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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-i847
FCC ID (Requested) : A3LSGHI847
Report No : FI-300-R1
Job No : FI-300
Date issued : December 30, 2011

- Abstract -

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

Prepared By

HK LEE – Test Engineer

Authorized By

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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 : A3LSGHI847
- Model : SGH-i847
- Quantity : Quantity production is planned
- Emission Designators : 245KGXW(GSM850), 246KG7W(GSM850 EDGE)
247KGXW(GSM1900), 241KG7W(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 : 0.899 W ERP GSM850 (29.54 dBm)
0.713 W EIRP GSM1900 (28.53 dBm)
0.215 W ERP GSM850 EDGE(23.32 dBm)
0.394 W EIRP GSM1900 EDGE(25.96 dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 GSM/GPRS/EDGE and Cellular/PSC
WCDMA/HSPA Phone with Bluetooth and WLAN
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : December 1-2, 2011
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FI-300-R1

2. INTRODUCTION

2.1. General

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

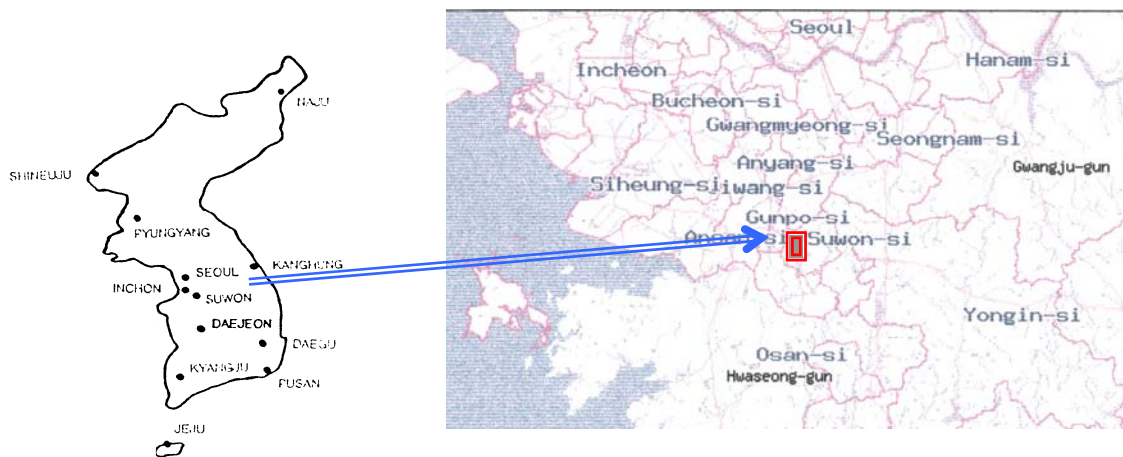


Figure1. Map of the Suwon City area.

Measurement Procedure

The radiated and spurious measurements were made Fully-anechoic chamber at a 3-meter test range (see Figure2). The equipment under testing was placed on a Non-conducted turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The substitution antenna will replace the EUT antenna it the same position and in vertical polarization. The frequency of the signal generator shall be set to the frequencies that were measured on the EUT. The test antenna shall be raised and lowered, if necessary, to ensure that the maximum signal is still being received. The signal generator, output level, shall be adjusted until an equal or a known related level to what was measured from the EUT is obtained in the spectrum analyzer. This level was recorded.

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



Figure2. Photograph of 3m Fully-Anechoic Chamber



3. MEASURING INSTRUMENT CALIBRATION

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

4. TEST EQUIPMENT LIST

Name Of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/010	2012-10-25
	E4440A(3Hz~26.5GHz)	MY46187454	2012-03-08
	E4440A(3Hz~26.5GHz)	MY41000236	2012-04-27
Signal Generator	SMR20	835197/030	2012-12-01
Network Analyzer	8753E	JP38160590	2012-06-21
Pre-Amplifier	8449B	3008A00691	2012-12-09
Communication test set	8960	MY47510060	2012-03-08
	8960	GB42360886	2012-09-02
Controller	CO2000	CO2000/424	Not Required
Turn Unit	CT0800	CT0800/057	Not Required
Rotating Device	DE3600-RH-PR	DE3600-RH-PR/050	Not Required
Antenna Master	MA4000	MA4000/204	Not Required
Horn Antenna	HF906	100134	2013-09-05
	BBHA9120	9120D-636	2012-07-14
Dipole Antenna	UHA 9105	9105-2412	2013-09-09
	UHA 9105	9105-2413	2012-07-15
Receive Antenna	HL040	353255/019	2013-09-05
Power Supply	E3640A	MY40003594	2012-06-21
	E3640A	MY40003595	2012-05-27
	E3632A	MY40022438	2012-03-08
Divider	11636B	51946	2012-07-04
	11636B	51942	2012-07-05
	11636B	56918	2012-09-28
High Pass Filter	WHK/3.0/18G-10SS	492	Not Required
	WHK/3.5/18G-10SS	4	Not Required
Environmental Chamber	SH-241	92000549	2012-11-14
	SH-241	92000548	2012-11-14
Shielded Fully Anechoic Chamber	CHAMBER	ANT0001	Not Required

