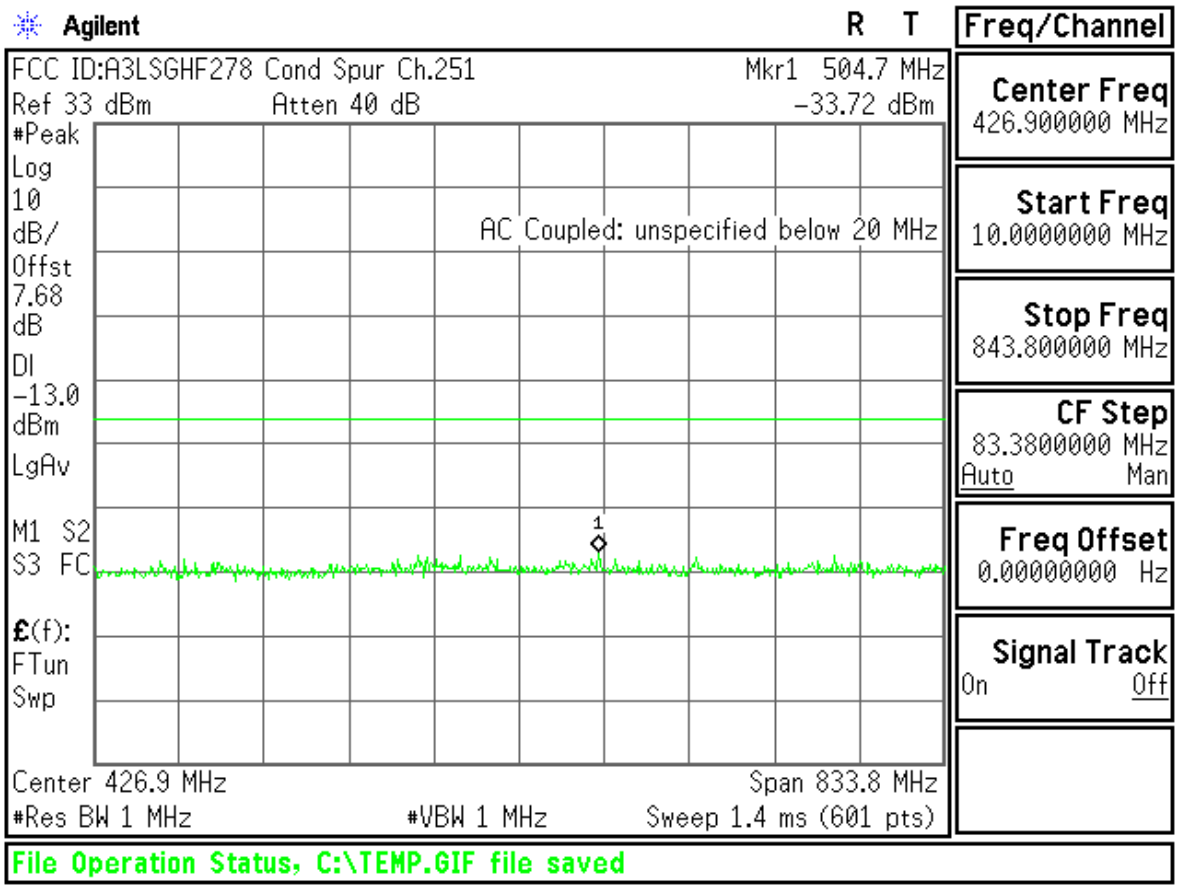

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.190
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Center Freq
1.25500000 GHz
Start Freq
10.0000000 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

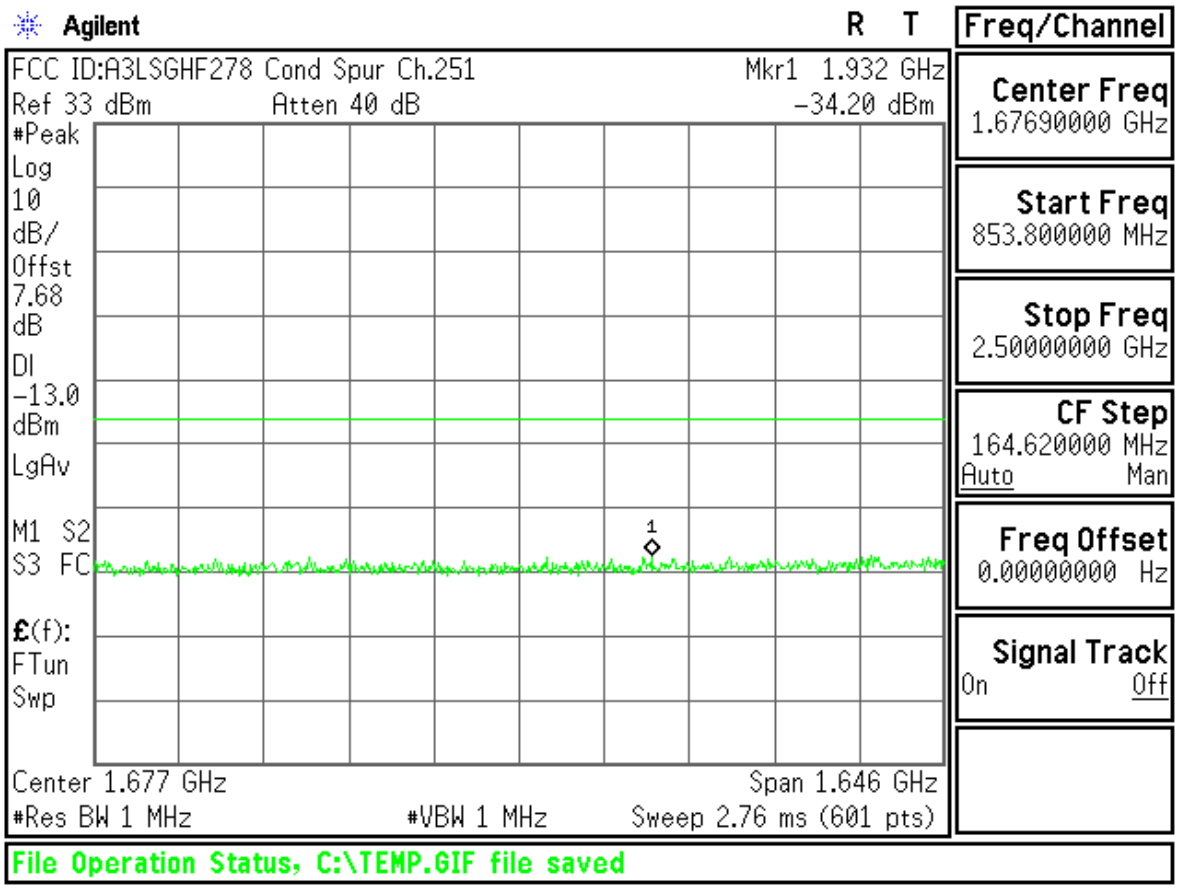

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.190
Mkr1 817.9 MHz
Ref 33 dBm
Atten 40 dB
-34.06 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 420.8 MHz
Span 821.6 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1.4 ms (601 pts)
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

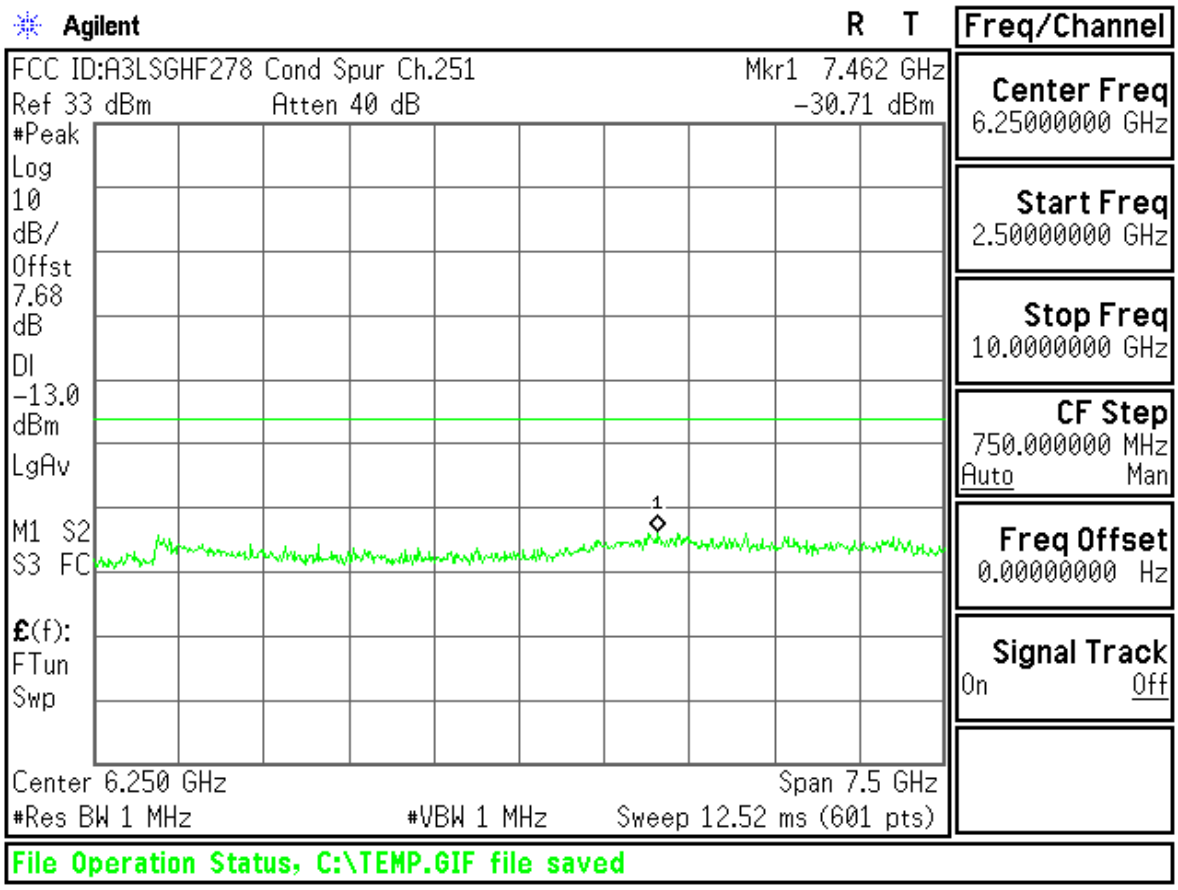

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.190
Mkr1 2.105 GHz
Ref 33 dBm
Atten 40 dB
-34.46 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 1.671 GHz
Span 1.658 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 2.8 ms (601 pts)
Freq/Channel
Center Freq
1.67080000 GHz
Start Freq
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

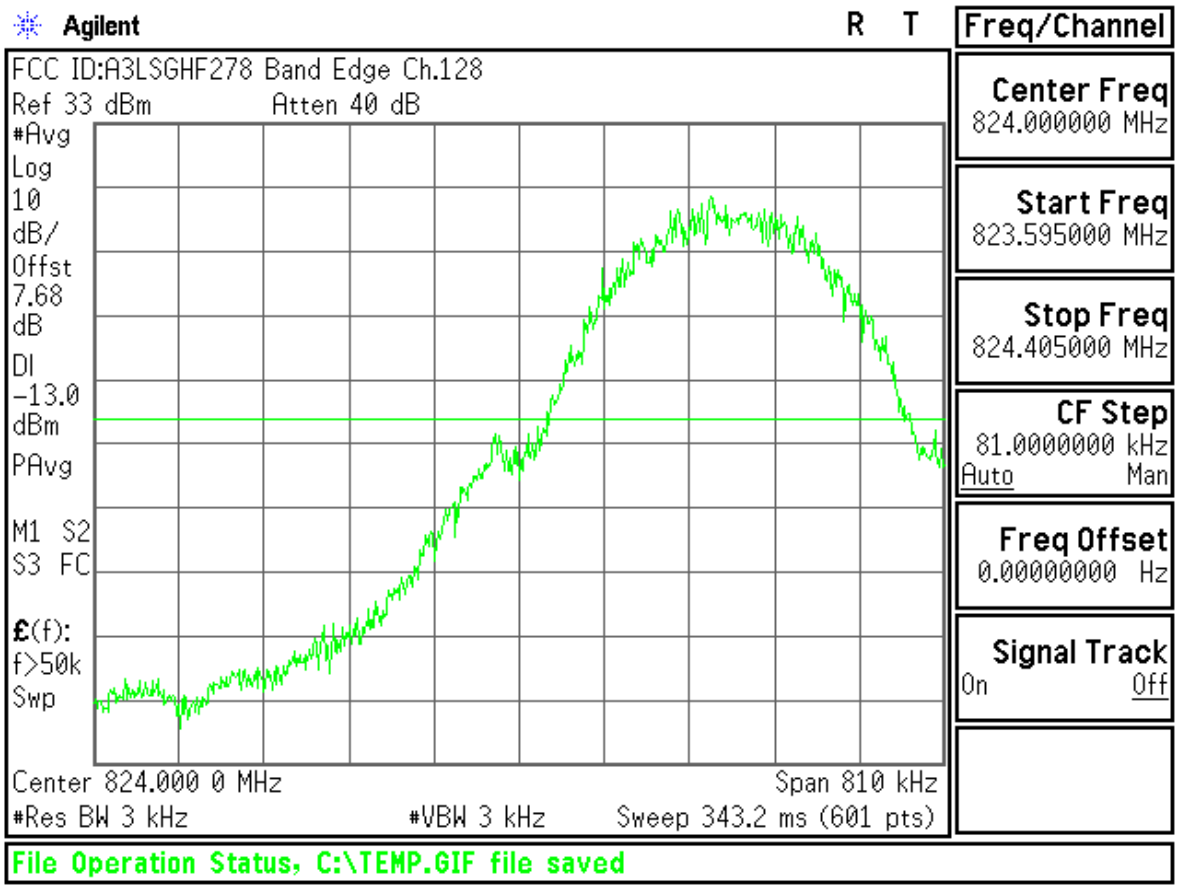

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.190
Mkr1 7.738 GHz
Ref 33 dBm
Atten 40 dB
-30.52 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 6.250 GHz
Span 7.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 12.52 ms (601 pts)
Freq/Channel
Center Freq
6.25000000 GHz
Start Freq
2.50000000 GHz
Stop Freq
10.0000000 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

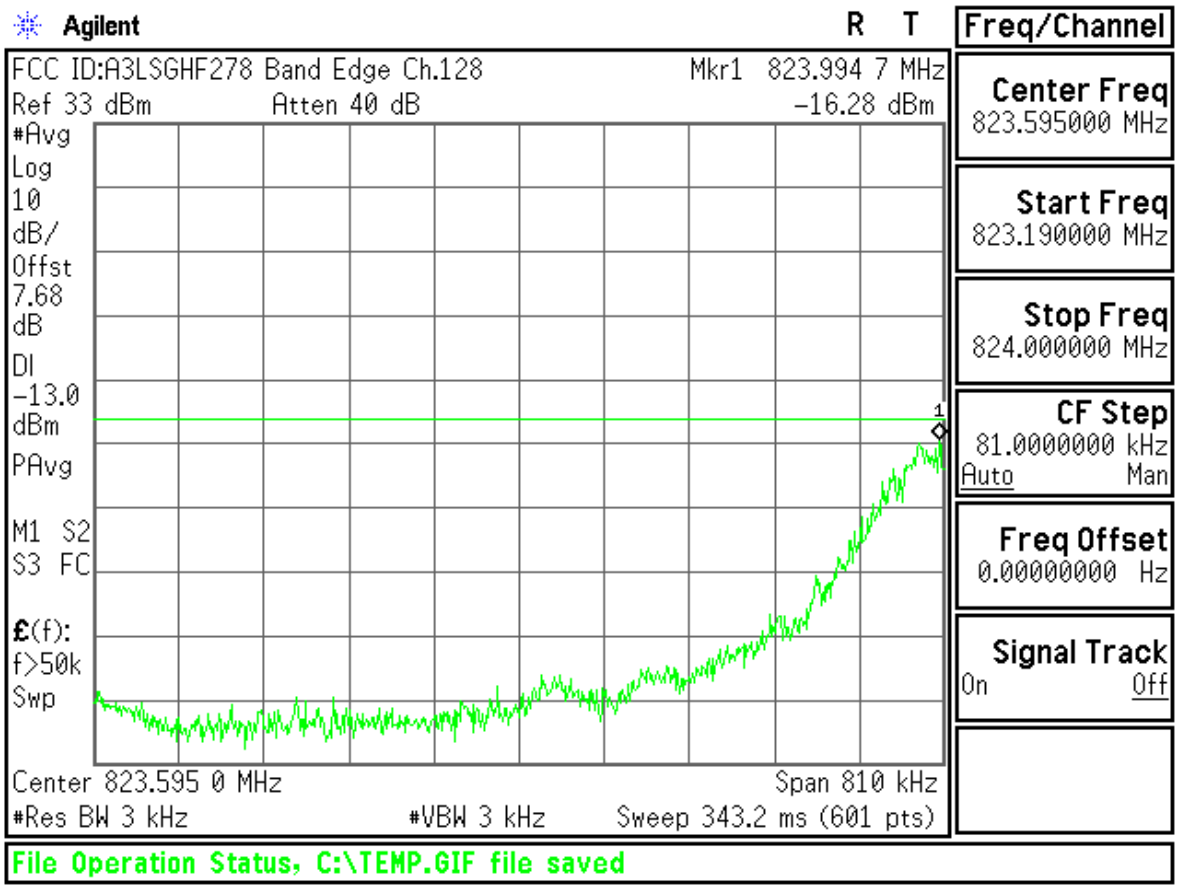

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.251
Ref 33 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Center Freq
1.25500000 GHz
Start Freq
10.0000000 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

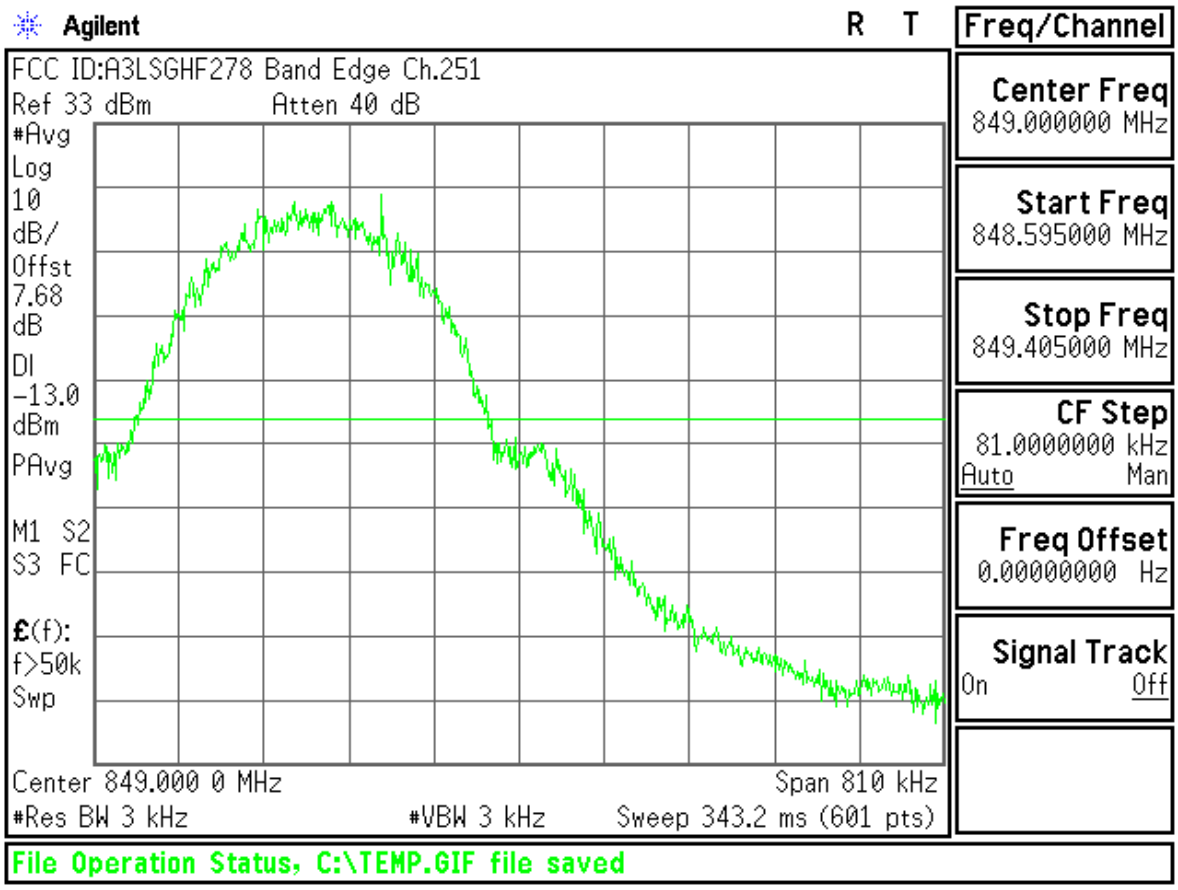

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.251
Mkr1 504.7 MHz
Ref 33 dBm
Atten 40 dB
-33.72 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
1
Center 426.9 MHz
Span 833.8 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1.4 ms (601 pts)
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
File Operation Status, C:\TEMP.GIF file saved

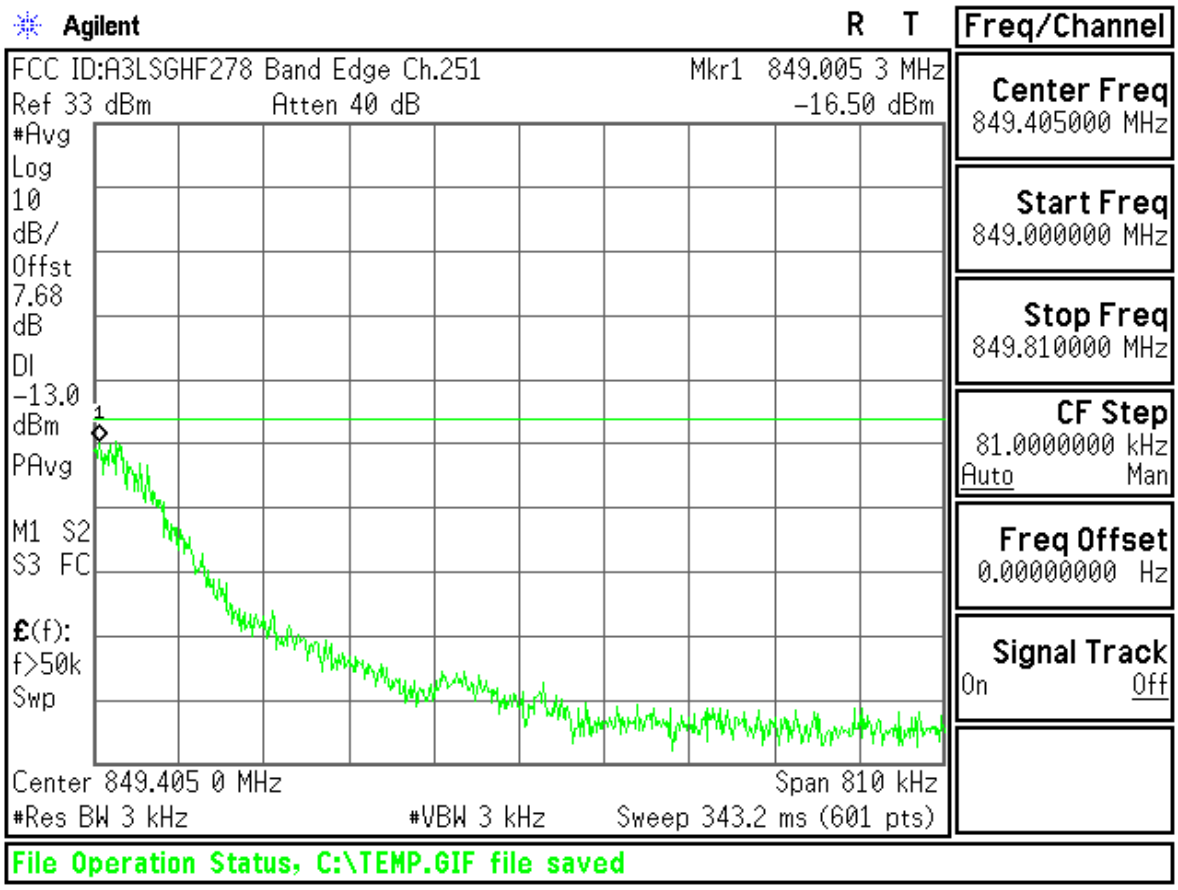

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.251
Mkr1 1.932 GHz
Ref 33 dBm
Atten 40 dB
-34.20 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
1.67690000 GHz
Start Freq
853.800000 MHz
Stop Freq
2.50000000 GHz
CF Step
164.620000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 1.677 GHz
Span 1.646 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 2.76 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved


Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.251
Mkr1 7.462 GHz
Ref 33 dBm
Atten 40 dB
-30.71 dBm
#Peak
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
6.25000000 GHz
Start Freq
2.50000000 GHz
Stop Freq
10.0000000 GHz
CF Step
750.000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 6.250 GHz
Span 7.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 12.52 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved

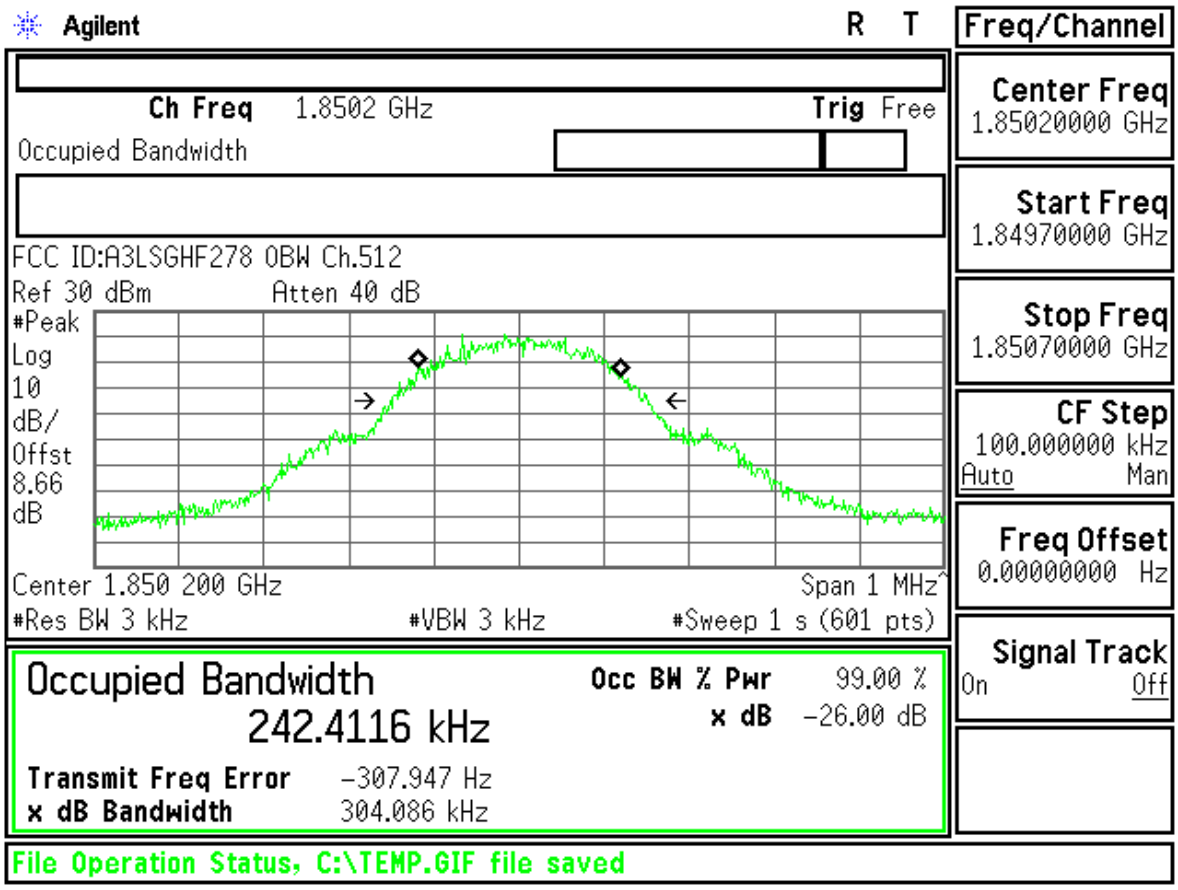

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.128
Ref 33 dBm
Atten 40 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 824.000 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
824.000000 MHz
Start Freq
823.595000 MHz
Stop 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

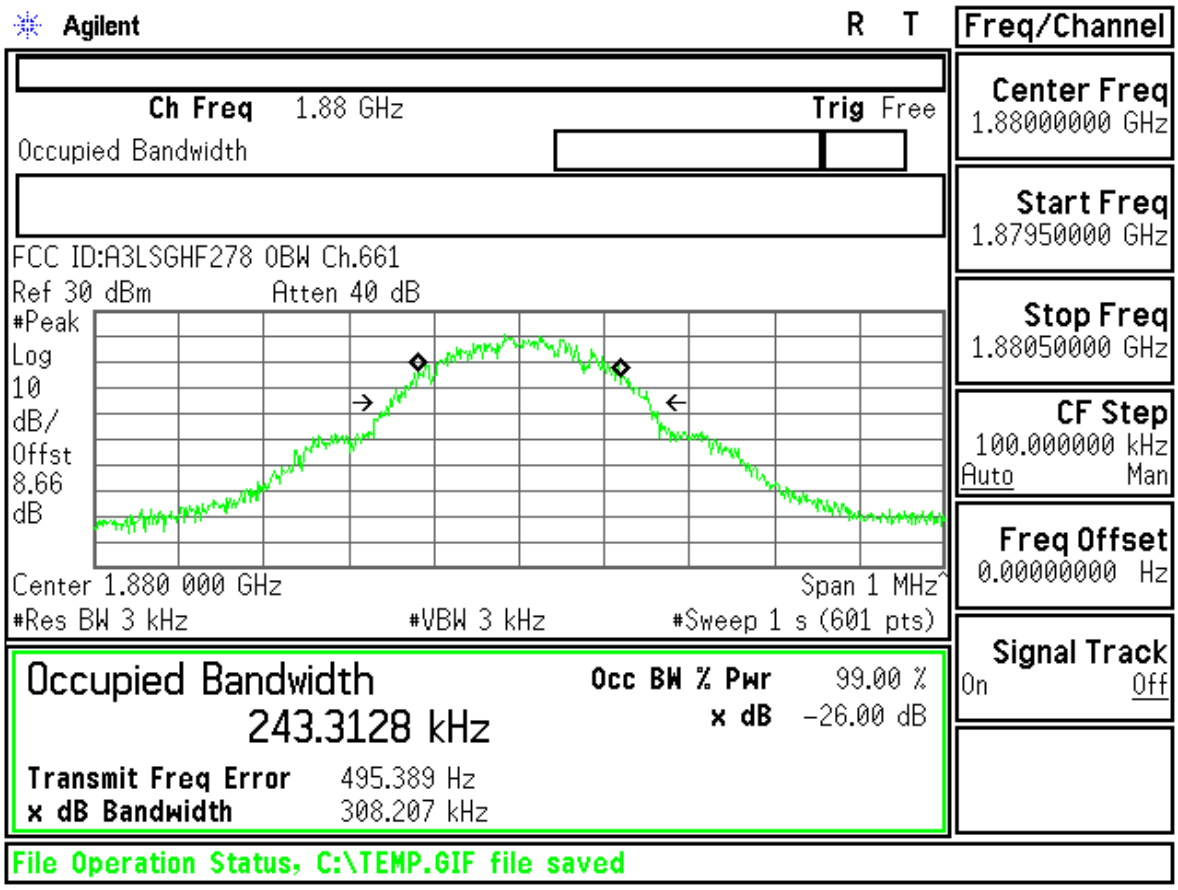

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.128
Mkr1 823.994 7 MHz
Ref 33 dBm
Atten 40 dB
-16.28 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 823.595 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
823.595000 MHz
Start 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

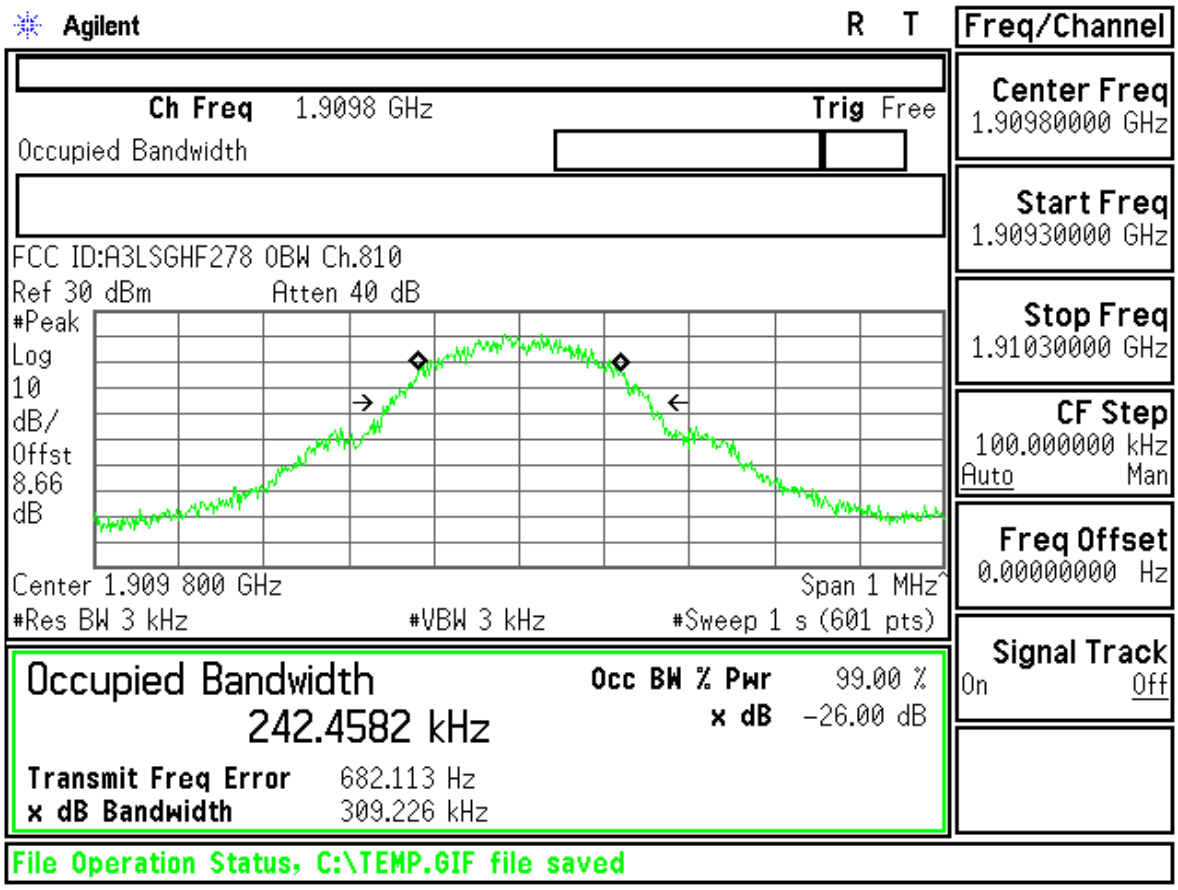

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.251
Ref 33 dBm
Atten 40 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 849.000 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
849.000000 MHz
Start Freq
848.595000 MHz
Stop 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
FCC ID:A3LSGHF278 Band Edge Ch.251
Mkr1 849.005 3 MHz
Ref 33 dBm
Atten 40 dB
-16.50 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(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)
Freq/Channel
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

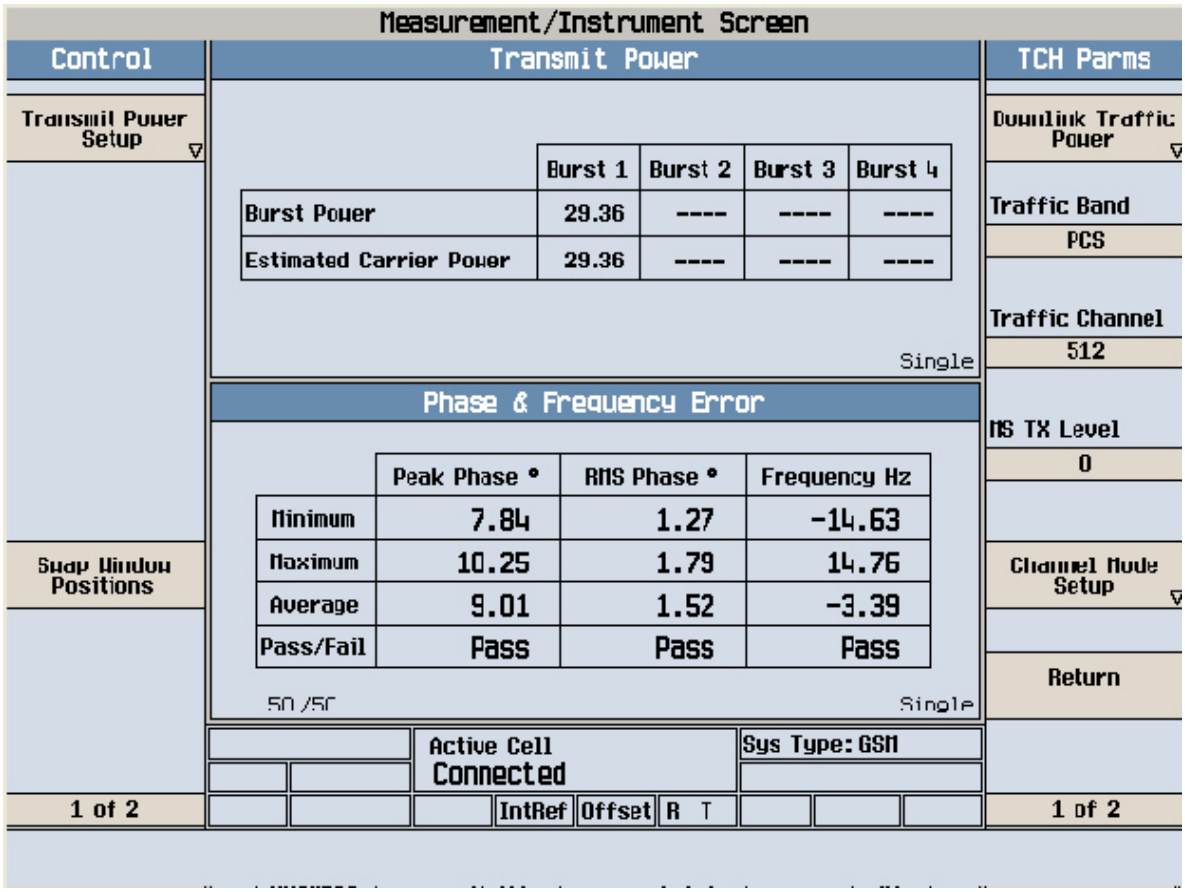
GSM1900


Agilent
R T
Freq/Channel
Ch Freq 1.8502 GHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.512
Ref 30 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
8.66
dB
Center 1.850 200 GHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
242.4116 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -307.947 Hz
x dB Bandwidth 304.086 kHz
Center Freq
1.85020000 GHz
Start Freq
1.84970000 GHz
Stop Freq
1.85070000 GHz
CF Step
100.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
File Operation Status, C:\TEMP.GIF file saved

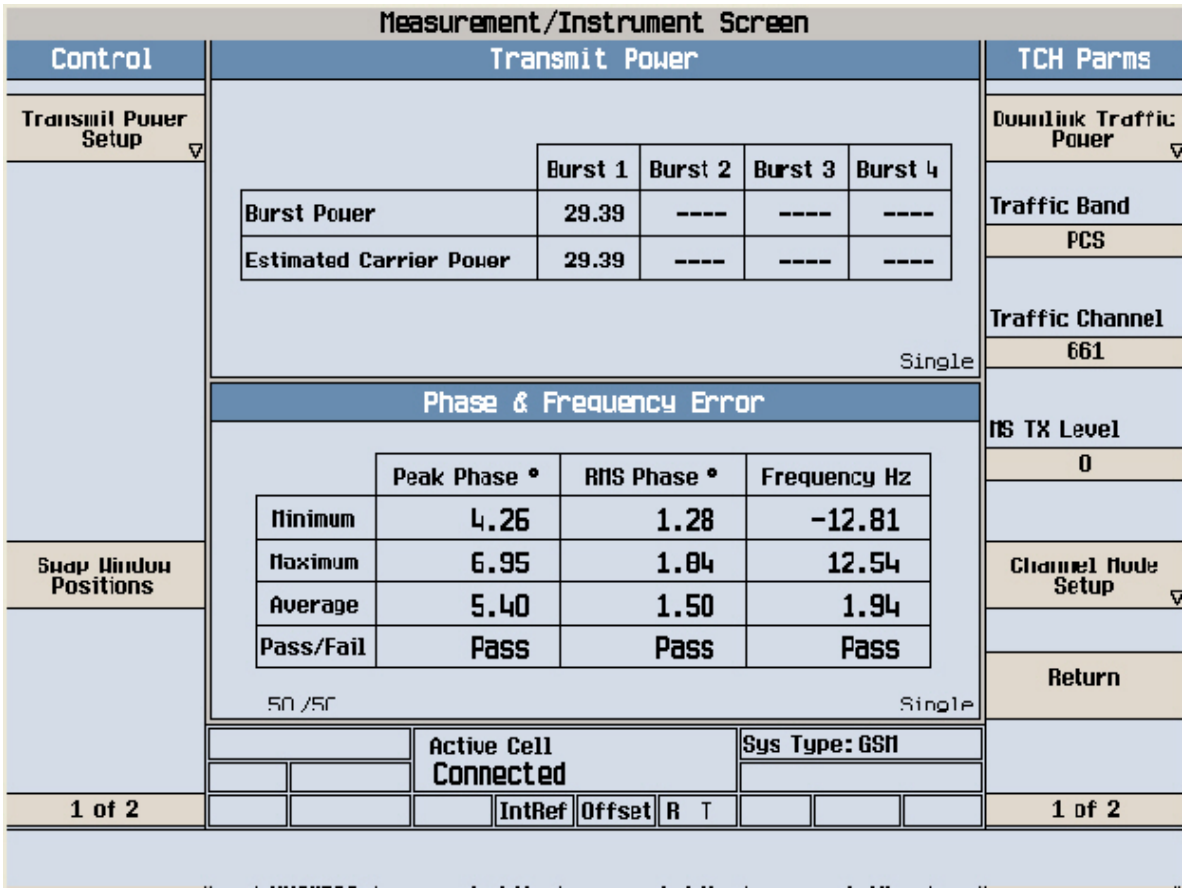

Agilent
R T
Freq/Channel
Ch Freq 1.88 GHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.661
Ref 30 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
8.66
dB
Center 1.880 000 GHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
243.3128 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 495.389 Hz
x dB Bandwidth 308.207 kHz
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



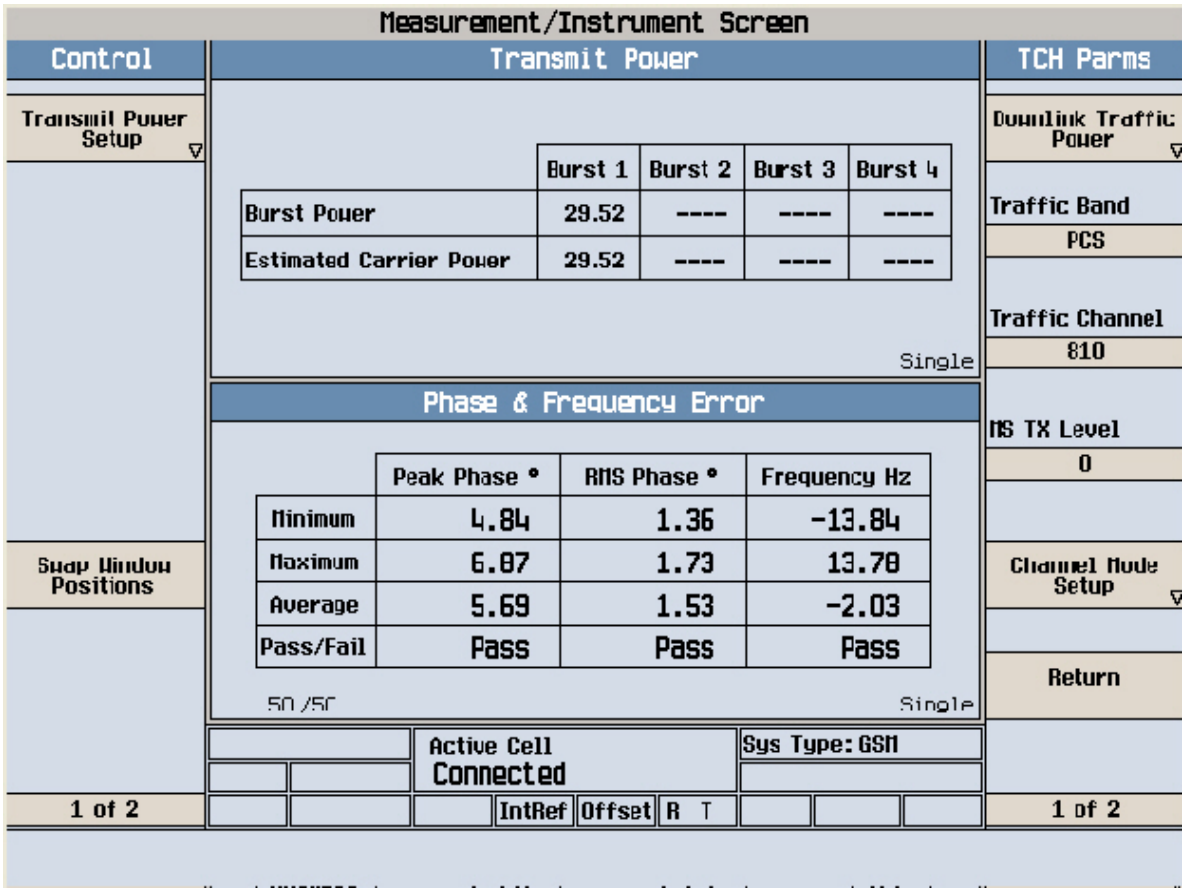
FCC ID : A3LSGHF278 Transmit Power 512CH



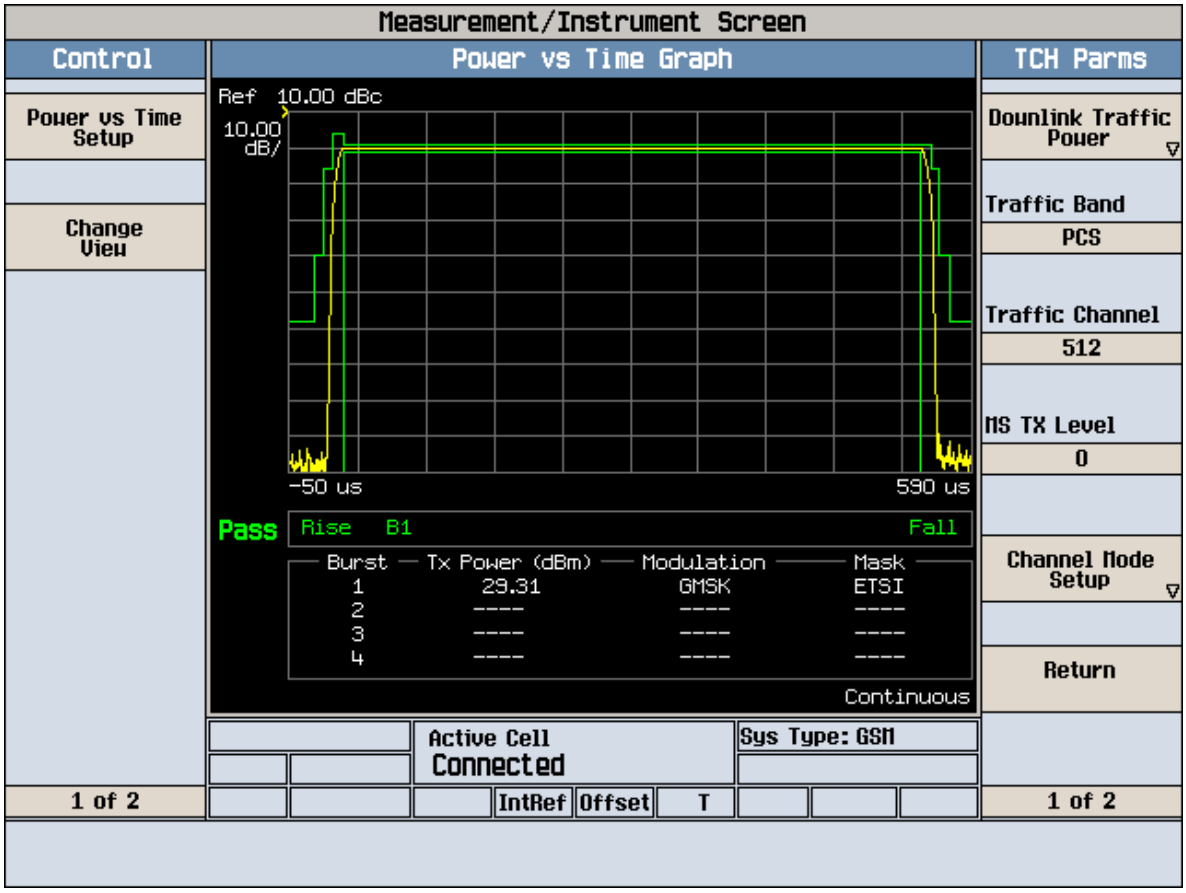
FCC ID : A3LSGHF278 Transmit Power 661CH



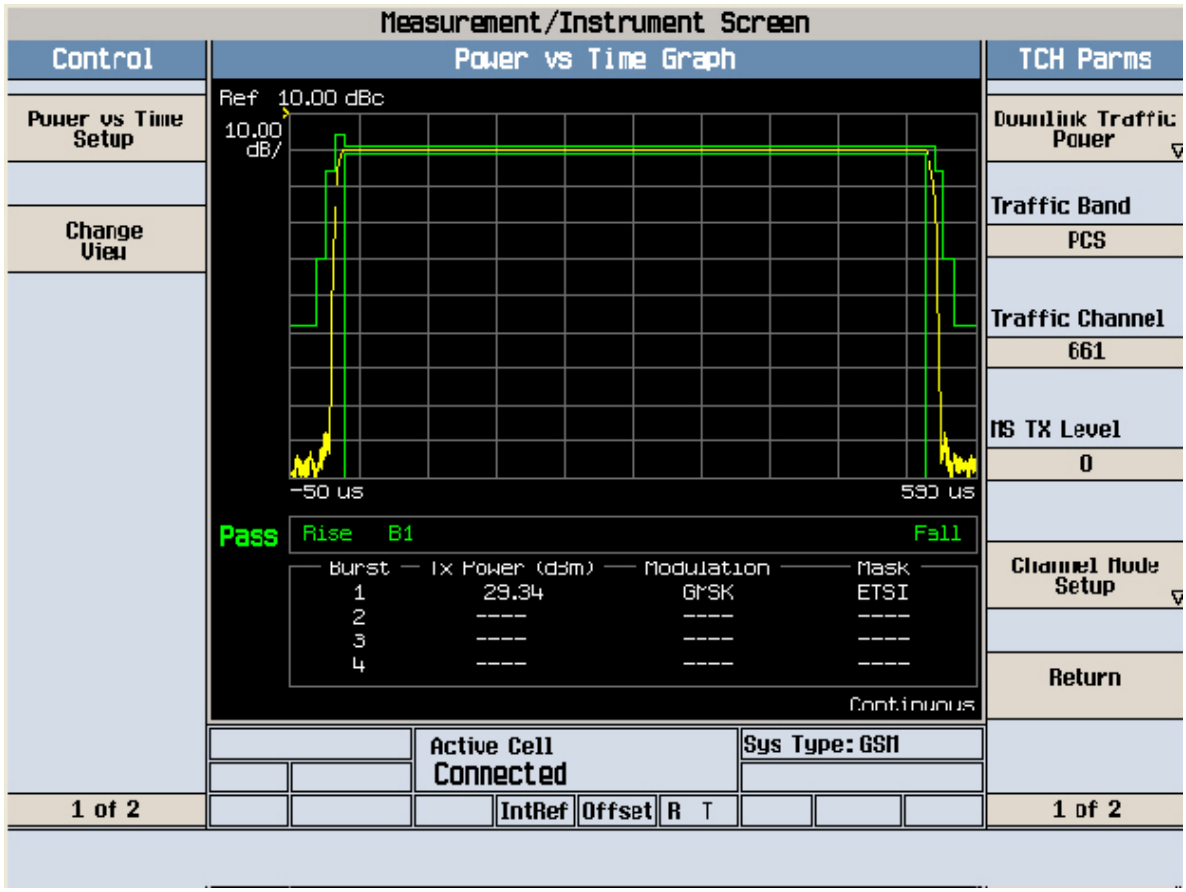
FCC ID : A3LSGHF278 Transmit Power 810CH



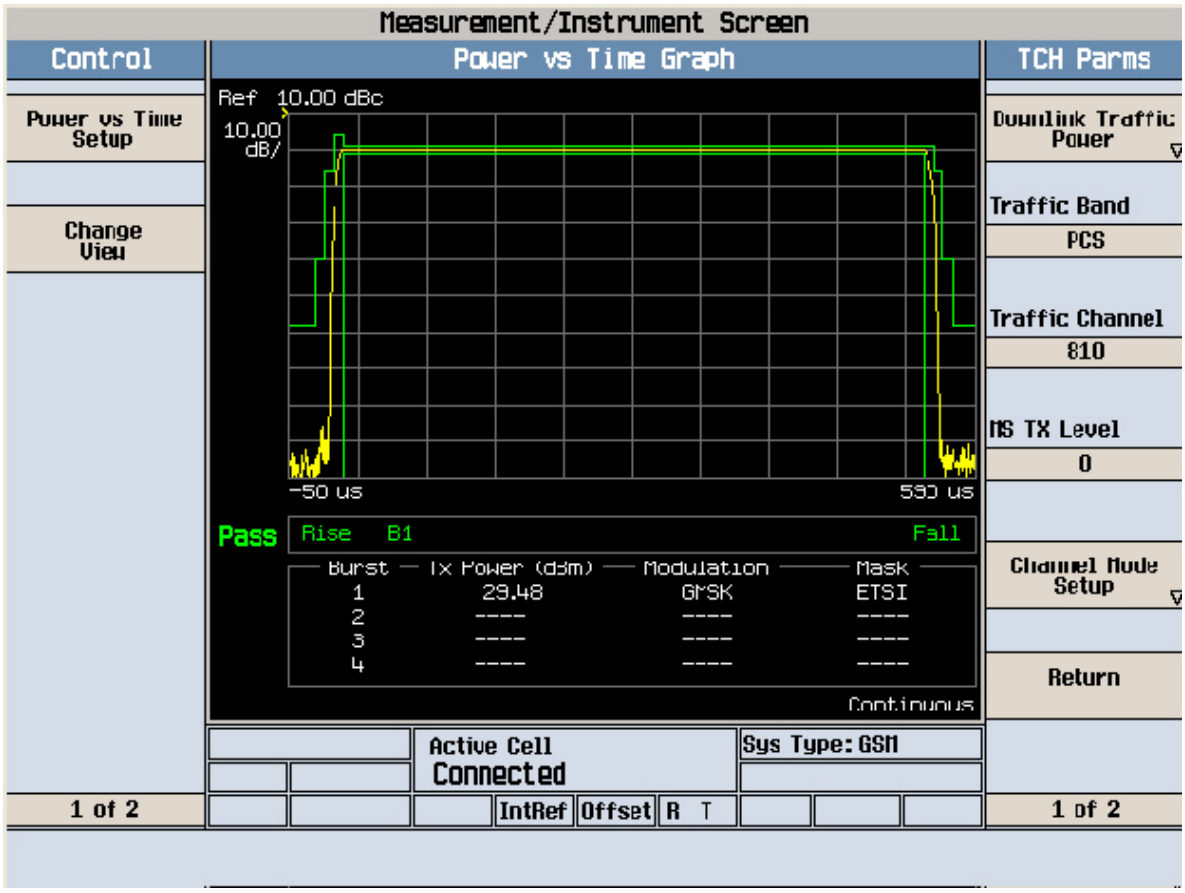
FCC ID : A3LSGHF278 GMSK Power vs Time 512CH



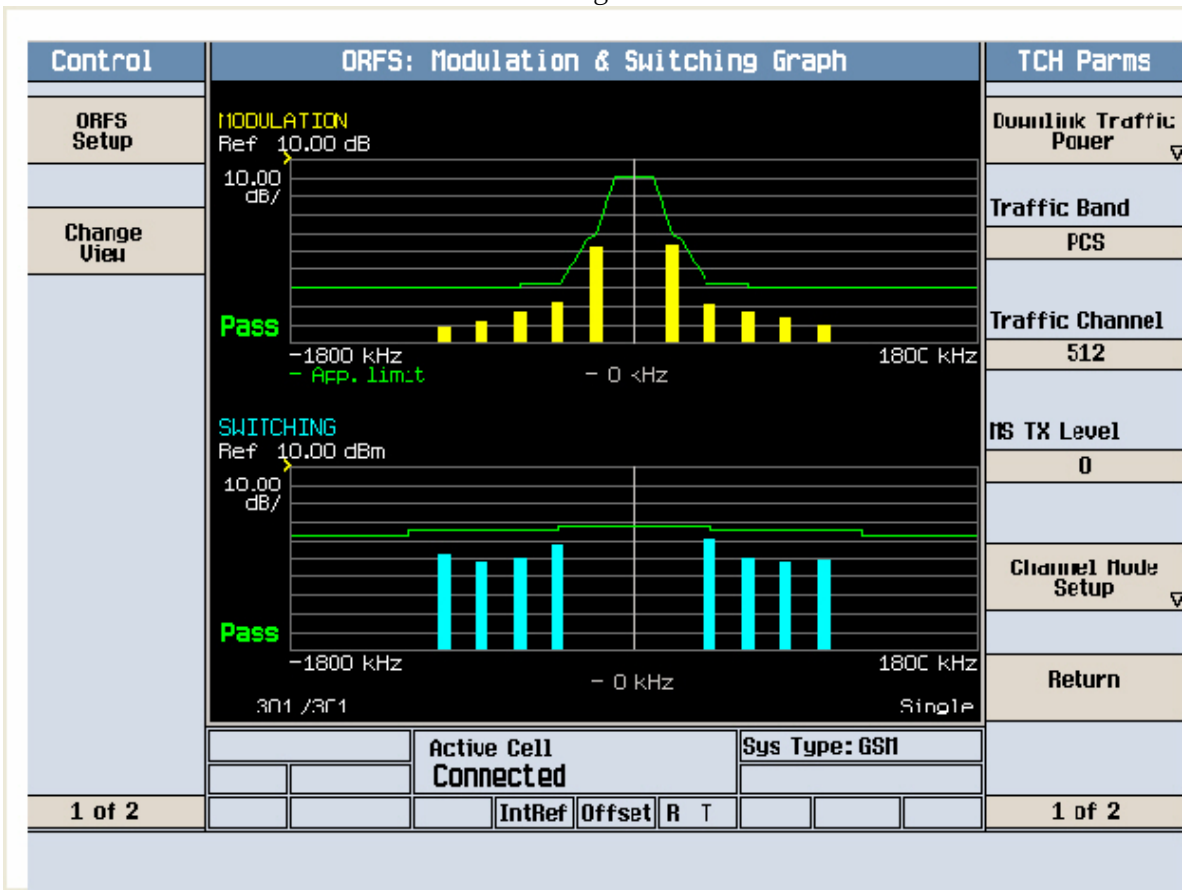
FCC ID : A3LSGHF278 GMSK Power vs Time 661CH



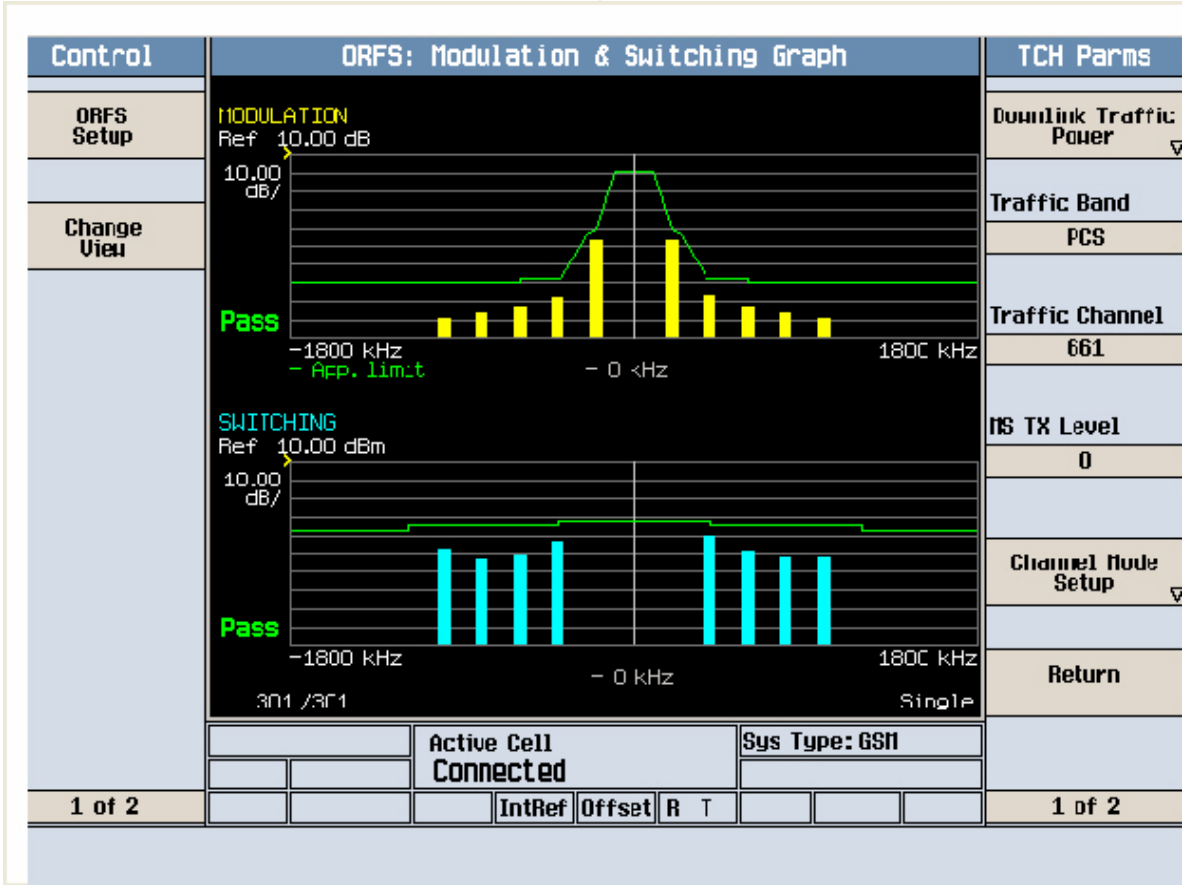
FCC ID : A3LSGHF278 GMSK Power vs Time 810CH



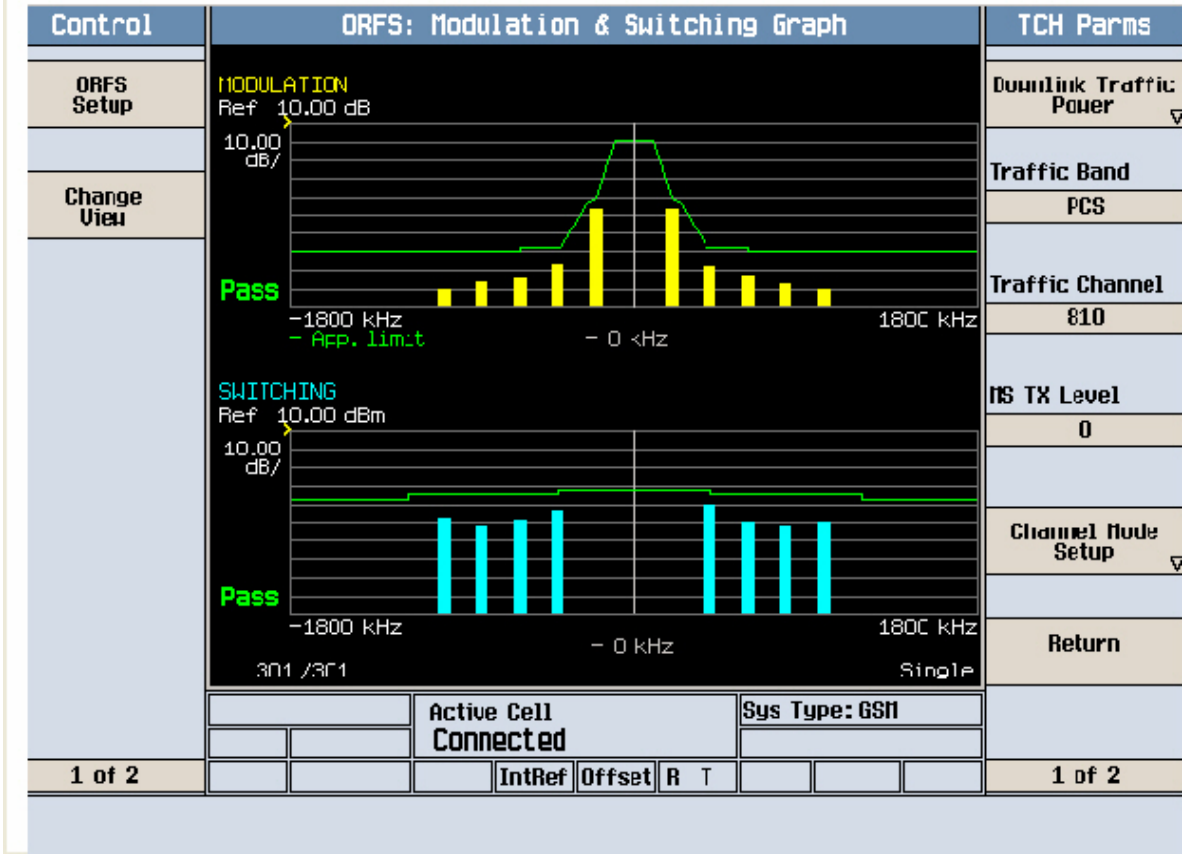
FCC ID : A3LSGHF278 Modulation & Switching 512CH

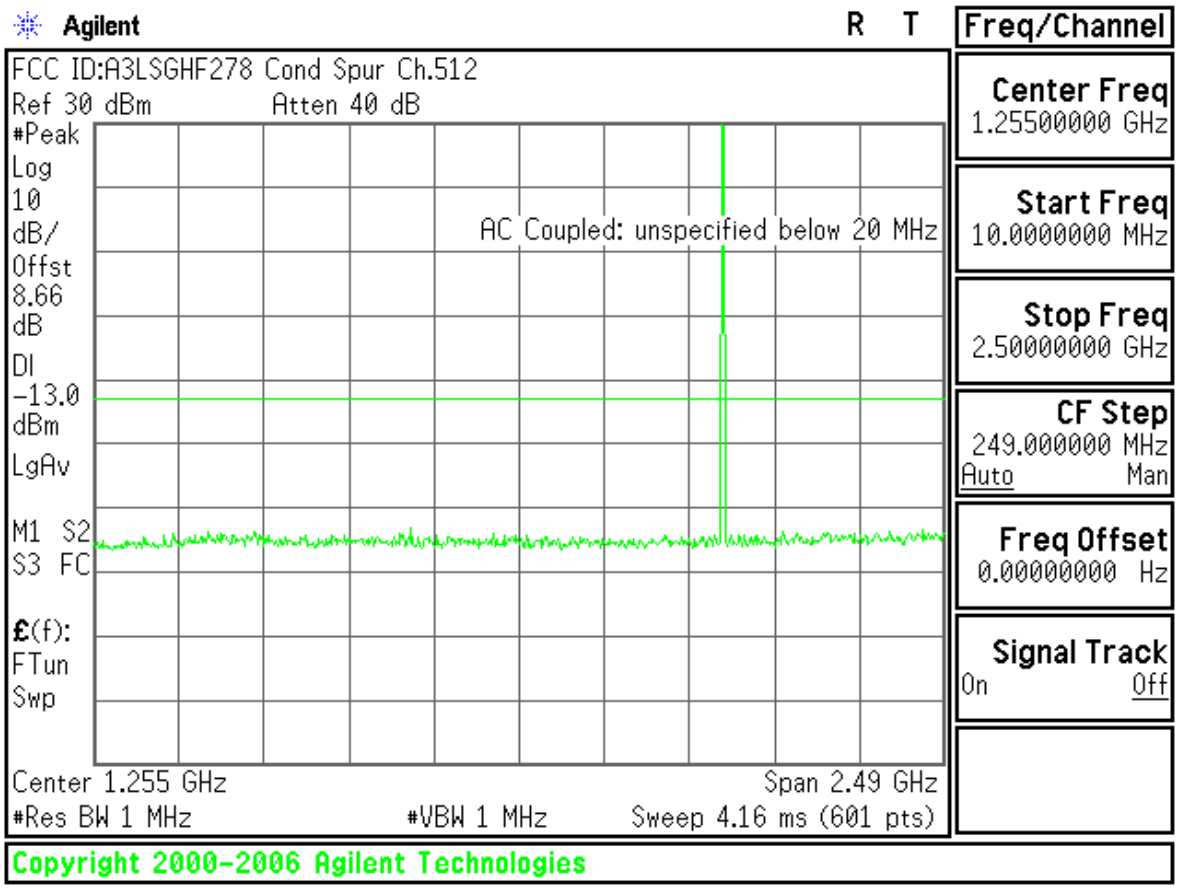


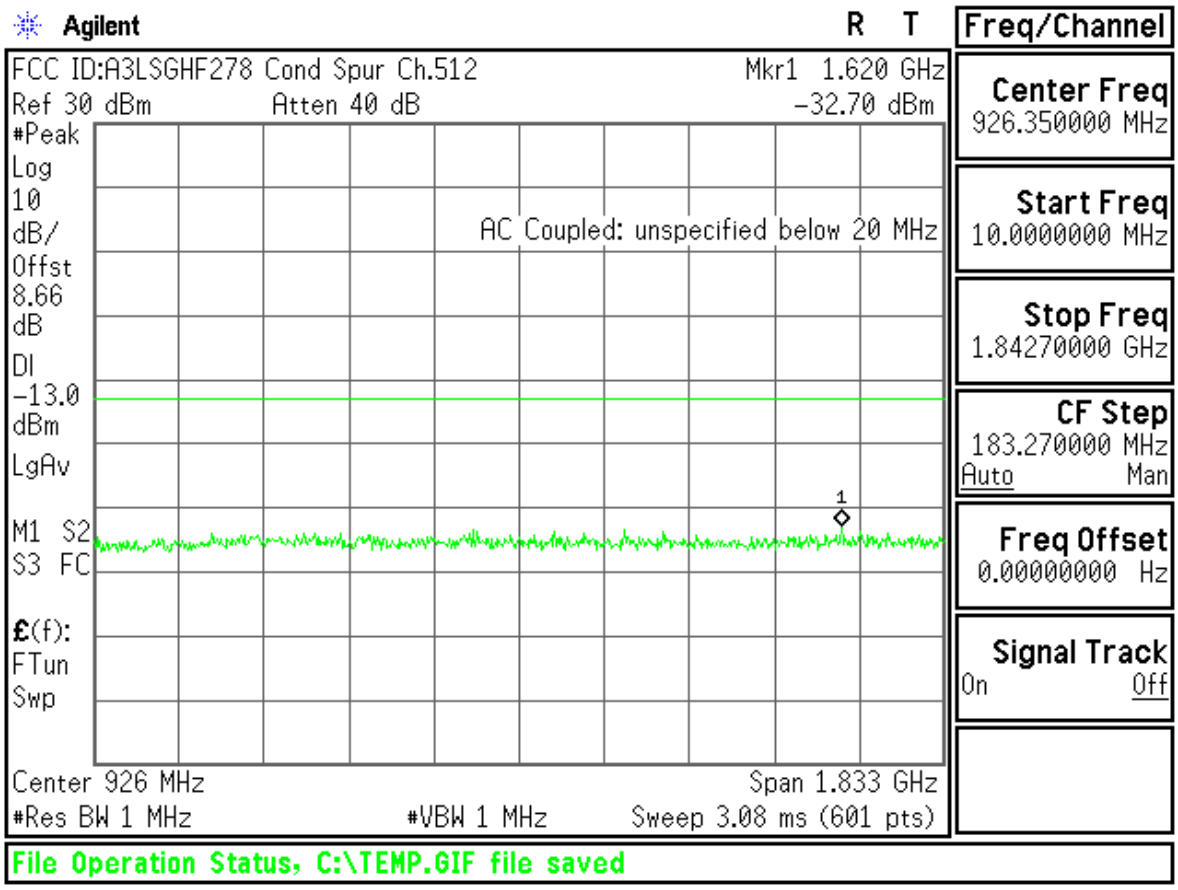
FCC ID : A3LSGHF278 Modulation & Switching 661CH