5. DESCRIPTION OF TESTS

5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power

Test Set-up for the ERP/EIRP TEST

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

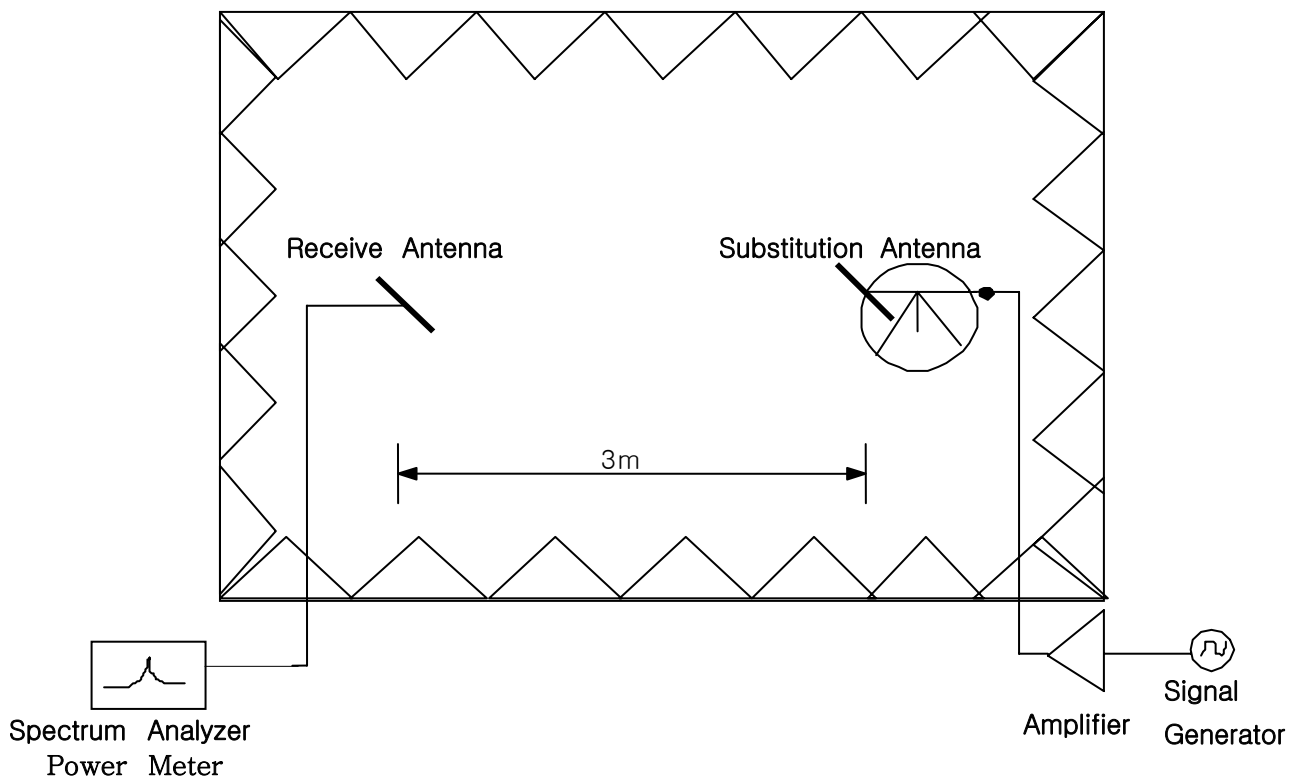


Figure 3. Diagram of ERP/EIRP test Set-up

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

5.2. Radiated Spurious & Harmonic Emission

Test Set-up for the Radiated Emission TEST

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

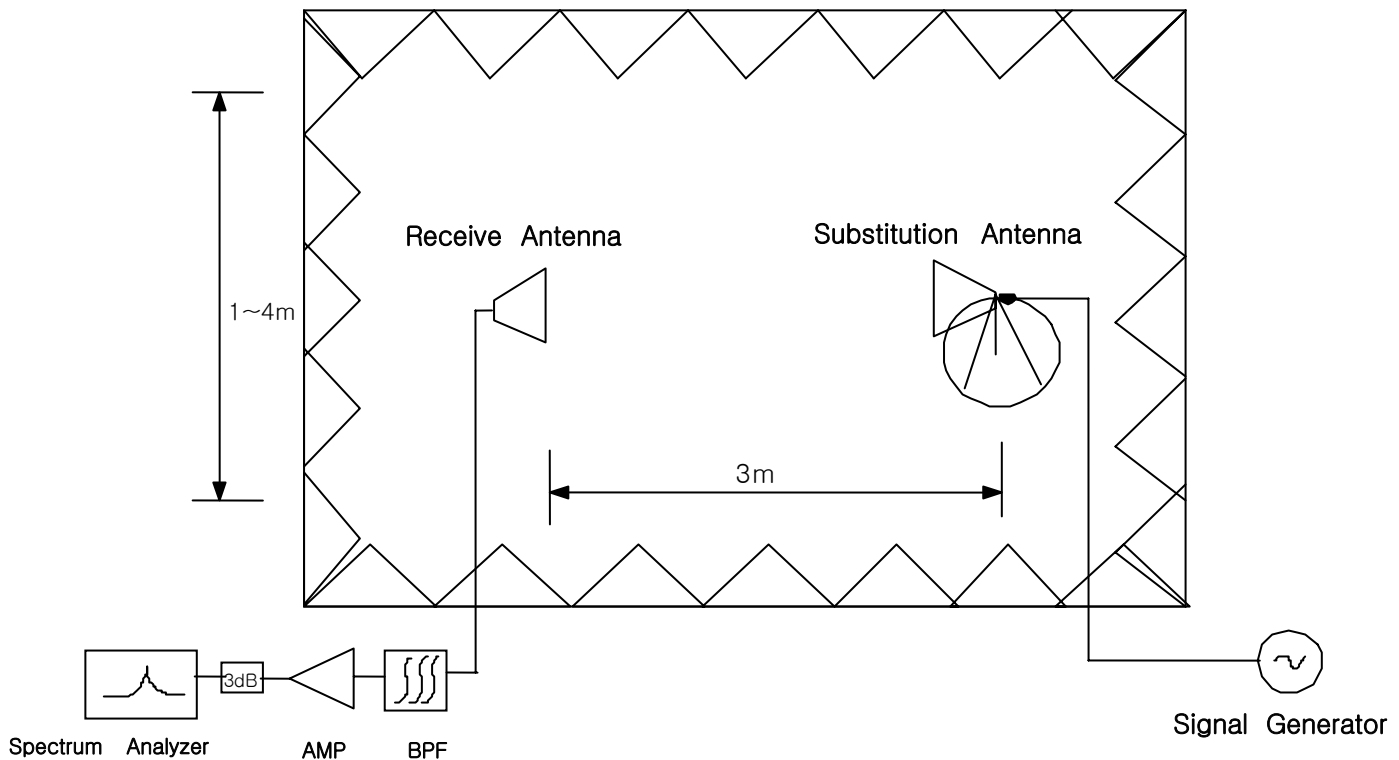


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna and tested in 3 orthogonal planes. The turn unit and rotating device was adjusted for the highest reading on the receive spectrum analyzer. The Spectrum was investigated from 30MHz to the 10th Harmonic of the fundamental. A peak detector is used, with RBW=VBW=1MHz. The value that we could measure was only reported. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

SAMPLE CALCULATION

Example: Channel 661 , Second Harmonic(3760.00MHz)

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

5.3. Peak-Average Ratio

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

5.4. Occupied Bandwidth

Test Procedure

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

Plots of the EUT's occupied bandwidth are shown herein.

5.5. Spurious and Harmonic Emission at Antenna Terminal

5.5.1. Occupied Bandwidth Emission Limits

- (a) On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least $43 + 10 \log(P)$ dB.
- (b) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- (c) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.