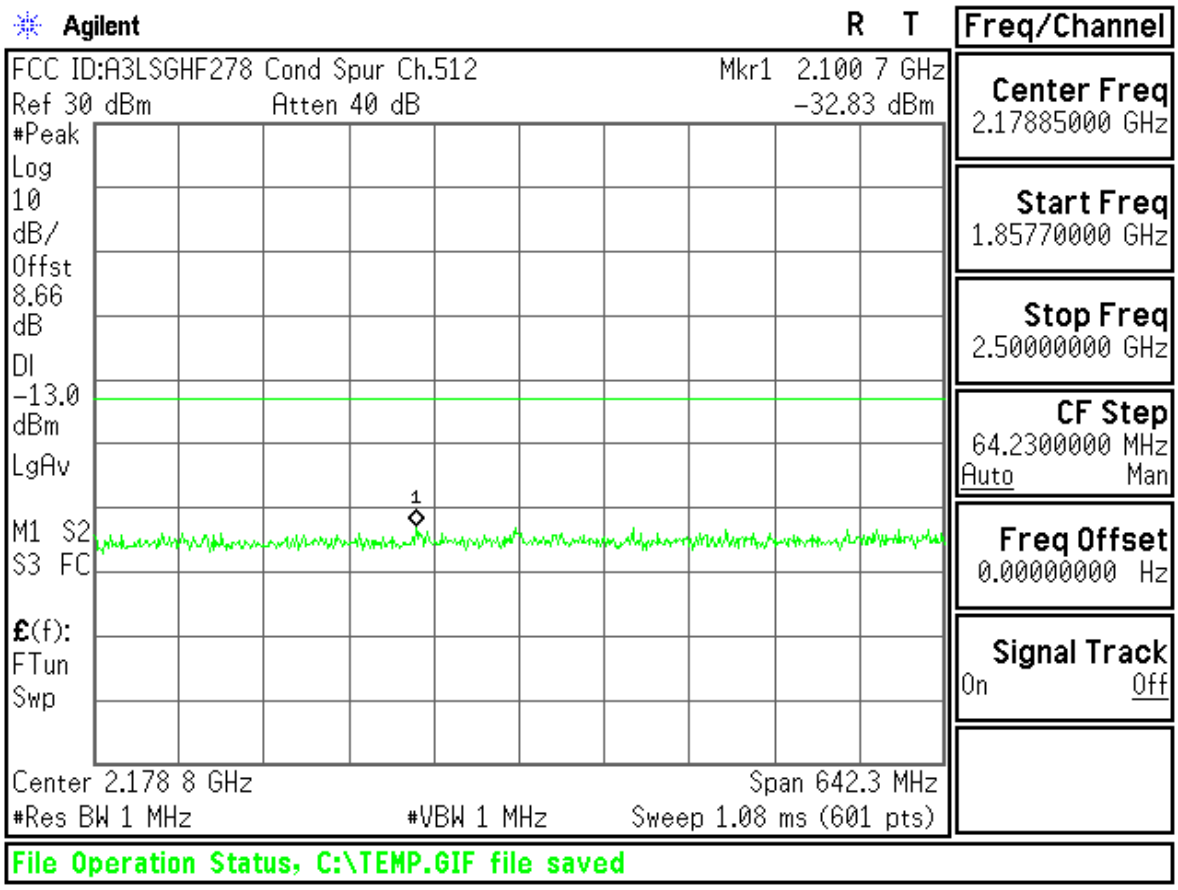


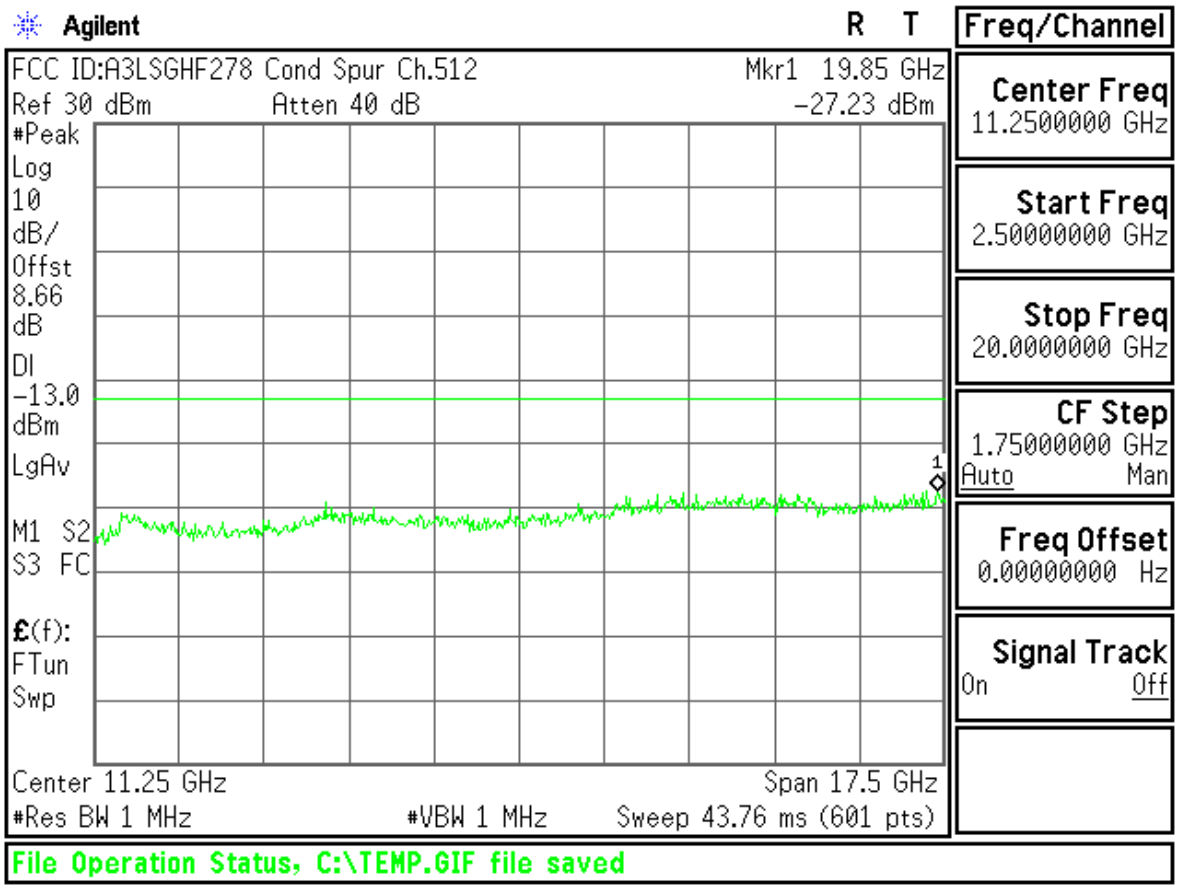
FCC ID : A3LSGHF278 Modulation & Switching 810CH

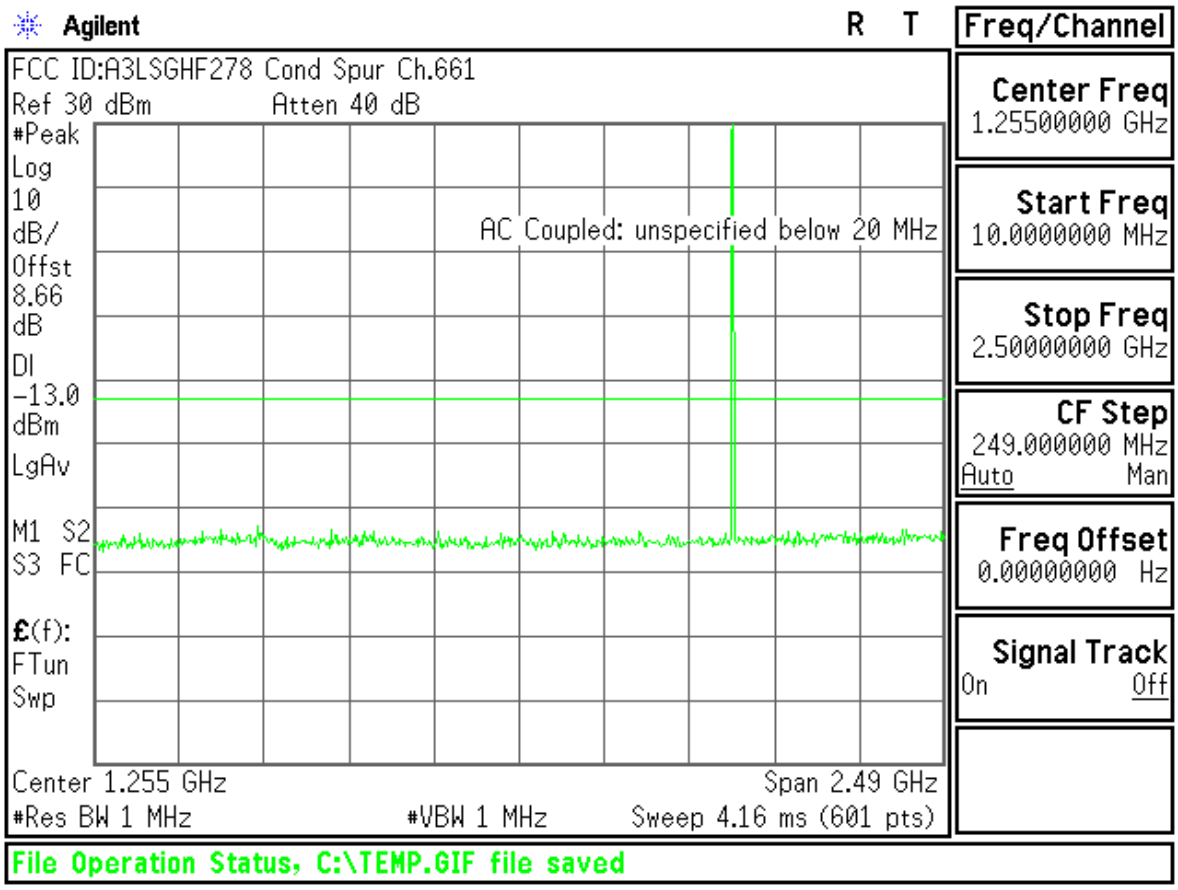


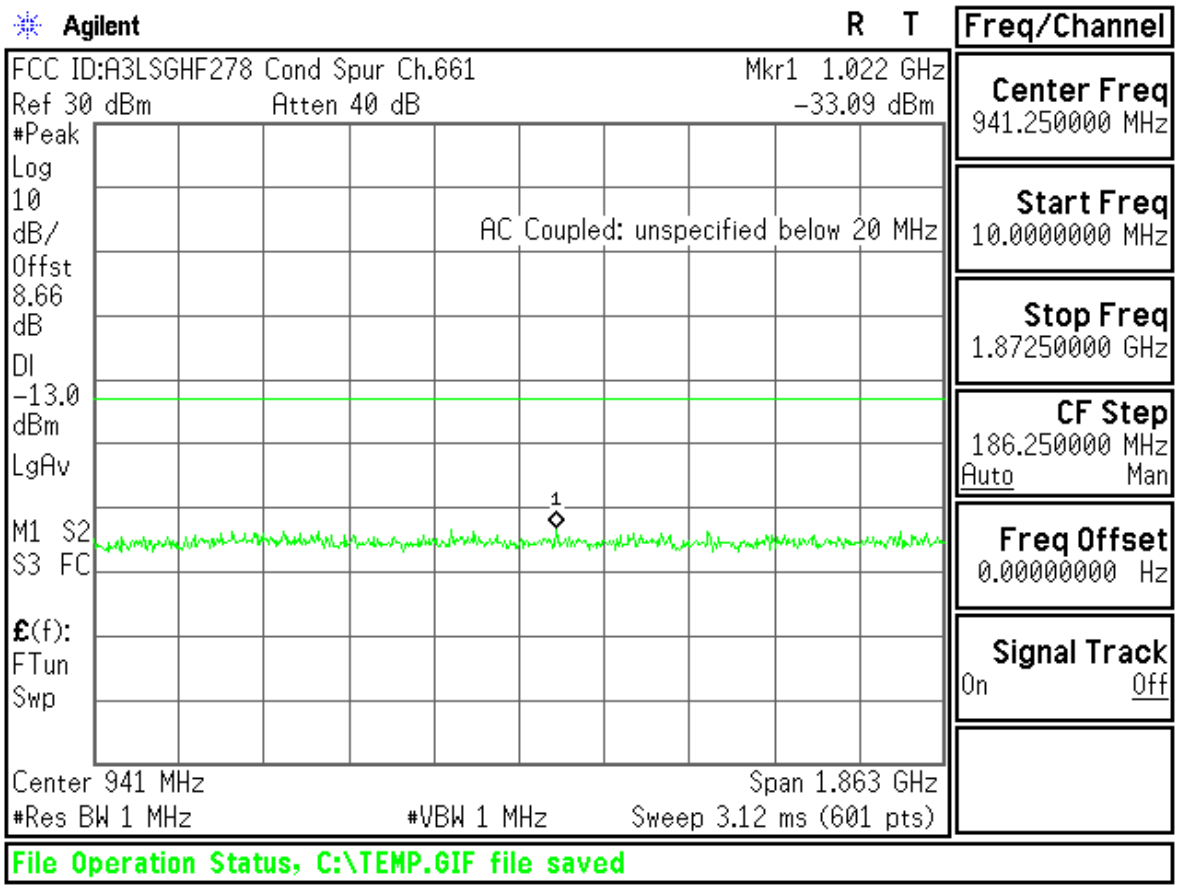

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.512
Ref 30 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Center Freq
1.25500000 GHz
Start Freq
10.0000000 MHz
Stop Freq
2.50000000 GHz
CF Step
249.000000 MHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
Copyright 2000-2006 Agilent Technologies

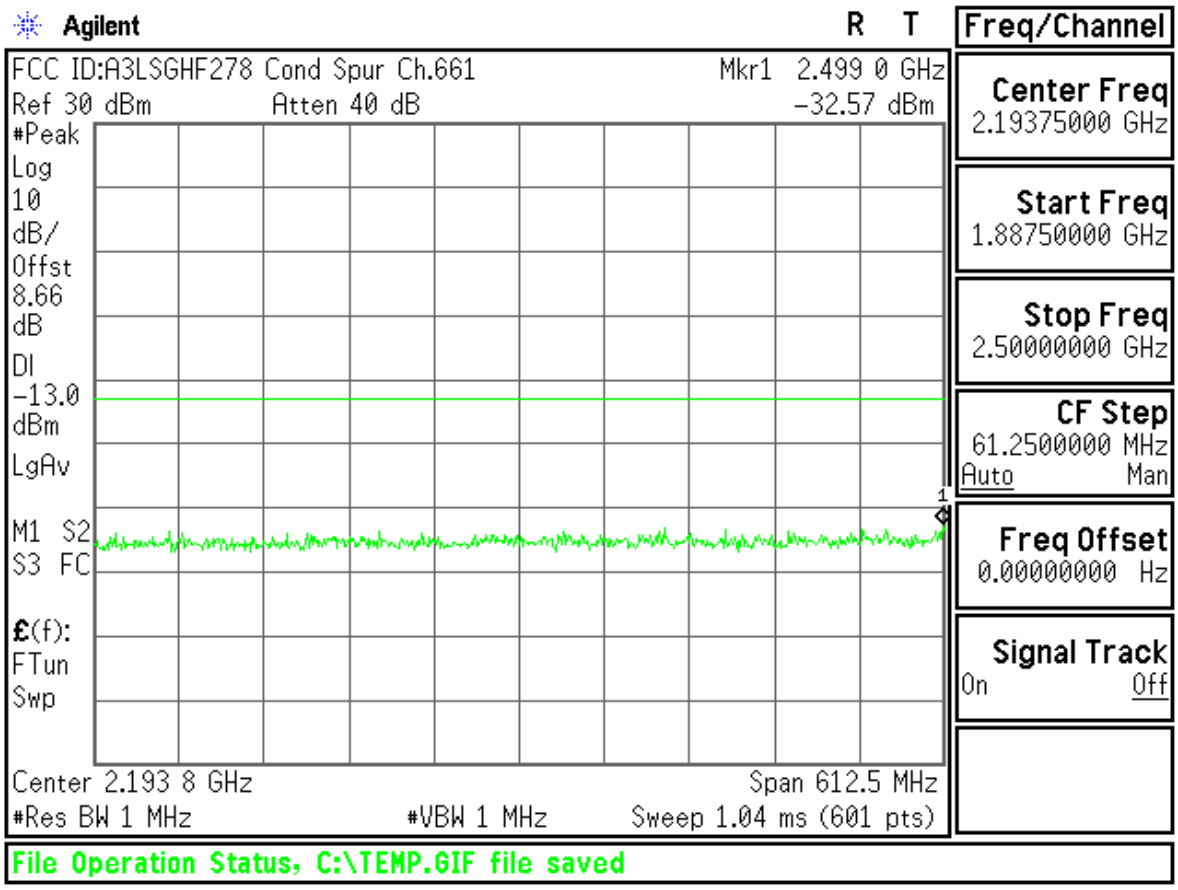

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.512
Mkr1 1.620 GHz
Ref 30 dBm
Atten 40 dB
-32.70 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
1
Center 926 MHz
Span 1.833 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 3.08 ms (601 pts)
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
File Operation Status, C:\TEMP.GIF file saved

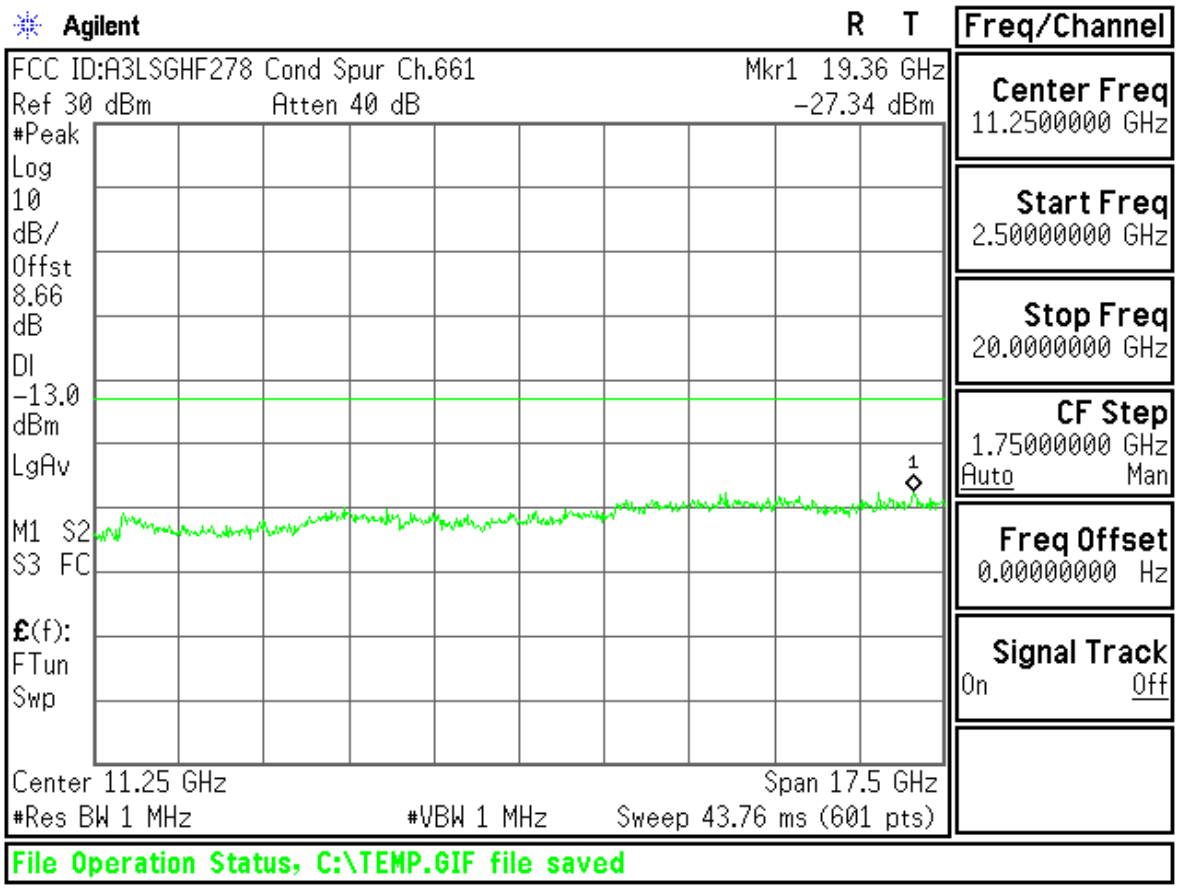

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.512
Mkr1 2.100 7 GHz
Ref 30 dBm
Atten 40 dB
-32.83 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 2.178 8 GHz
Span 642.3 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1.08 ms (601 pts)
Freq/Channel
Center Freq
2.17885000 GHz
Start 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

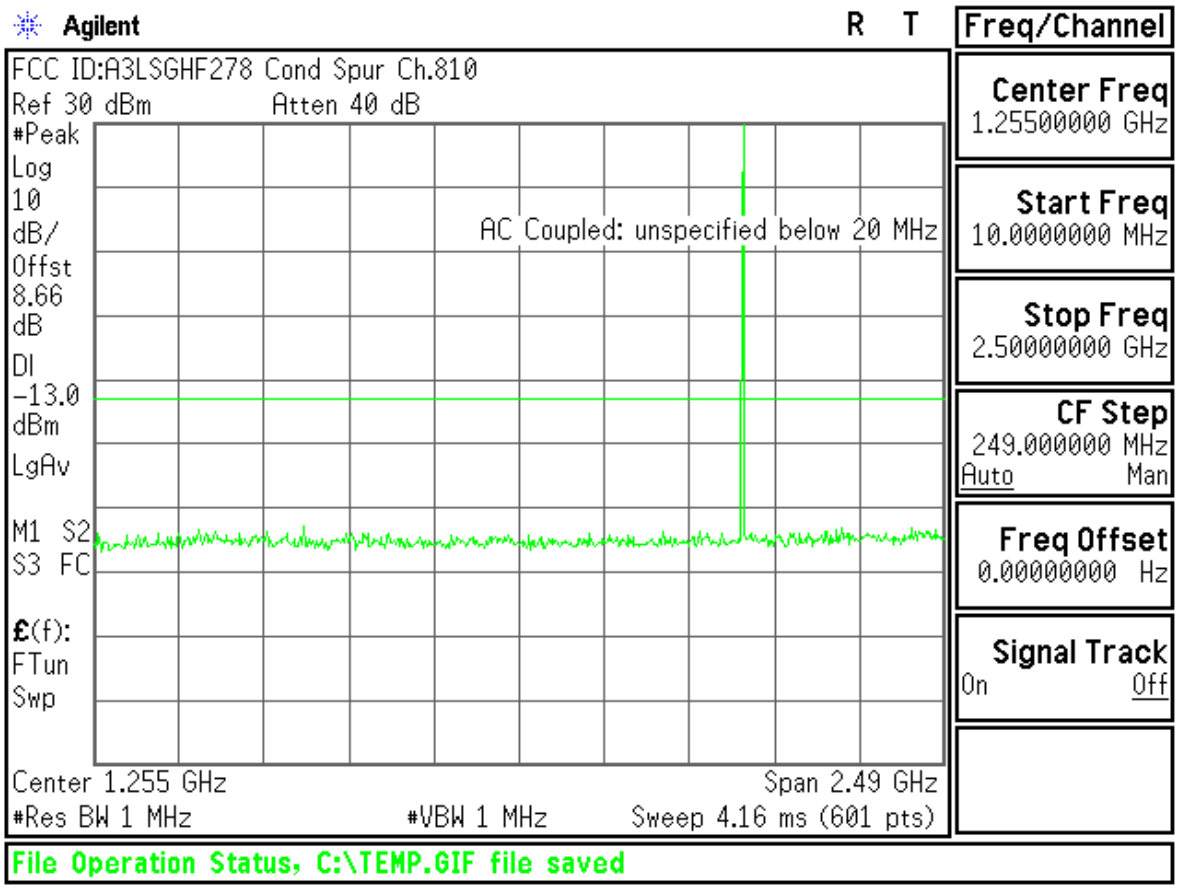

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.512
Mkr1 19.85 GHz
Ref 30 dBm
Atten 40 dB
-27.23 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 11.25 GHz
Span 17.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 43.76 ms (601 pts)
Freq/Channel
Center Freq
11.2500000 GHz
Start Freq
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