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

Table 1. Broadband PCS Service Frequency Blocks

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

Table 2. Cellular Service Frequency Blocks

5.5.2. Conducted Spurious Emission

Minimum standard:

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

$$43 + 10\log (0.899 \text{ W}) = 42.54 \text{ dB}$$

$$29.54 \text{ dBm} - 42.54 \text{ dB} = -13 \text{ dBm}$$

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

Example)

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

A Resolution BW of 3KHz was used for measurement at the band edges.

Test Procedure:

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

Plots are shown herein.

5.6. Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

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

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

Time Period and Procedure:

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (25°C to 27°C to provide a reference).
2. The equipment is subjected to an overnight "soak" at -30°C without any power applied.
3. After the overnight "soak" at -30°C (Usually 14~16 hours), the equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within a three minute interval after applying to the transmitter.
4. Frequency measurements are made at 10°C interval up to room temperature. At least a period of one and one half-hour is provided to allow stabilization of the equipment at each temperature level.
5. Again the transmitter carrier frequency and the individual oscillators is measured at room temperature to begin measurement of the upper temperature levels.
6. Frequency measurements are at 10 intervals starting at -30°C up to $+50^{\circ}\text{C}$ allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

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

6. TEST DATA

6.1. Conducted Output Power

A base station simulator was used to establish communication with the Samsung 850/1900 GSM/GPRS/EDGE and Cellular/PSC WCDMA/HSPA Phone with Bluetooth and WLAN FCC ID: A3LSGHI847. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported in GSM mode and using a Power Control Level of "0" in the PCS BAND and "5" in the Cellular Band. The GSM conducted powers are reported below, respectively.

BAND	Channel	RF Conducted Power Table				
		Voice	GPRS Data		EDGE Data	
			1 Tx Slot	2 Tx Slot	1 Tx Slot	2 Tx Slot
PCS	512	29.54	29.59	28.45	26.18	26.12
	661	29.5	29.46	28.47	26.08	26.02
	810	29.92	29.86	28.5	26.18	26.17
Cellular	128	32.64	32.51	30.45	25.89	25.35
	190	32.52	32.35	30.39	25.97	25.34
	251	32.73	32.56	30.21	25.99	25.44

Table 6-1 GSM Conducted Output Powers

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

Supply Voltage : 3.7VDC

Modulation : GSM850

Reference level

Frequency (MHz)	Output (dBm)	Polarization (H/V)	S/A (dBm)	Ant gain (dBd)	Ref level (dBm)
824.20	27.00	H	-10.50	-0.67	-9.83
		V	-11.35	-0.67	-10.68
836.60	28.00	H	-9.97	-0.73	-9.24
		V	-10.24	-0.73	-9.51
848.80	30.00	H	-10.10	-0.79	-9.31
		V	-9.30	-0.79	-8.51

Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-9.38	H	291/155	27.45	0.556	Standard
836.60	-9.30	H	286/115	27.94	0.622	Standard
848.80	-9.77	H	75/90	29.54	0.899	Standard

EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
848.80	-16.11	H	75/90	23.32	0.215	Standard

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

- All modes of operation were investigated, and the worst-case results are reported.

Radiated measurements at 3 meters by Substitution Method



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

Supply Voltage : 3.7VDC

Modulation : PCS 1900

Reference level

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

Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-20.45	V	265/90	28.06	0.640	Standard
1880.00	-20.39	V	219/90	28.53	0.713	Standard
1909.80	-21.54	H	333/10	27.55	0.569	Standard

EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1880.00	-22.96	V	219/90	25.96	0.394	Standard

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

- All modes of operation were investigated, and the worst-case results are reported.

Radiated measurements at 3 meters by Substitution Method

6.4. GSM850 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 29.54 dBm = 0.899 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 42.54$ dBc

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
128	2	1648.40	-52.68	H	69.63
	3	2472.60	-58.93	H	70.64
	4	3296.80	-67.12	V	74.96
	5	4121.00	-	-	-
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-49.94	H	66.64
	3	2509.80	-58.78	H	70.28
	4	3346.40	-65.33	H	73.92
	5	4183.00	-	-	-
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-52.94	H	68.36
	3	2546.40	-59.68	H	71.73
	4	3395.20	-66.23	V	74.02
	5	4244.00	-	-	-
	6	5092.80	-	-	-
	7	5941.60	-	-	-

NOTE :

1. "-" Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. The spectrum is measured from 30MHz to the 10th harmonic and All modes of operation were investigated, and the worst-case results are reported..

Radiated Spurious Emission measurements at 3 meters by Substitution Method

6.5. GSM1900 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 28.53 dBm = 0.713 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 41.53$ dBc

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-60.35	H	61.90
	3	5550.60	-66.37	H	64.50
	4	7400.80	-65.99	V	58.96
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-60.40	H	62.04
	3	5640.00	-66.71	H	64.50
	4	7520.00	-66.30	V	59.77
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-63.23	H	64.81
	3	5729.40	-65.91	V	64.09
	4	7639.20	-66.89	V	60.50
	5	9549.00	-	-	-
	6	11458.80	-	-	-
	7	13368.60	-	-	-

NOTE :

1. "-" Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. The spectrum is measured from 30MHz to the 10th harmonic and All modes of operation were investigated, and the worst-case results are reported.

Radiated Spurious Emission measurements at 3 meters by Substitution Method



6.6. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : December 2, 2011

Test Engineer : HK LEE

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Tx Level to radiate -13dBm
- ④ ESI Level received from Tx with-13dBm
- ⑤ Tested Level from EUT
- ⑥ = ERP+ 2.15 - (-13 + ⑤ - ④)

CH	Har	Frequency (MHz)	① Tx C/L dB	②Tx Horn Gain dBi	③Tx Level dBm	④ ESI Level : H dBm	④ ESI Level : V dBm	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	-52.68	-55.22	69.63	72.87
	3	2472.60	-11.12	10.60	-12.50	-32.97	-32.23	-58.93	-61.32	70.64	73.77
	4	3296.80	-12.19	12.00	-12.80	-36.08	-36.84	-67.07	-67.12	75.67	74.96
	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	-49.94	-55.76	66.64	73.23
	3	2509.80	-11.24	10.60	-12.40	-33.18	-32.42	-58.78	-65.11	70.28	77.37
	4	3346.40	-12.13	12.00	-12.90	-36.09	-36.75	-65.33	-67.48	73.92	75.41
	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	-52.94	-53.87	68.36	70.10
	3	2546.40	-11.22	10.60	-12.40	-32.63	-32.85	-59.68	-63.96	71.73	75.79
	4	3395.20	-12.28	12.00	-12.70	-36.60	-36.89	-66.04	-66.23	74.12	74.02
	5	4244.00	-14.15	12.60	-11.50	-39.36	-39.77	-	-	-	-
	6	5092.80	-16.16	12.70	-9.50	-42.73	-42.38	-	-	-	-
	7	5941.60	-17.34	13.10	-8.80	-45.37	-45.34	-	-	-	-



6.7. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : December 2, 2011

Test Engineer : HK LEE

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Tx Level to radiate -13dBm
- ④ ESI Level received from Tx with-13dBm
- ⑤ Tested Level from EUT
- ⑥ = 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	-60.35	-61.94	61.90	64.44
	3	5550.60	-16.92	12.50	-8.60	-43.40	-42.99	-66.37	-66.82	64.50	65.36
	4	7400.80	-20.20	11.50	-4.30	-48.71	-48.56	-66.18	-65.99	59.00	58.96
	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	-60.40	-62.20	62.04	64.57
	3	5640.00	-17.07	12.50	-8.40	-43.74	-43.42	-66.71	-67.06	64.50	65.17
	4	7520.00	-20.60	11.50	-3.90	-48.76	-48.06	-67.21	-66.30	59.98	59.77
	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	-63.23	-63.76	64.81	65.74
	3	5729.40	-17.16	12.50	-8.30	-44.20	-43.35	-67.37	-65.91	64.70	64.09
	4	7639.20	-20.88	11.50	-3.60	-48.25	-47.92	-67.53	-66.89	60.81	60.50
	5	9549.00	-24.09	11.90	-0.80	-52.88	-51.48	-	-	-	-
	6	11458.80	-26.05	11.50	1.60	-57.49	-54.67	-	-	-	-
	7	13368.60	-28.74	14.42	1.30	-63.03	-59.49	-	-	-	-