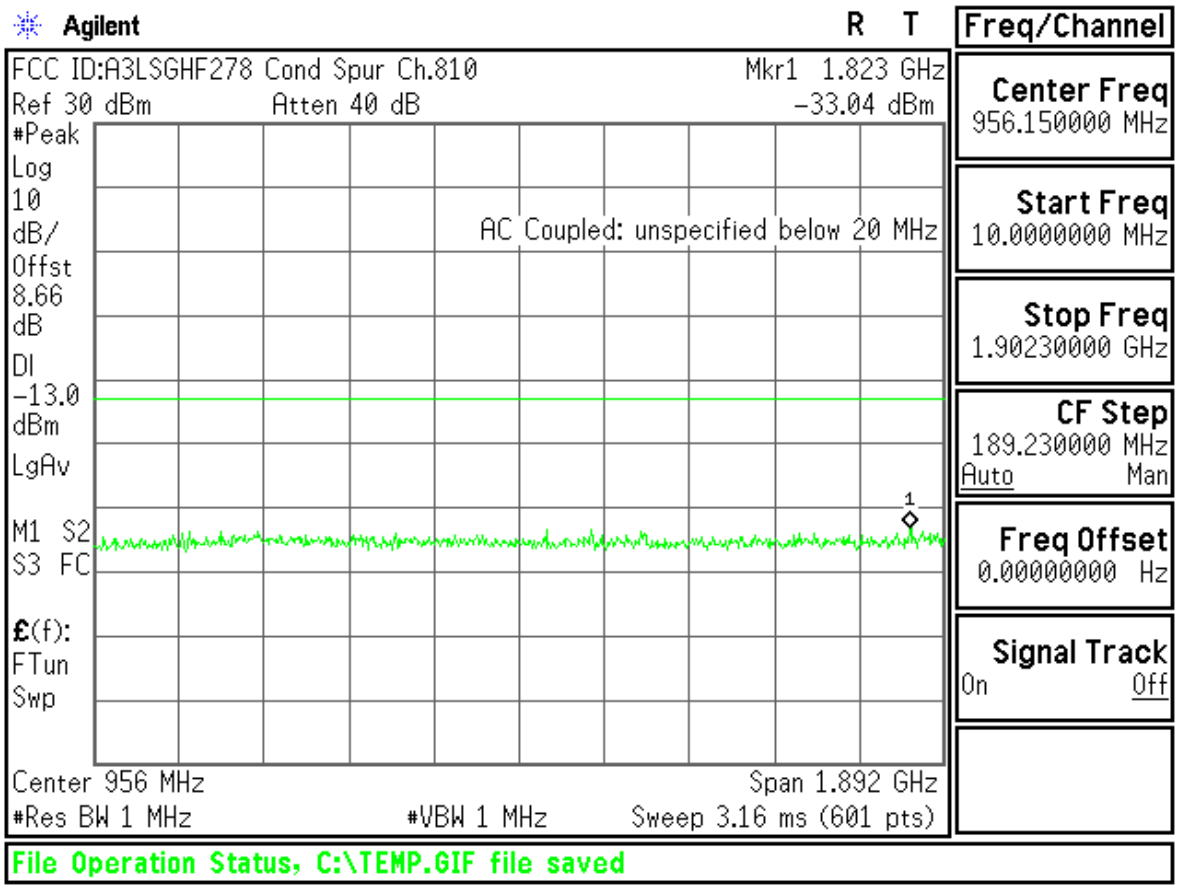

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.661
Ref 30 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Freq/Channel
Center Freq
1.25500000 GHz
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

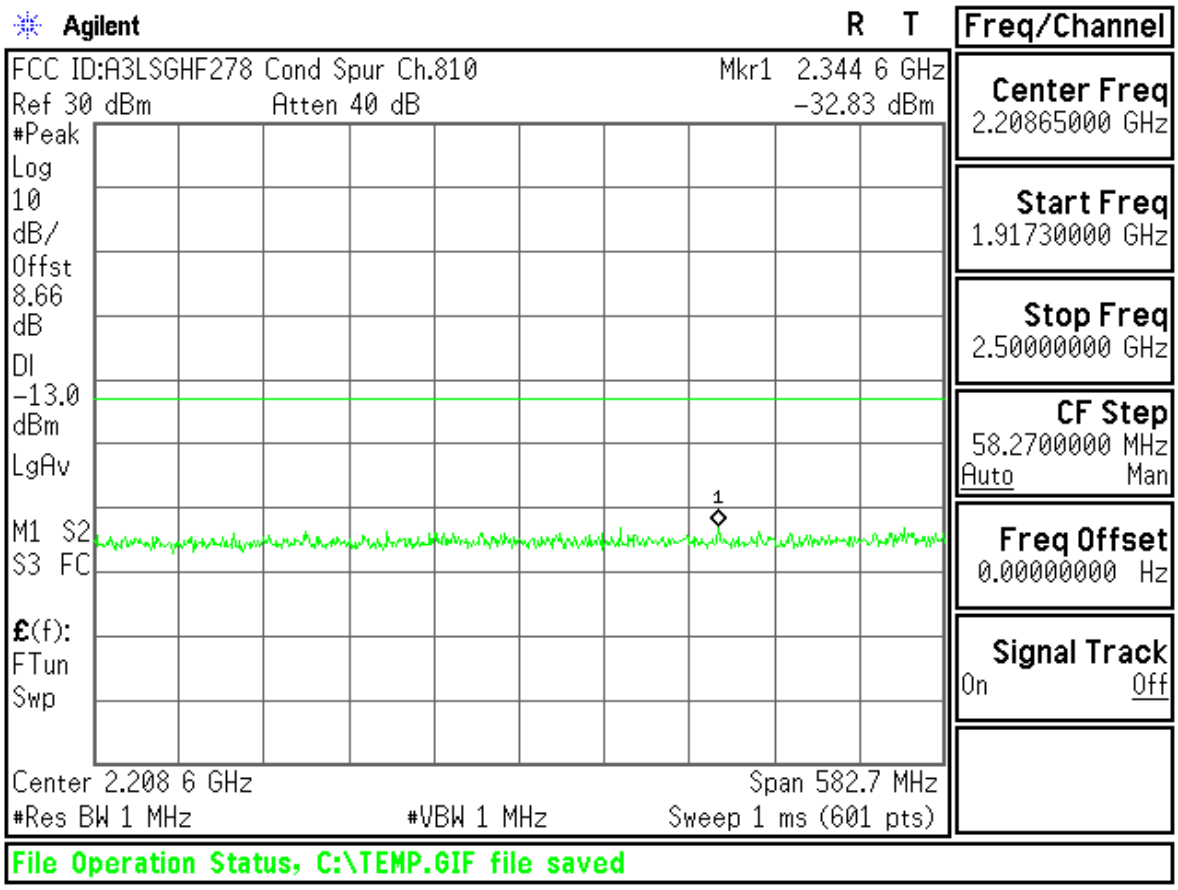

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.661
Mkr1 1.022 GHz
Ref 30 dBm
Atten 40 dB
-33.09 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
1
Center 941 MHz
Span 1.863 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 3.12 ms (601 pts)
Freq/Channel
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

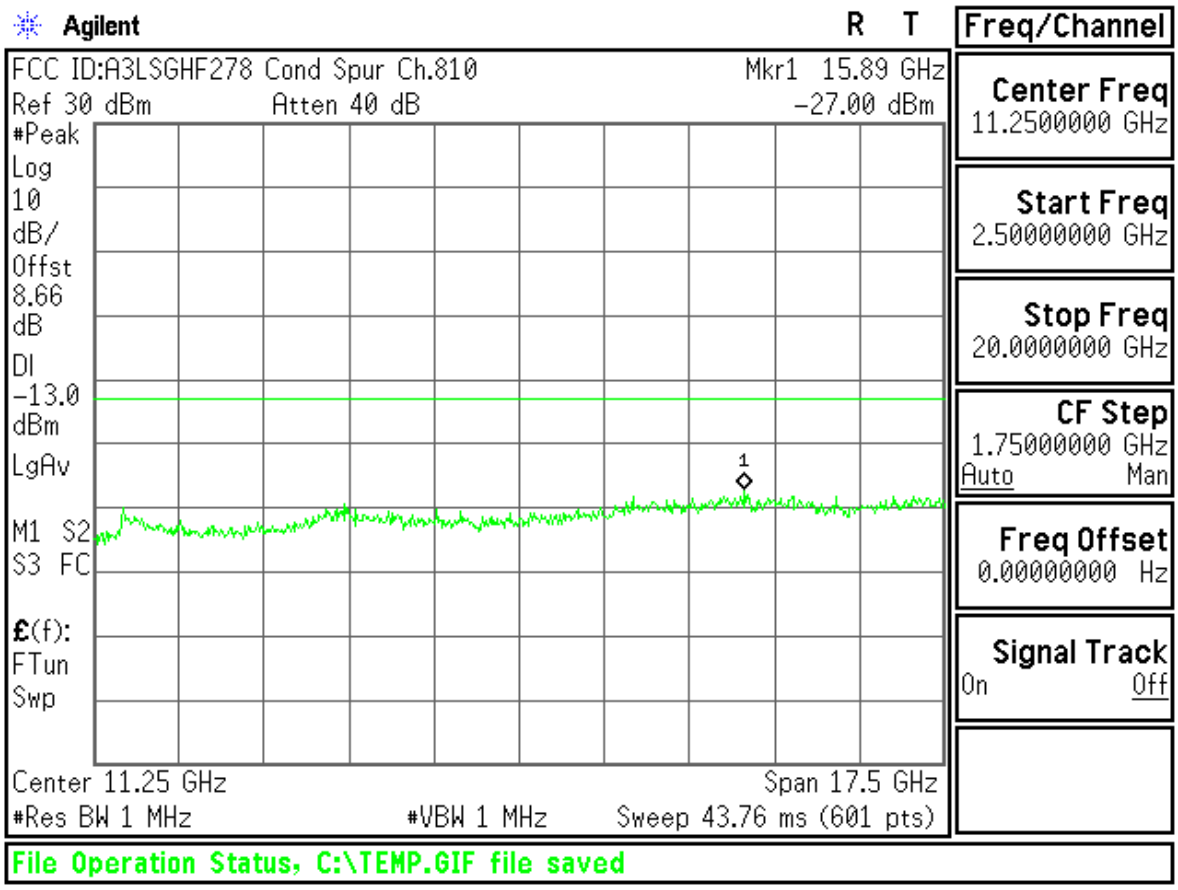

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.661
Mkr1 2.499 0 GHz
Ref 30 dBm
Atten 40 dB
-32.57 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 2.193 8 GHz
Span 612.5 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1.04 ms (601 pts)
Freq/Channel
Center Freq
2.19375000 GHz
Start 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

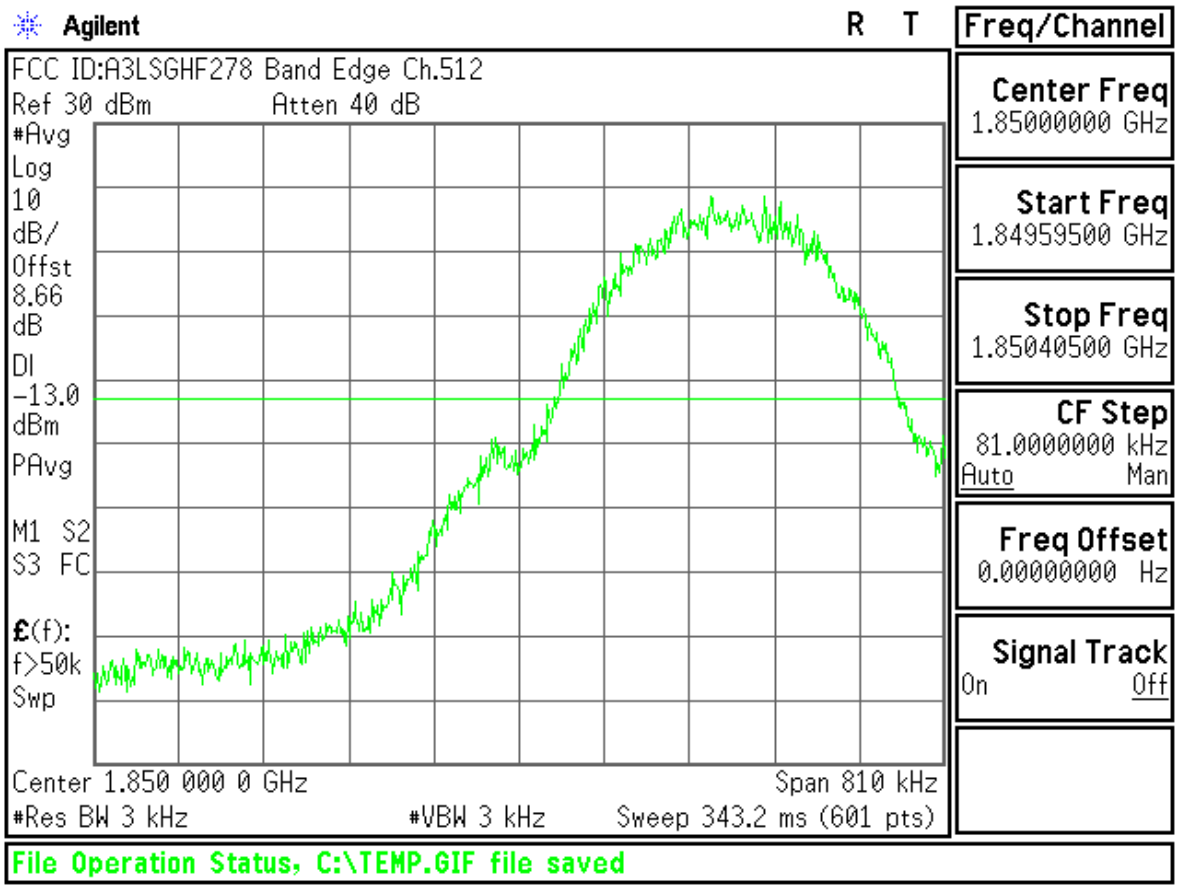

Agilent
R T
FCC ID:A3LSGHF278 Cond Spur Ch.661
Mkr1 19.36 GHz
Ref 30 dBm
Atten 40 dB
-27.34 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center 11.25 GHz
Span 17.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 43.76 ms (601 pts)
Freq/Channel
Center Freq
11.2500000 GHz
Start Freq
2.50000000 GHz
Stop Freq
20.0000000 GHz
CF Step
1.75000000 GHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
File Operation Status, C:\TEMP.GIF file saved

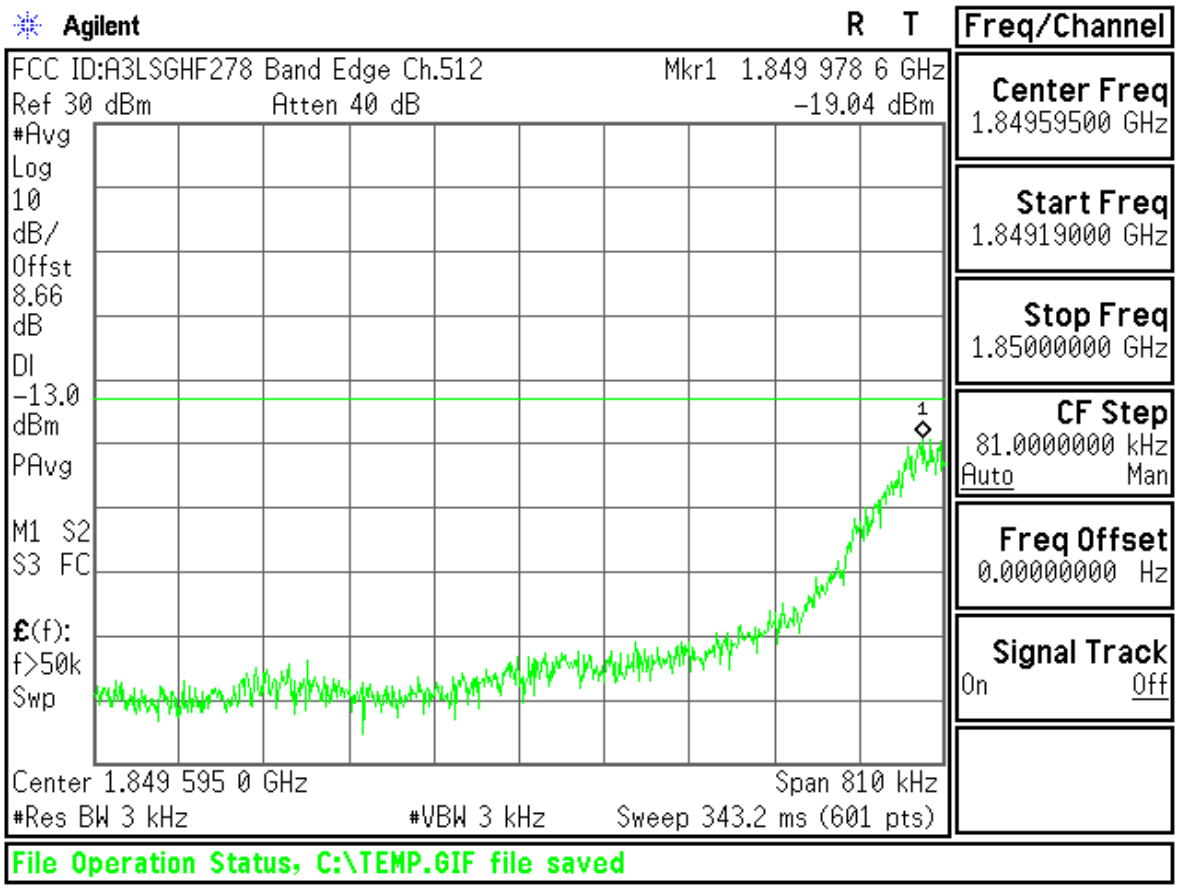

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.810
Ref 30 dBm
Atten 40 dB
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
Center 1.255 GHz
Span 2.49 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 4.16 ms (601 pts)
Center Freq
1.25500000 GHz
Start Freq
10.0000000 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

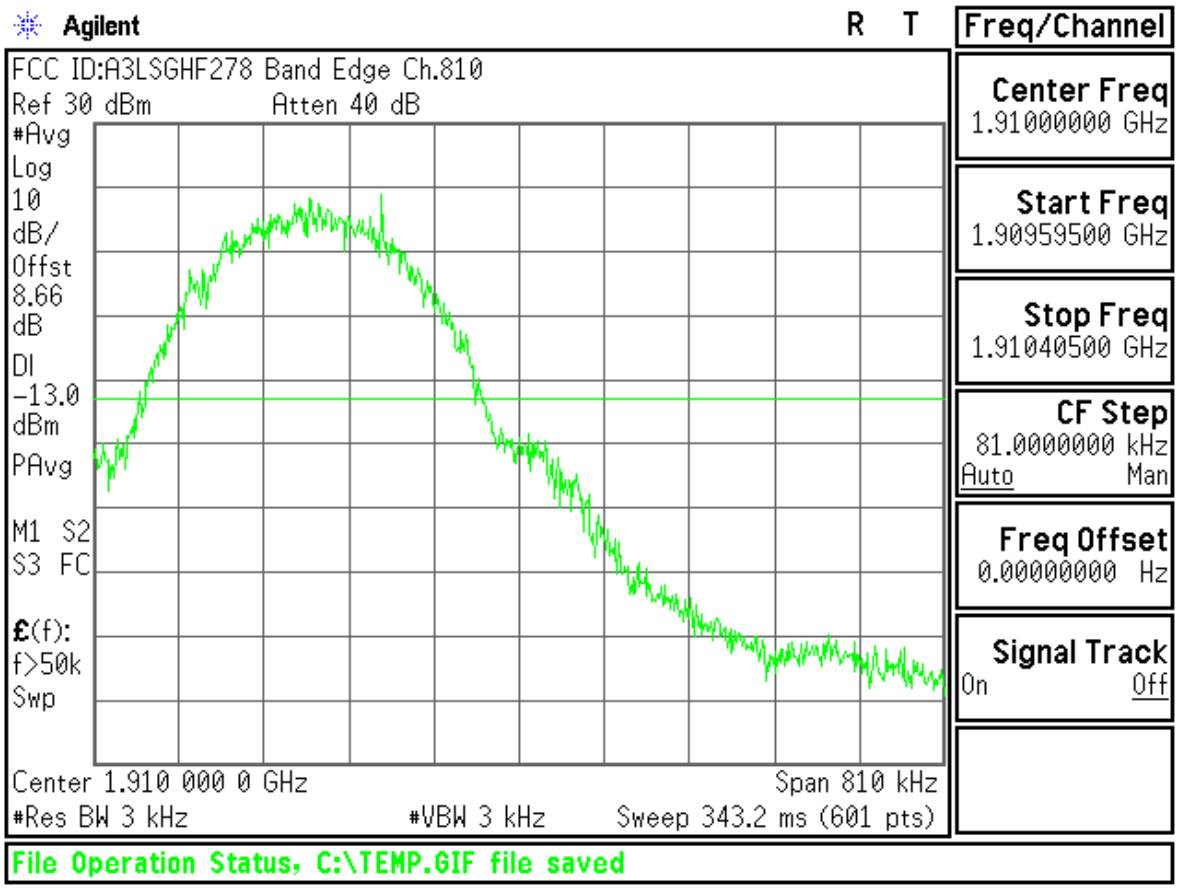

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.810
Mkr1 1.823 GHz
Ref 30 dBm
Atten 40 dB
-33.04 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
AC Coupled: unspecified below 20 MHz
1
Center 956 MHz
Span 1.892 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 3.16 ms (601 pts)
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

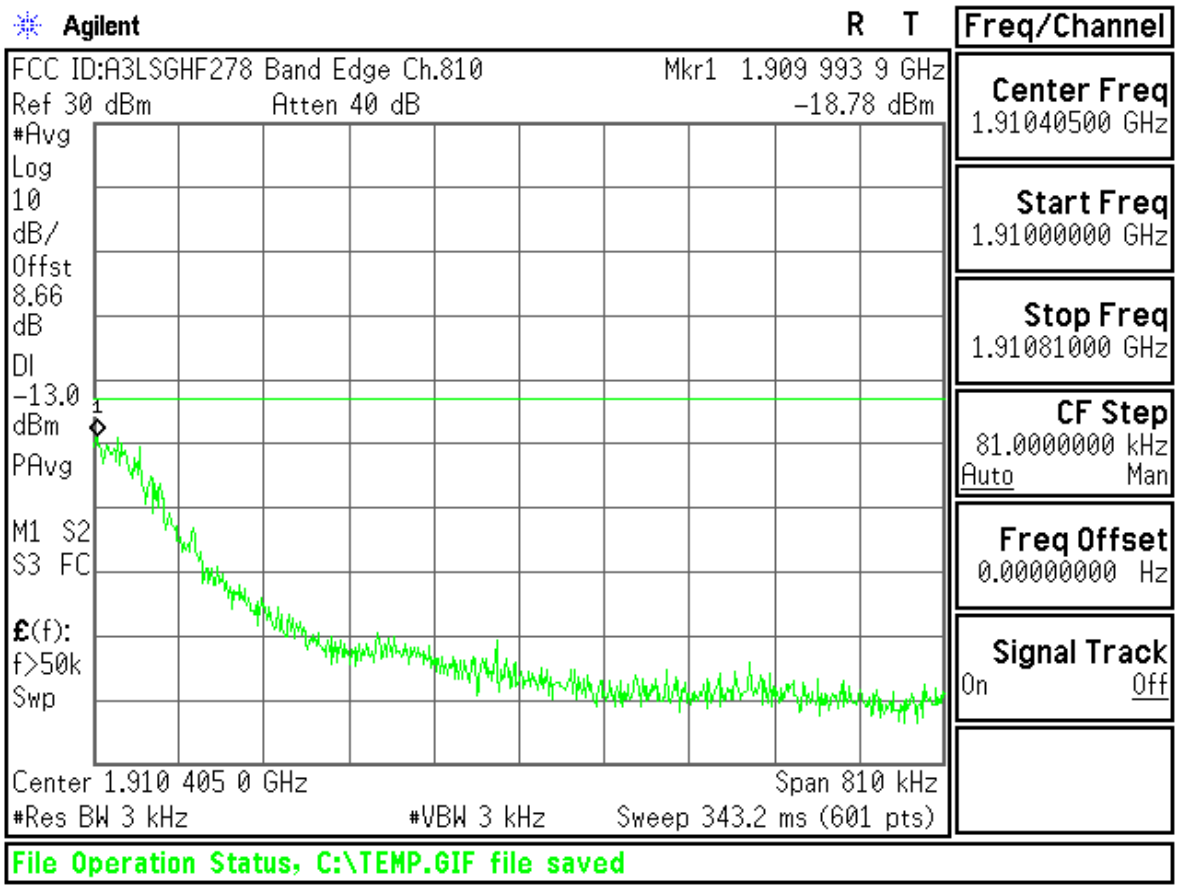

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.810
Mkr1 2.344 6 GHz
Ref 30 dBm
Atten 40 dB
-32.83 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
Center Freq
2.20865000 GHz
Start Freq
1.91730000 GHz
Stop Freq
2.50000000 GHz
CF Step
58.2700000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Center 2.208 6 GHz
Span 582.7 MHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 1 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved


Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Cond Spur Ch.810
Mkr1 15.89 GHz
Ref 30 dBm
Atten 40 dB
-27.00 dBm
#Peak
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
LgAv
M1 S2
S3 FC
£(f):
FTun
Swp
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
Center 11.25 GHz
Span 17.5 GHz
#Res BW 1 MHz
#VBW 1 MHz
Sweep 43.76 ms (601 pts)
File Operation Status, C:\TEMP.GIF file saved

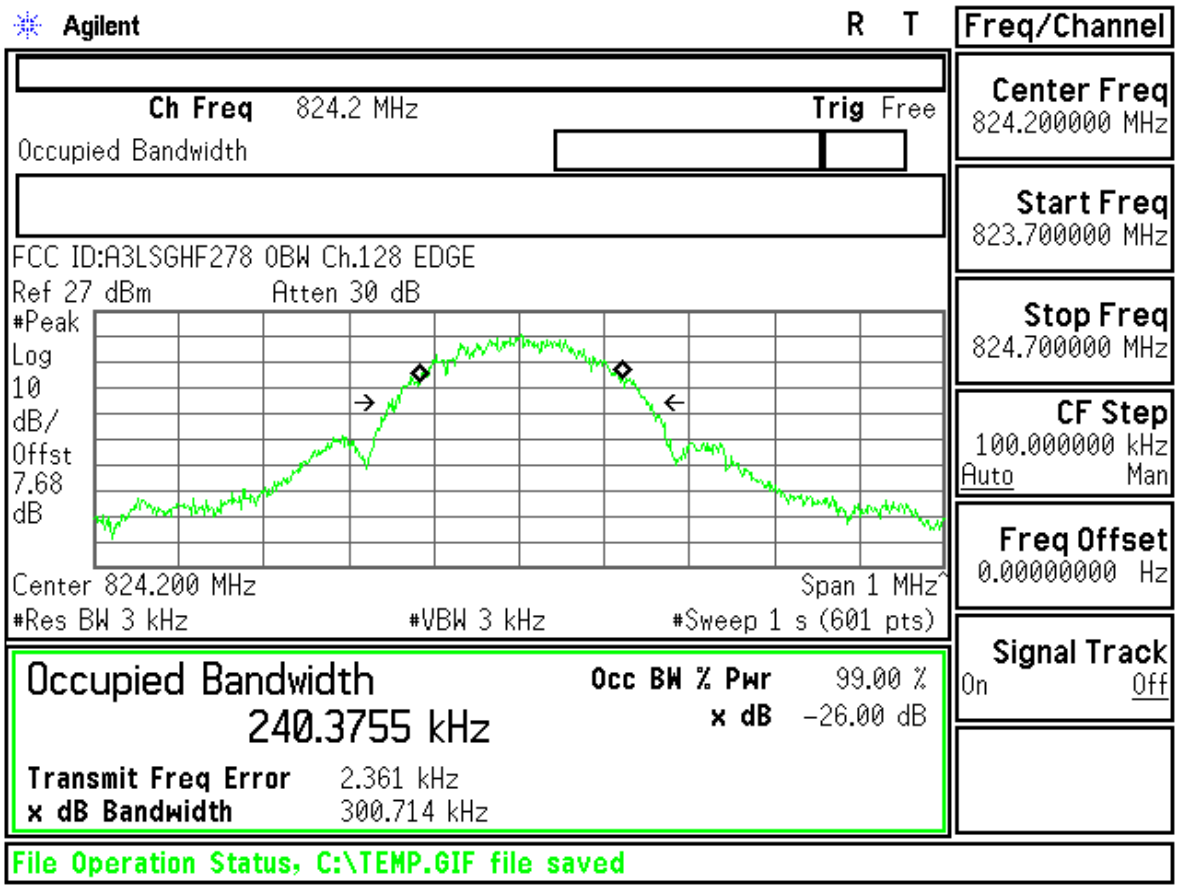

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.512
Ref 30 dBm
Atten 40 dB
#Avg
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 1.850 000 0 GHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
1.85000000 GHz
Start Freq
1.84959500 GHz
Stop 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

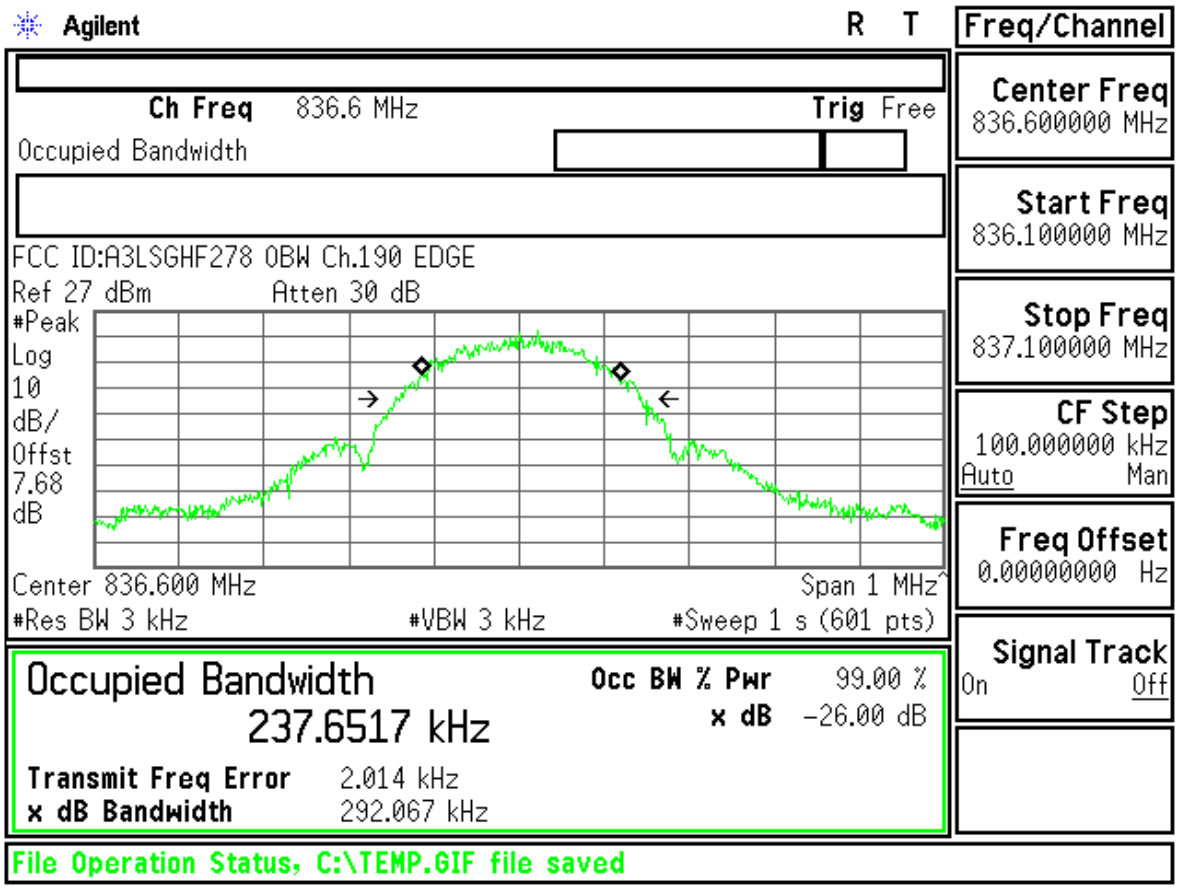

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.512
Mkr1 1.849 978 6 GHz
Ref 30 dBm
Atten 40 dB
-19.04 dBm
#Avg
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 1.849 595 0 GHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
1.84959500 GHz
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

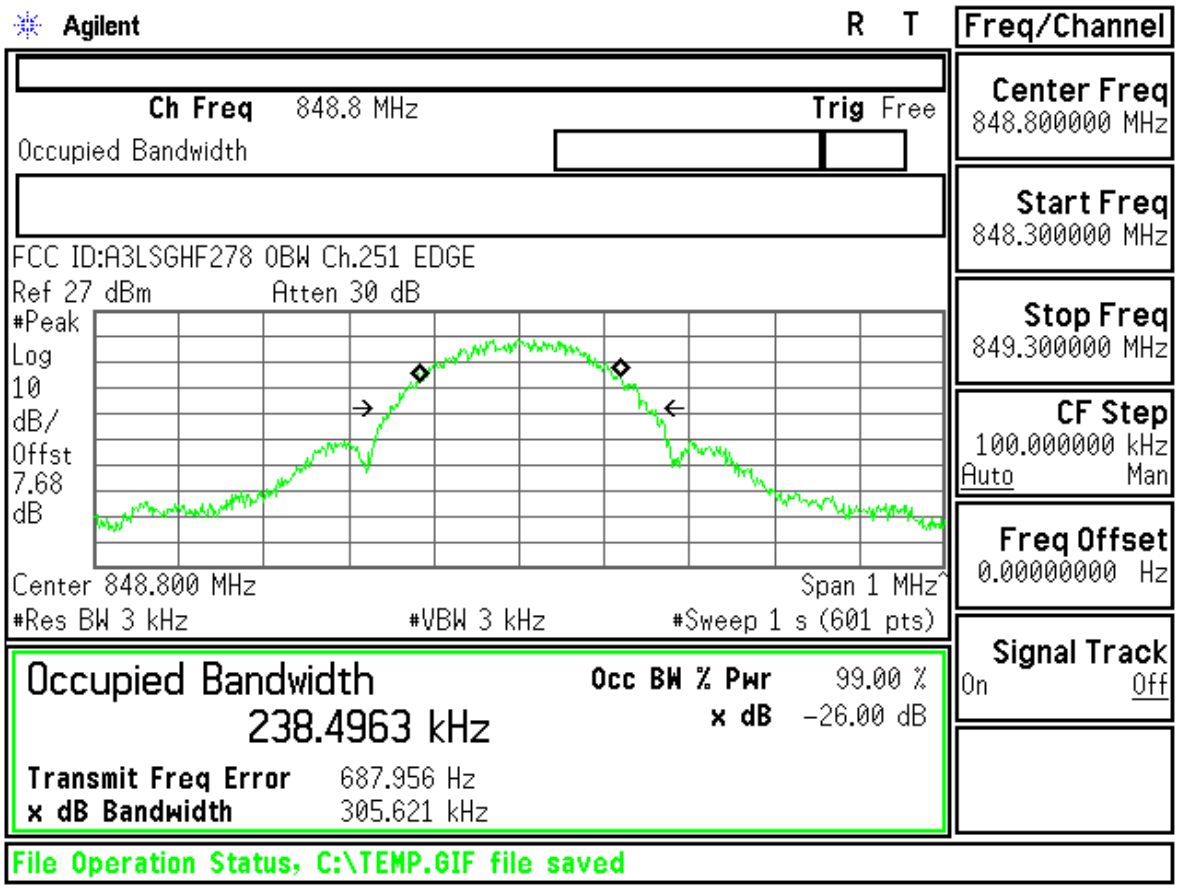

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Band Edge Ch.810
Ref 30 dBm
Atten 40 dB
#Avg
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 1.910 000 0 GHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Center Freq
1.91000000 GHz
Start Freq
1.90959500 GHz
Stop 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:A3LSGHF278 Band Edge Ch.810
Mkr1 1.909 993 9 GHz
Ref 30 dBm
Atten 40 dB
-18.78 dBm
#Avg
Log
10
dB/
Offst
8.66
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 1.910 405 0 GHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Center Freq
1.91040500 GHz
Start Freq
1.91000000 GHz
Stop Freq
1.91081000 GHz
CF Step
81.0000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
File Operation Status, C:\TEMP.GIF file saved

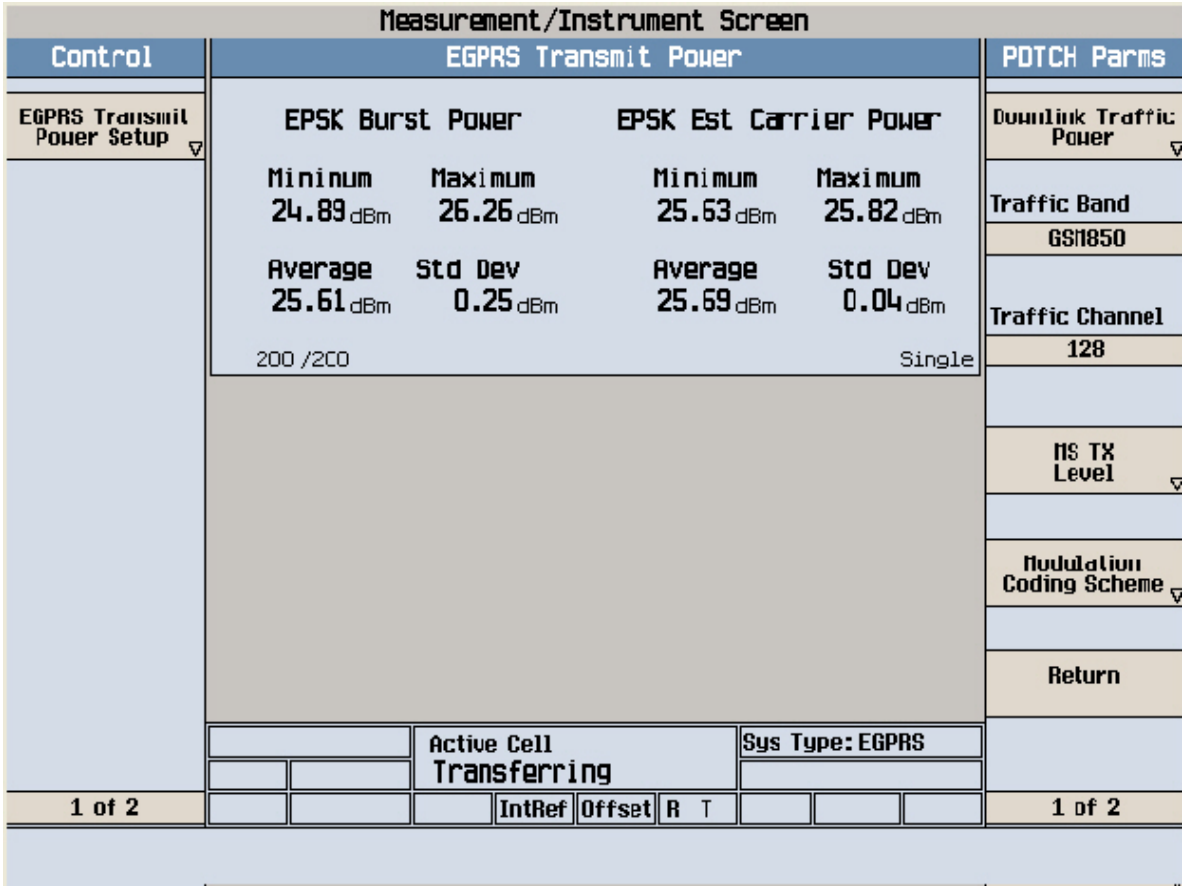
EDGE850


Agilent
R T
Freq/Channel
Ch Freq 824.2 MHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.128 EDGE
Ref 27 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 824.200 MHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
240.3755 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 2.361 kHz
x dB Bandwidth 300.714 kHz
File Operation Status, C:\TEMP.GIF file saved
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

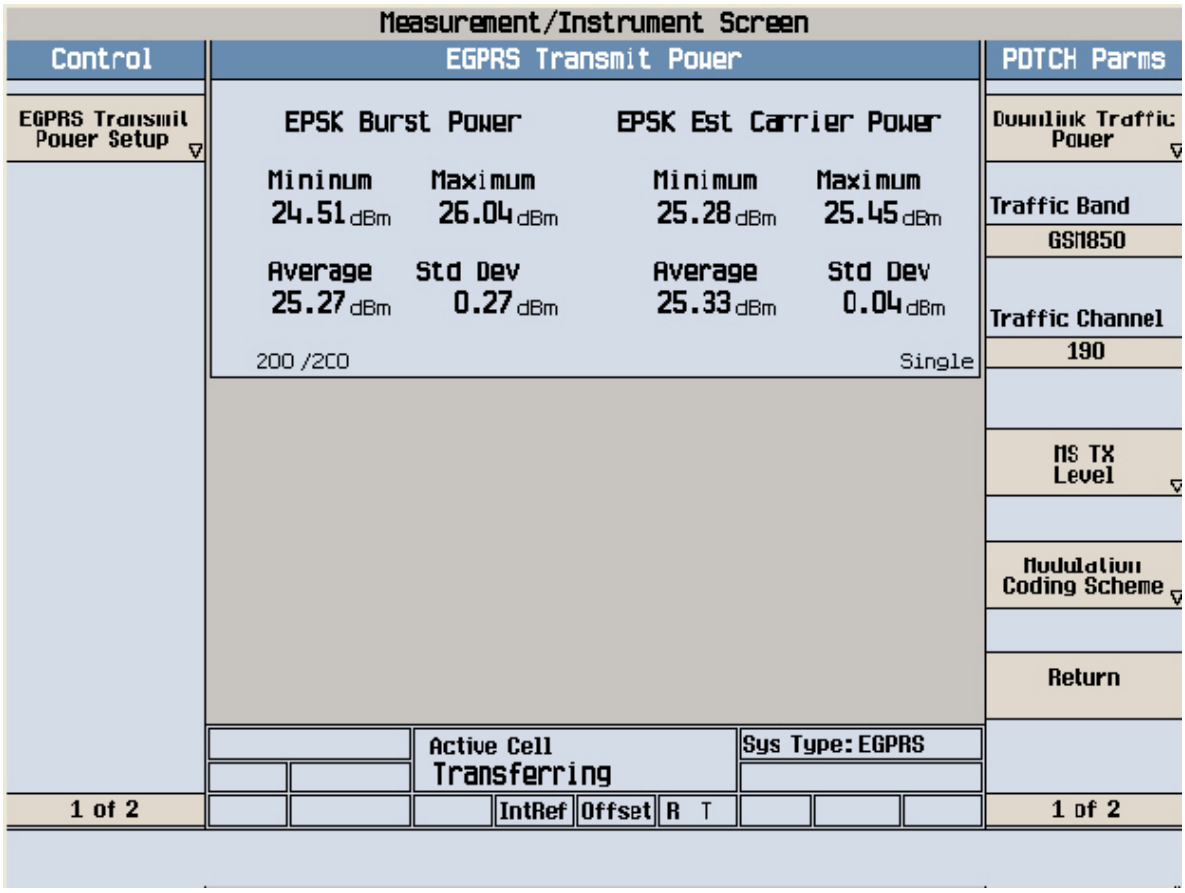

Agilent
R T
Freq/Channel
Ch Freq 836.6 MHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.190 EDGE
Ref 27 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 836.600 MHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
237.6517 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 2.014 kHz
x dB Bandwidth 292.067 kHz
File Operation Status, C:\TEMP.GIF file saved
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



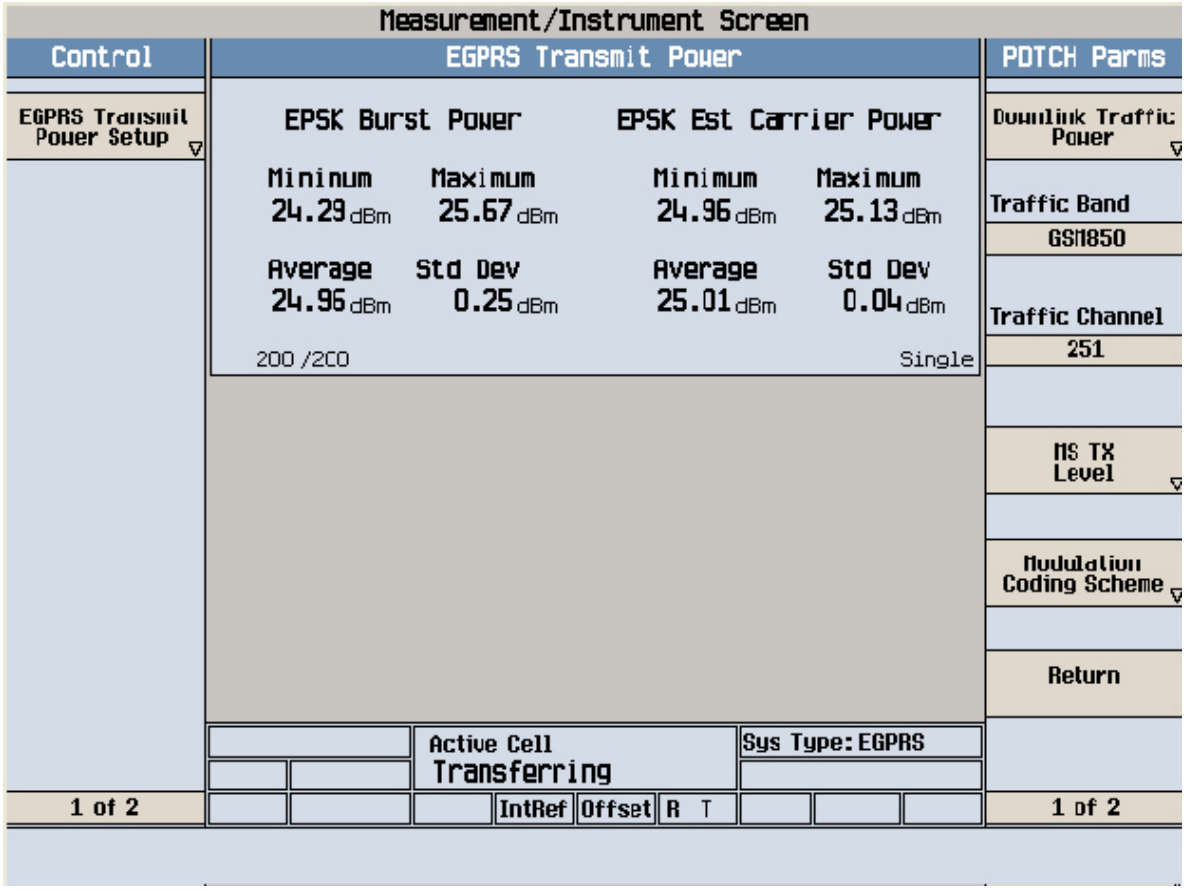
ID : A3LSGHF278 Transmit Power 128CH EDGE