6.8. Frequency Stability

6.8.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

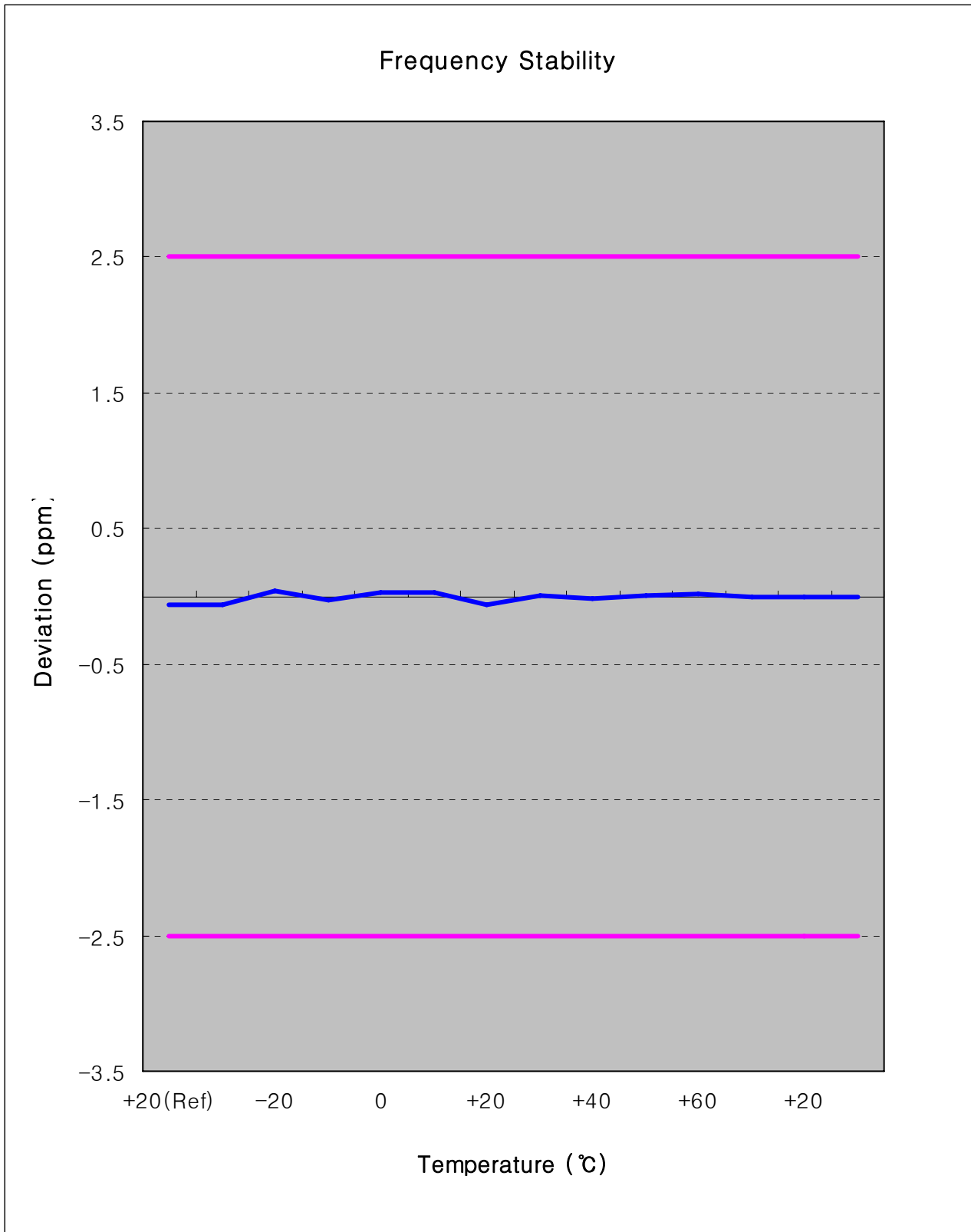
Deviation Limit : $\pm 0.00025\%$ or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	22.40	836,600,022	0.000003	0.027
100%		-30	-35.90	836,599,964	-0.000004	-0.043
100%		-20	-5.70	836,599,994	-0.000001	-0.007
100%		-10	33.50	836,600,034	0.000004	0.040
100%		0	-14.40	836,599,986	-0.000002	-0.017
100%		+10	-47.40	836,599,953	-0.000006	-0.057
100%		+20	22.40	836,600,022	0.000003	0.027
100%		+30	-8.90	836,599,991	-0.000001	-0.011
100%		+40	-42.20	836,599,958	-0.000005	-0.050
100%		+50	-16.60	836,599,983	-0.000002	-0.020
100%		+60	35.20	836,600,035	0.000004	0.042
115%		4.26	+20	-47.00	836,599,953	-0.000006
Batt.Endpoint	3.35	+20	23.50	836,600,024	0.000003	0.028