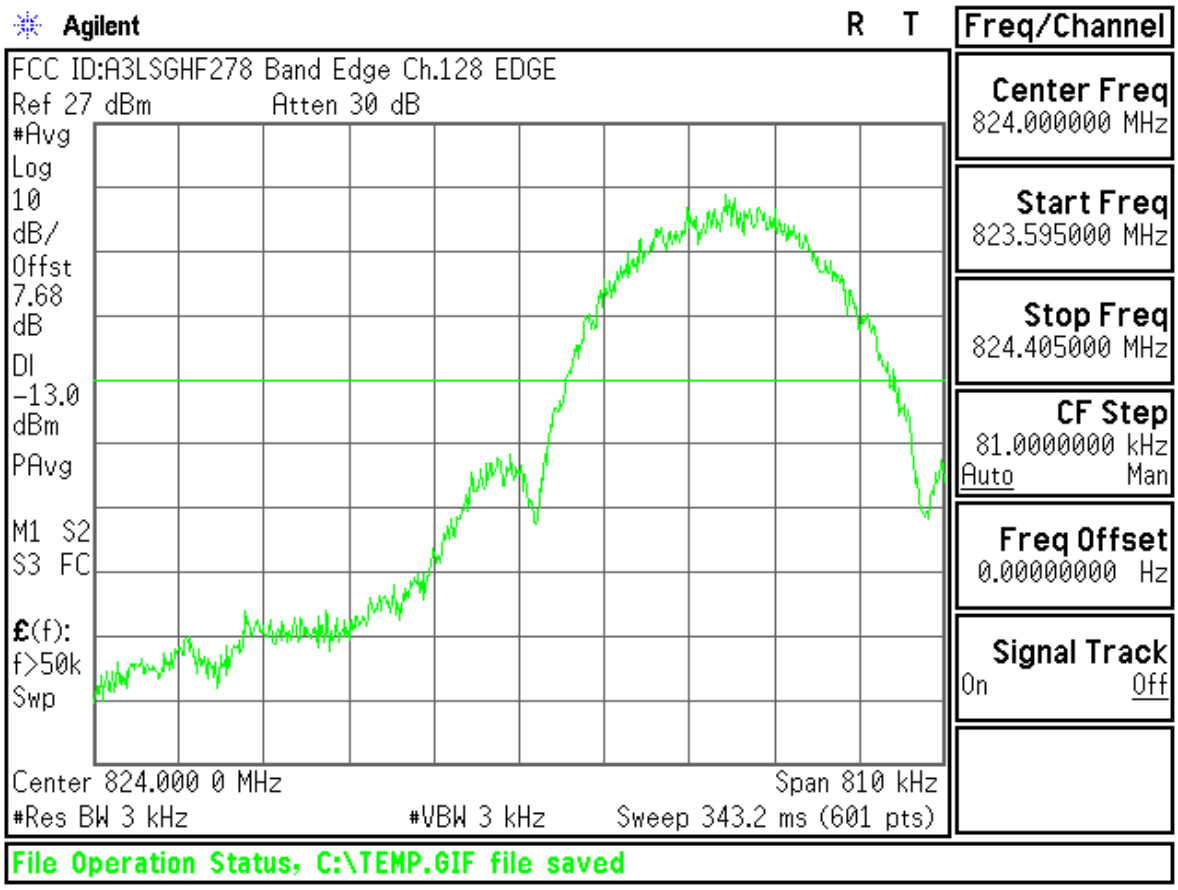


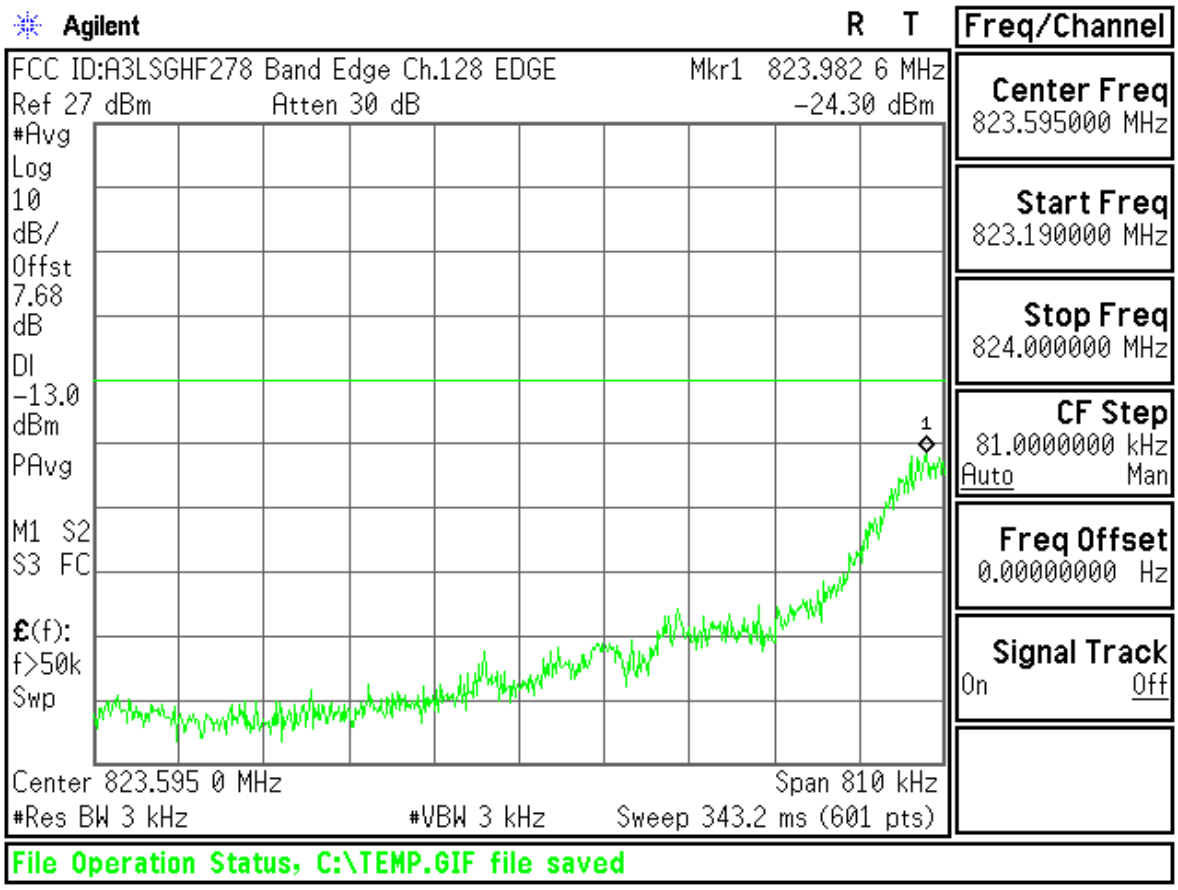
FCC ID : A3LSGHF278 Transmit Power 190CH EDGE

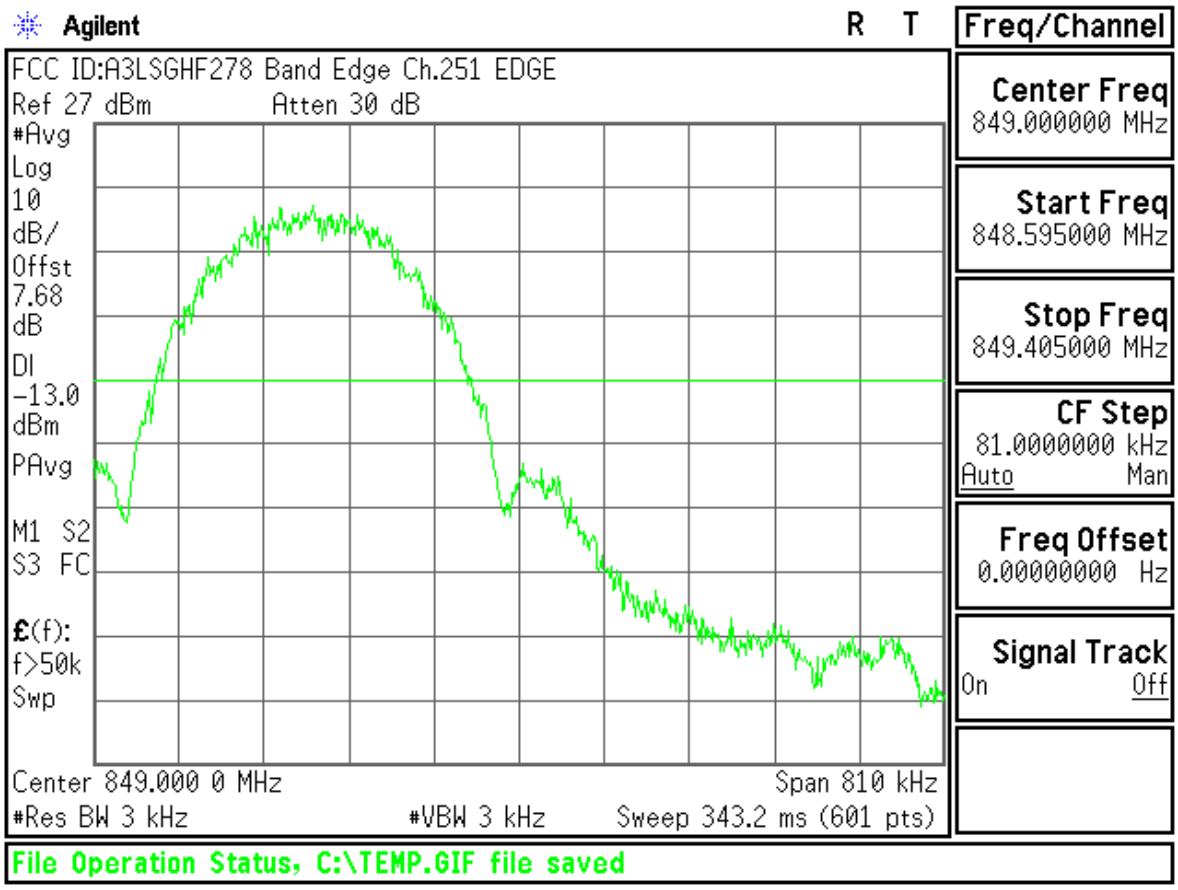


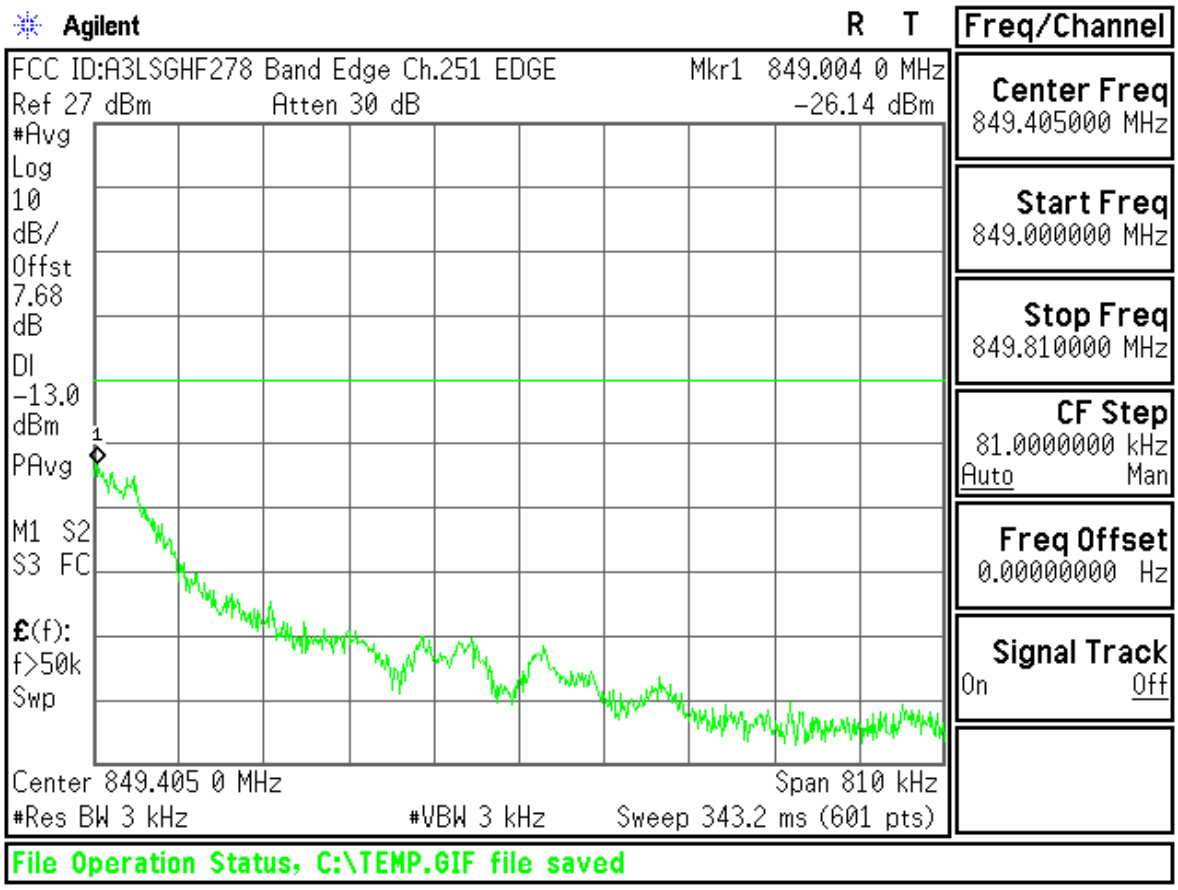
FCC ID : A3LSGHF278 Transmit Power 251CH EDGE



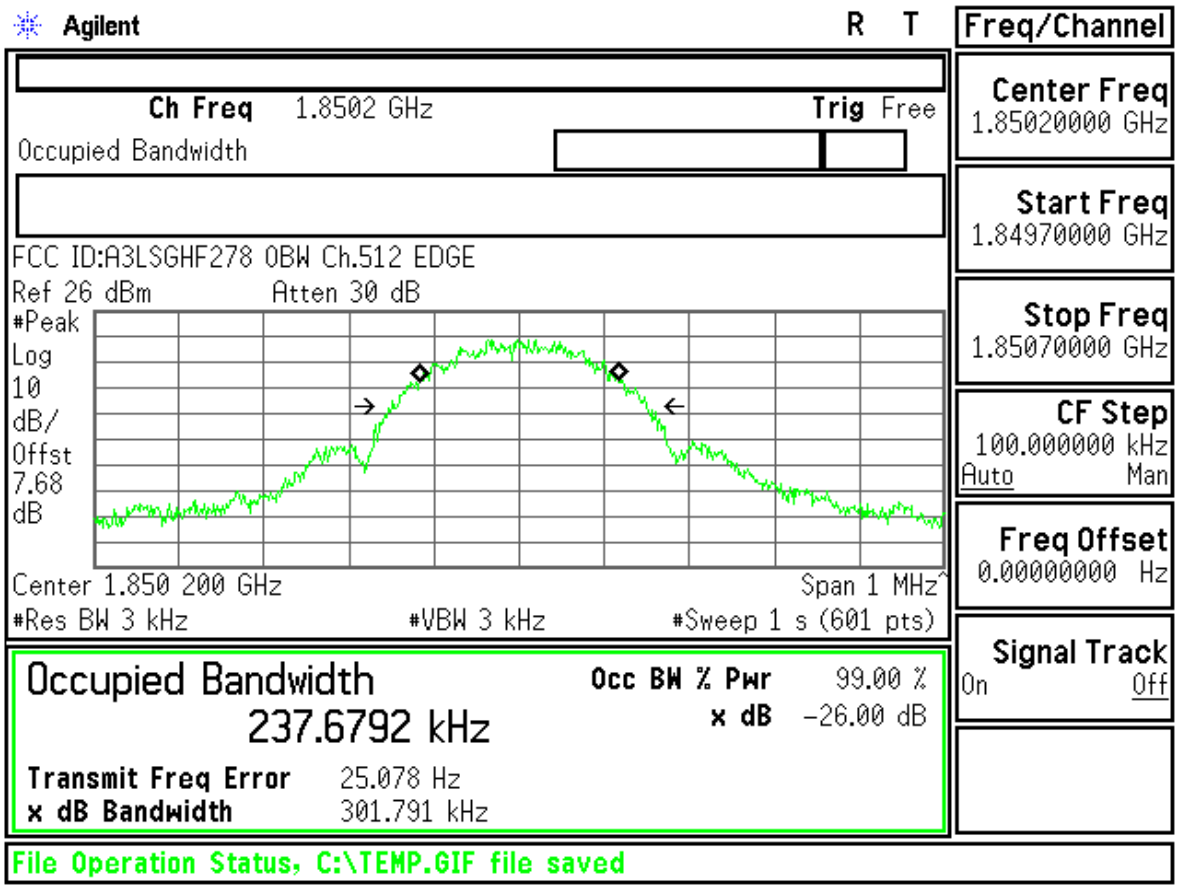

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.128 EDGE
Ref 27 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 824.000 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
824.000000 MHz
Start Freq
823.595000 MHz
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

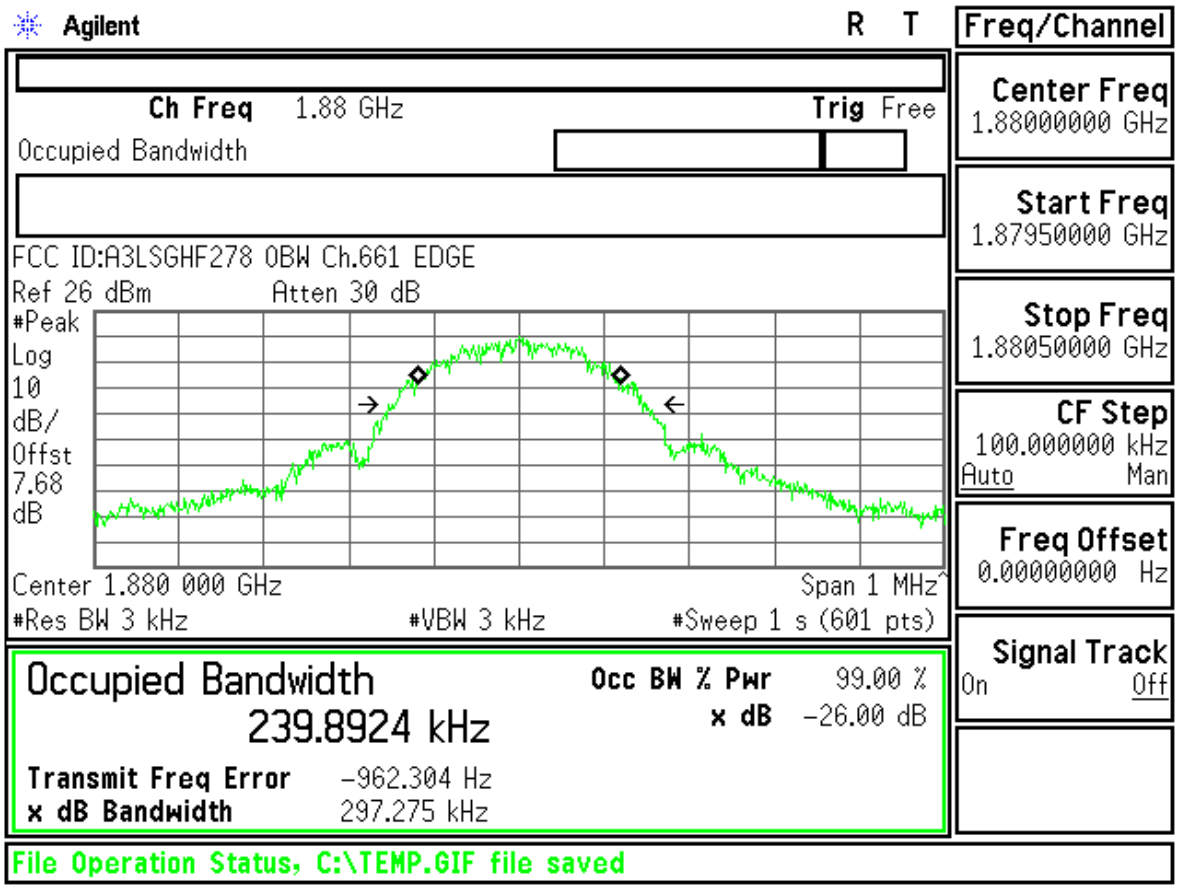

Agilent
R T
FCC ID:A3LSGHF278 Band Edge Ch.128 EDGE
Mkr1 823.982 6 MHz
Ref 27 dBm
Atten 30 dB
-24.30 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 823.595 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Freq/Channel
Center Freq
823.595000 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

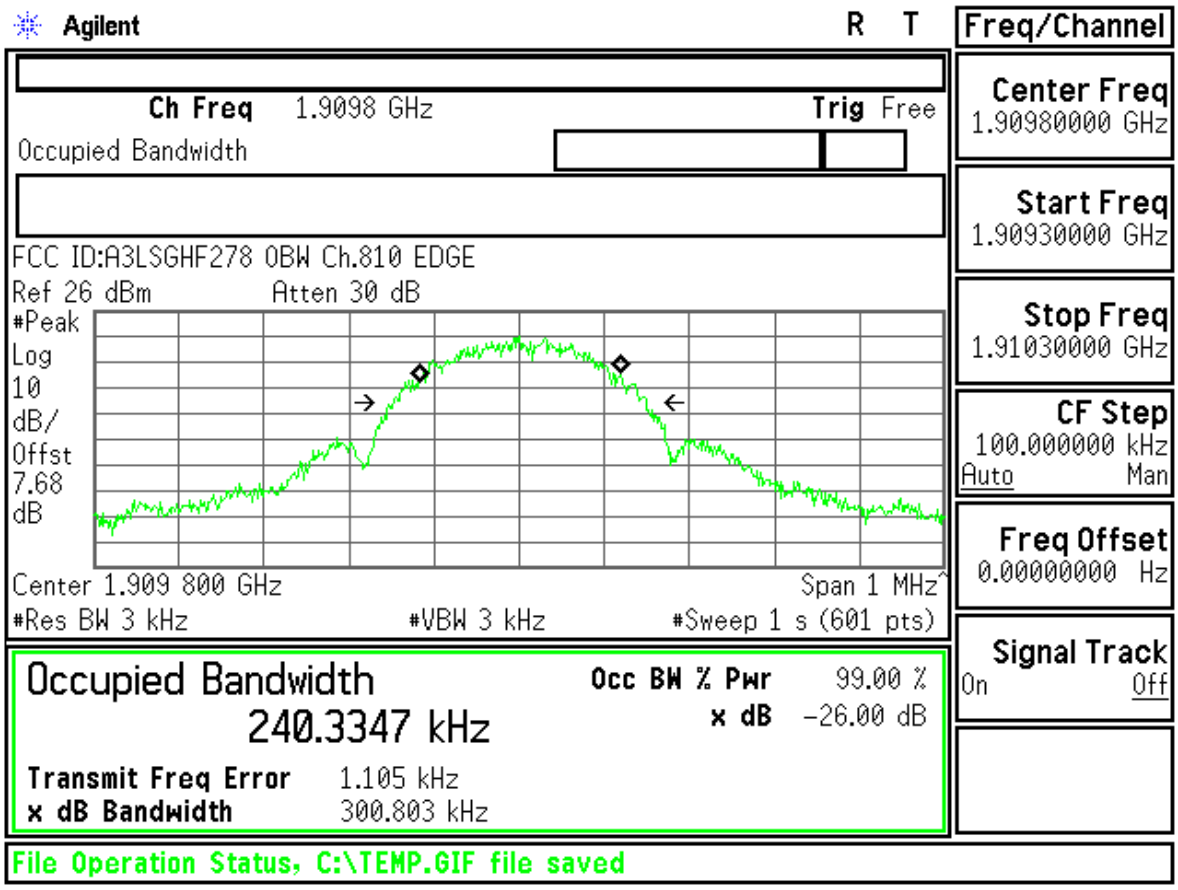

Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Band Edge Ch.251 EDGE
Ref 27 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
Center 849.000 0 MHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Center Freq
849.000000 MHz
Start Freq
848.595000 MHz
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:A3LSGHF278 Band Edge Ch.251 EDGE
Mkr1 849.004 0 MHz
Ref 27 dBm
Atten 30 dB
-26.14 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(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

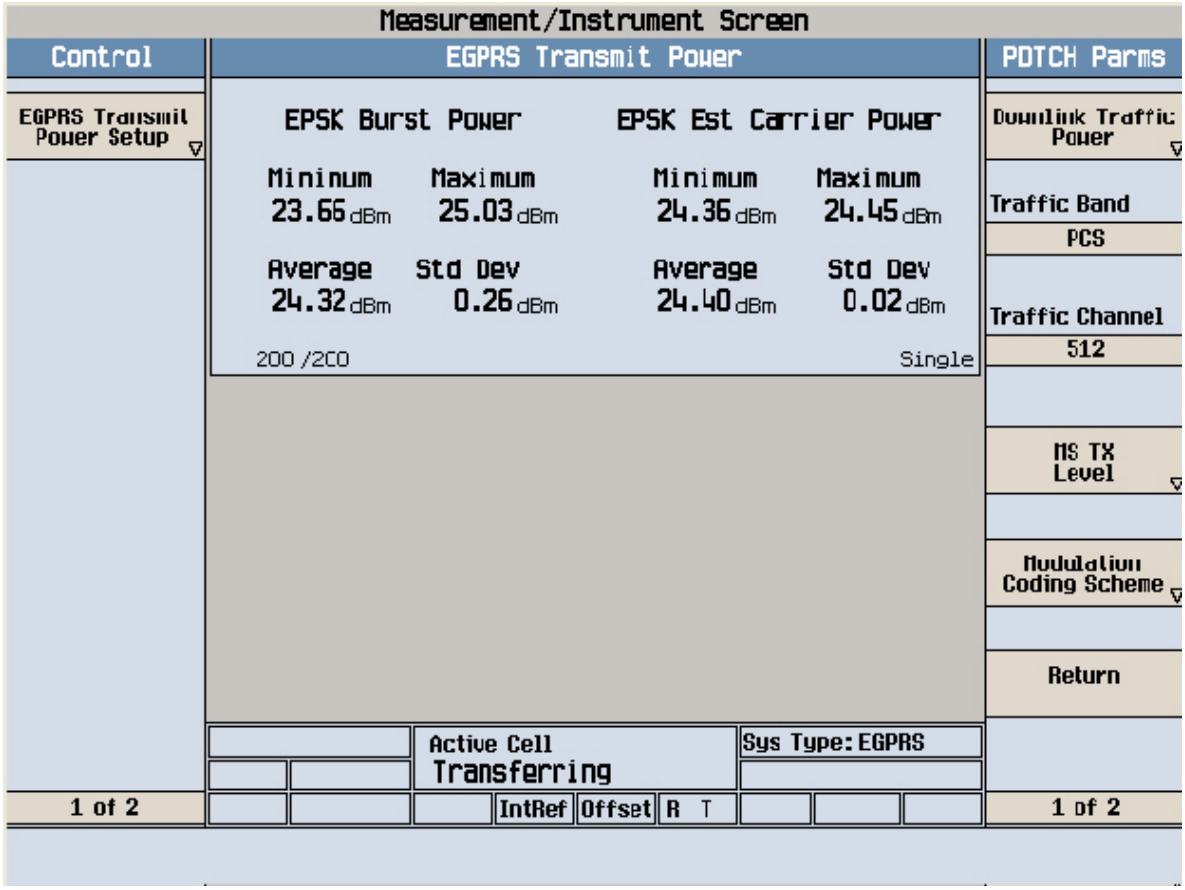
EDGE1900


Agilent
R T
Freq/Channel
Ch Freq 1.8502 GHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.512 EDGE
Ref 26 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 1.850 200 GHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
237.6792 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 25.078 Hz
x dB Bandwidth 301.791 kHz
Center Freq
1.85020000 GHz
Start Freq
1.84970000 GHz
Stop Freq
1.85070000 GHz
CF Step
100.000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
File Operation Status, C:\TEMP.GIF file saved

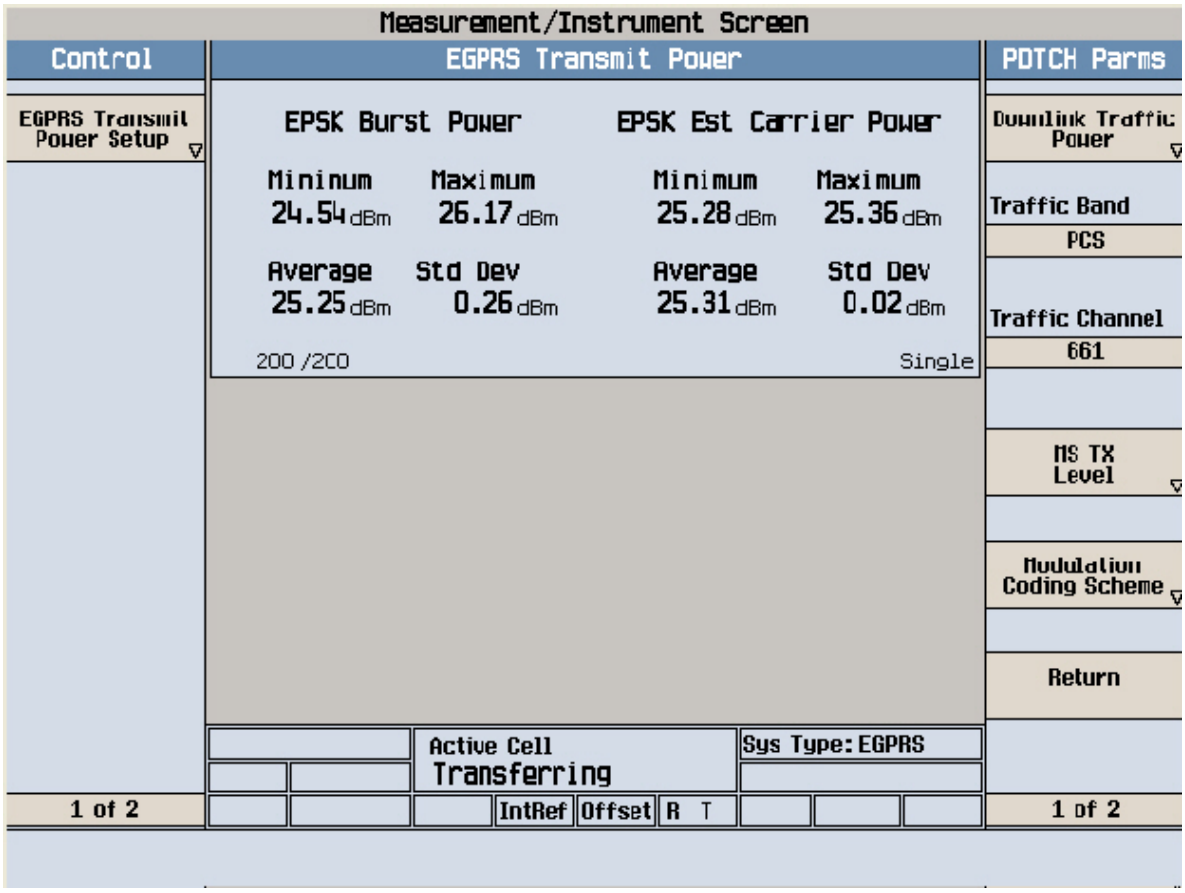

Agilent
R T
Freq/Channel
Ch Freq 1.88 GHz
Trig Free
Occupied Bandwidth
FCC ID:A3LSGHF278 OBW Ch.661 EDGE
Ref 26 dBm
Atten 30 dB
#Peak
Log
10
dB/
Offst
7.68
dB
Center 1.880 000 GHz
Span 1 MHz
#Res BW 3 kHz
#VBW 3 kHz
#Sweep 1 s (601 pts)
Occupied Bandwidth
239.8924 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error -962.304 Hz
x dB Bandwidth 297.275 kHz
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



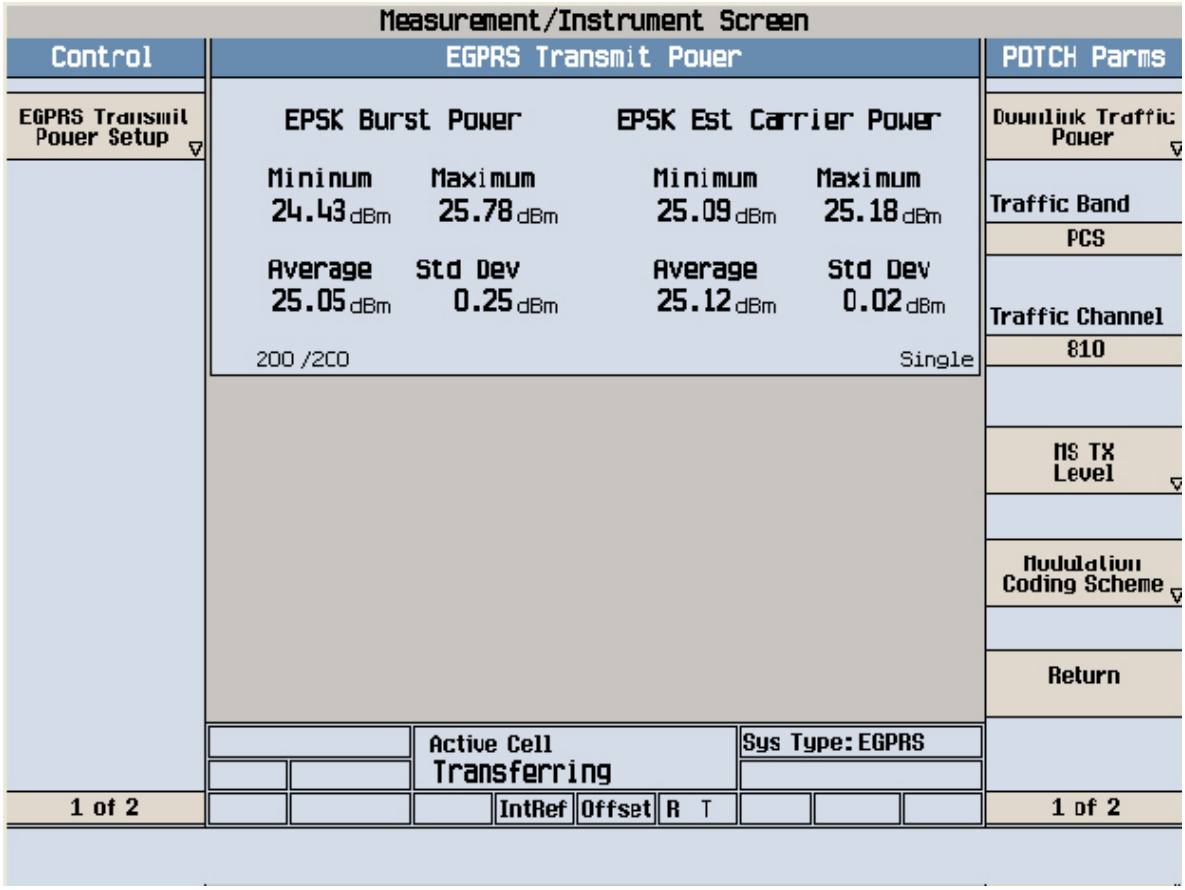
ID : A3LSGHF278 Transmit Power 512CH EDGE

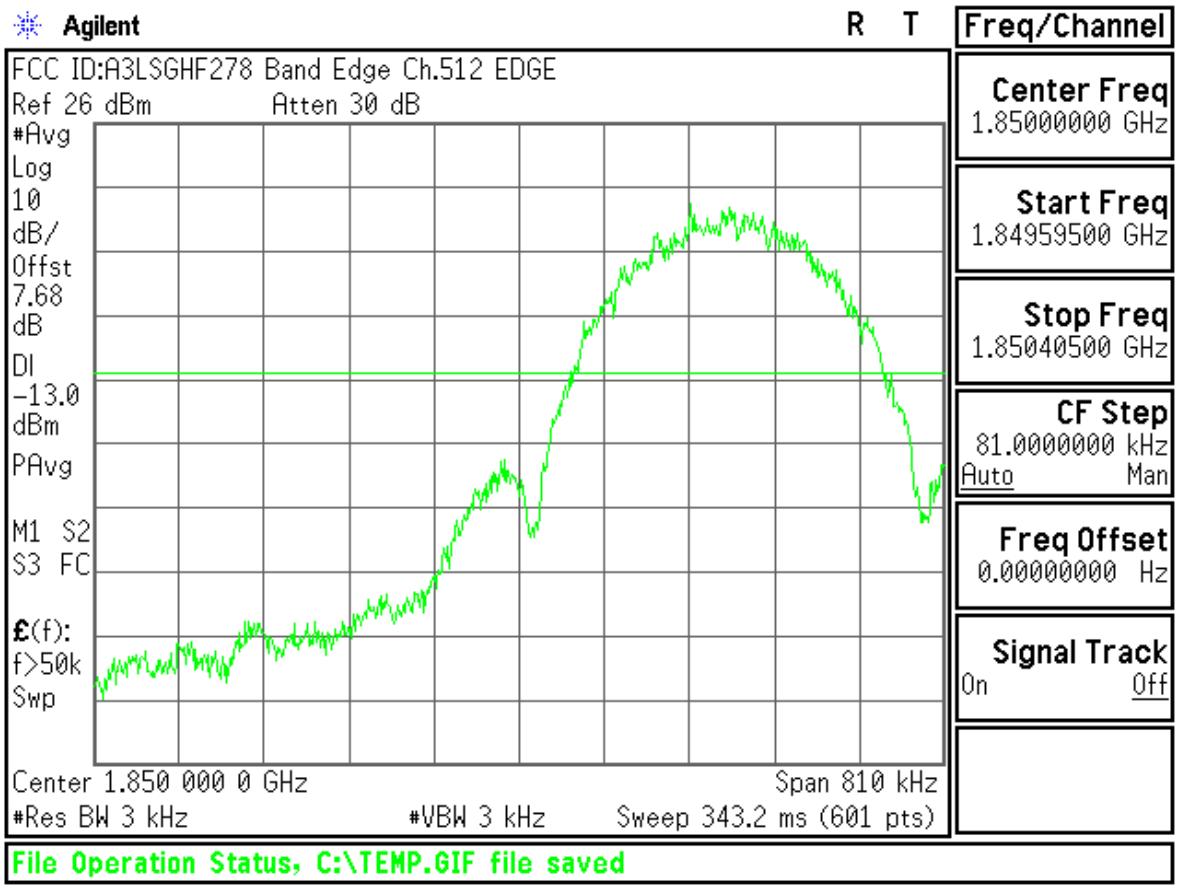


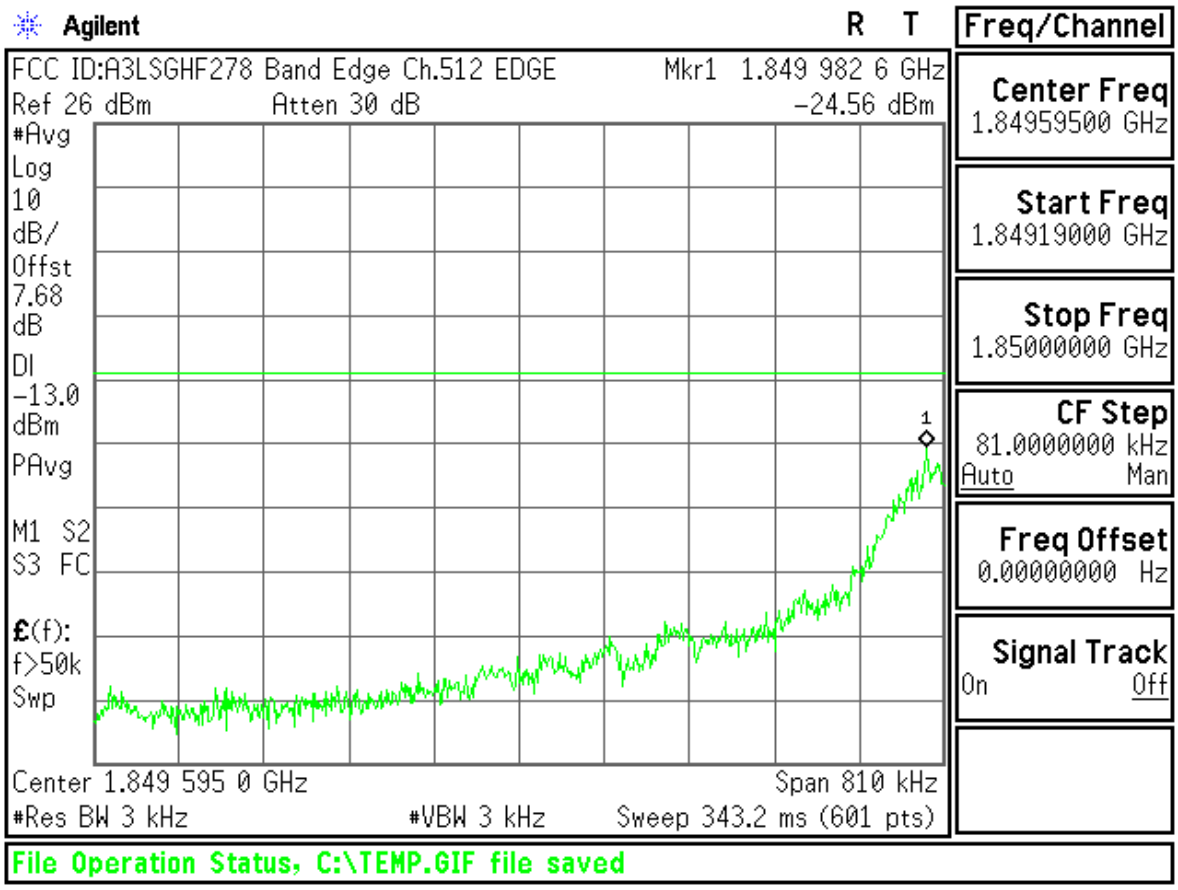
FCC ID : A3LSGHF278 Transmit Power 661CH EDGE

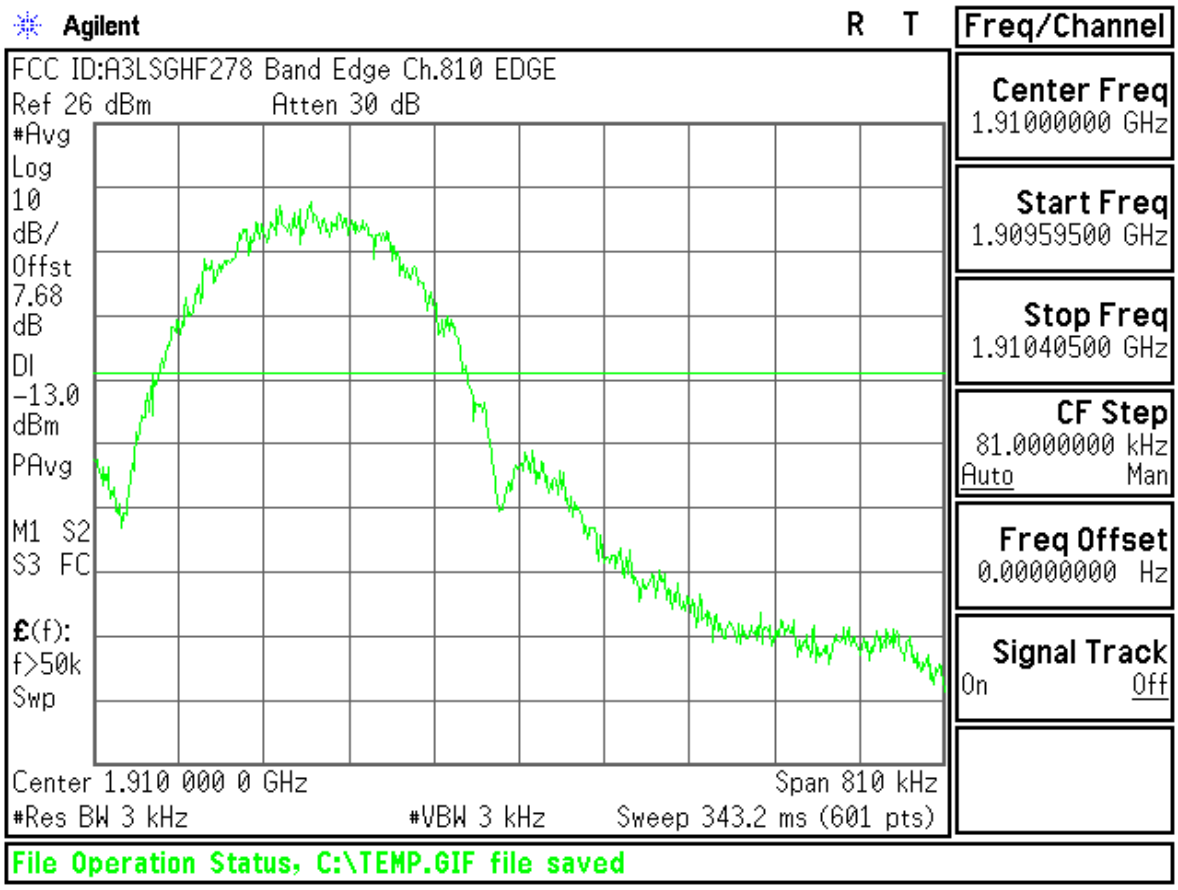


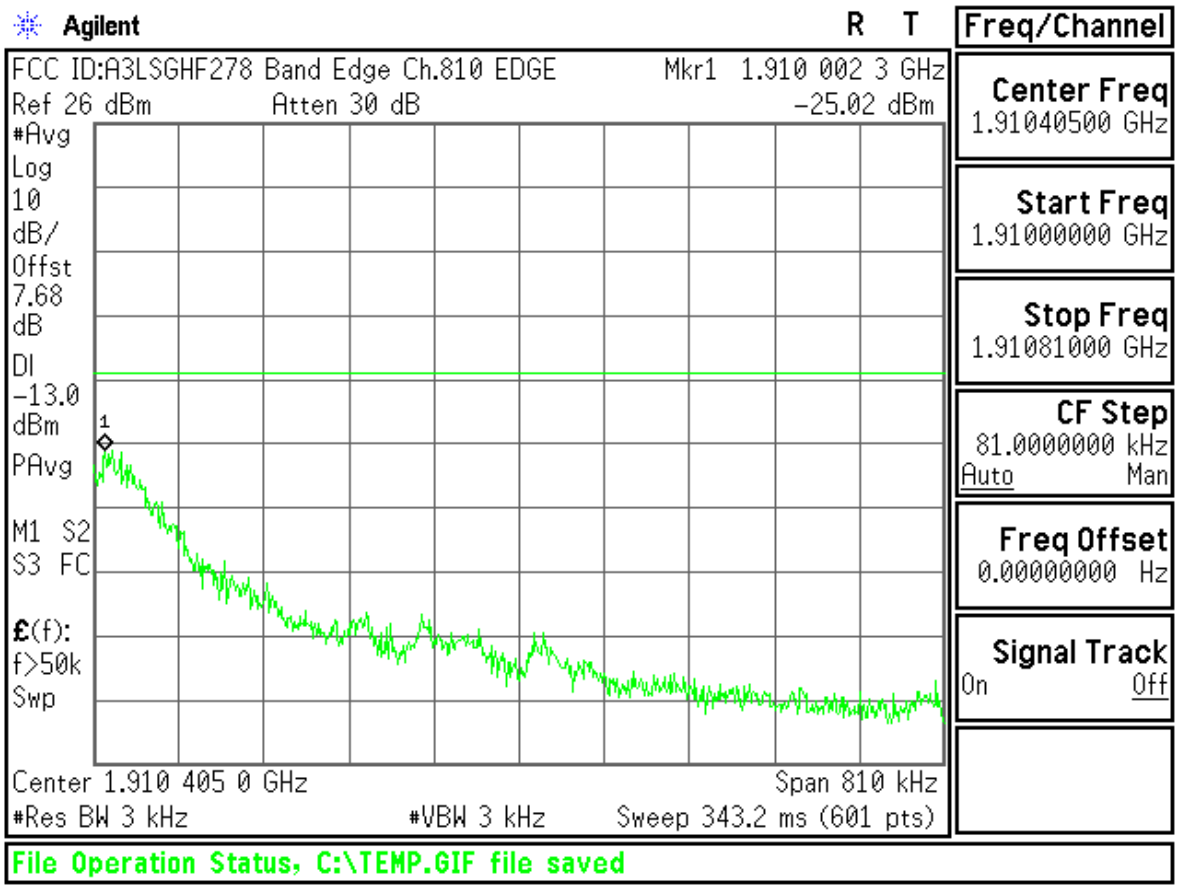
FCC ID : A3LSGHF278 Transmit Power 810CH EDGE




Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Band Edge Ch.512 EDGE
Ref 26 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(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:A3LSGHF278 Band Edge Ch.512 EDGE
Mkr1 1.849 982 6 GHz
Ref 26 dBm
Atten 30 dB
-24.56 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(f):
f>50k
Swp
1
Center 1.849 595 0 GHz
Span 810 kHz
#Res BW 3 kHz
#VBW 3 kHz
Sweep 343.2 ms (601 pts)
Center Freq
1.84959500 GHz
Start Freq
1.84919000 GHz
Stop Freq
1.85000000 GHz
CF Step
81.0000000 kHz
Auto
Man
Freq Offset
0.00000000 Hz
Signal Track
On
Off
File Operation Status, C:\TEMP.GIF file saved


Agilent
R T
Freq/Channel
FCC ID:A3LSGHF278 Band Edge Ch.810 EDGE
Ref 26 dBm
Atten 30 dB
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(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:A3LSGHF278 Band Edge Ch.810 EDGE
Mkr1 1.910 002 3 GHz
Ref 26 dBm
Atten 30 dB
-25.02 dBm
#Avg
Log
10
dB/
Offst
7.68
dB
Dl
-13.0
dBm
PAvg
M1 S2
S3 FC
£(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