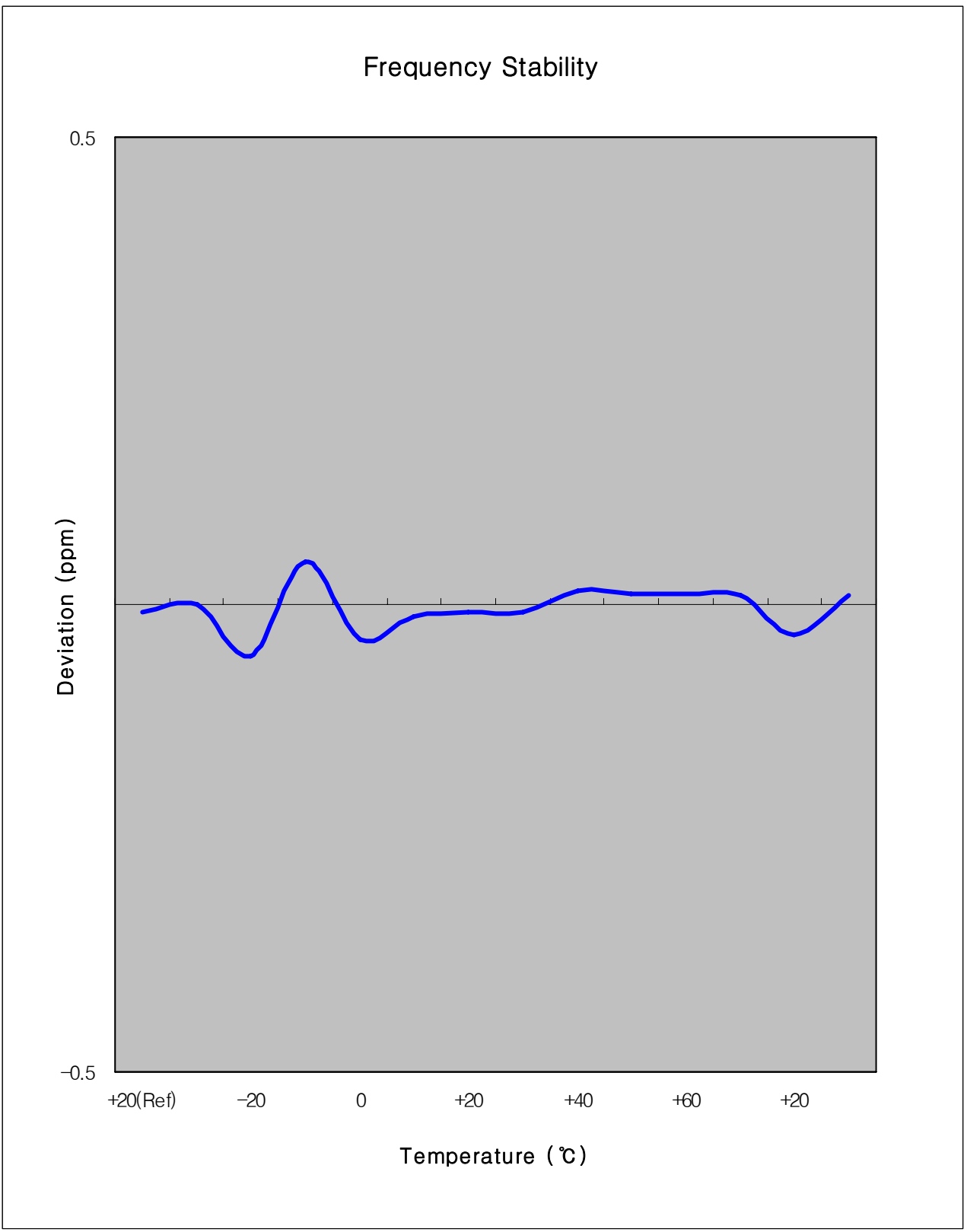
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.2. GSM850 Frequency Stability Graph



Zoom IN



6.8.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

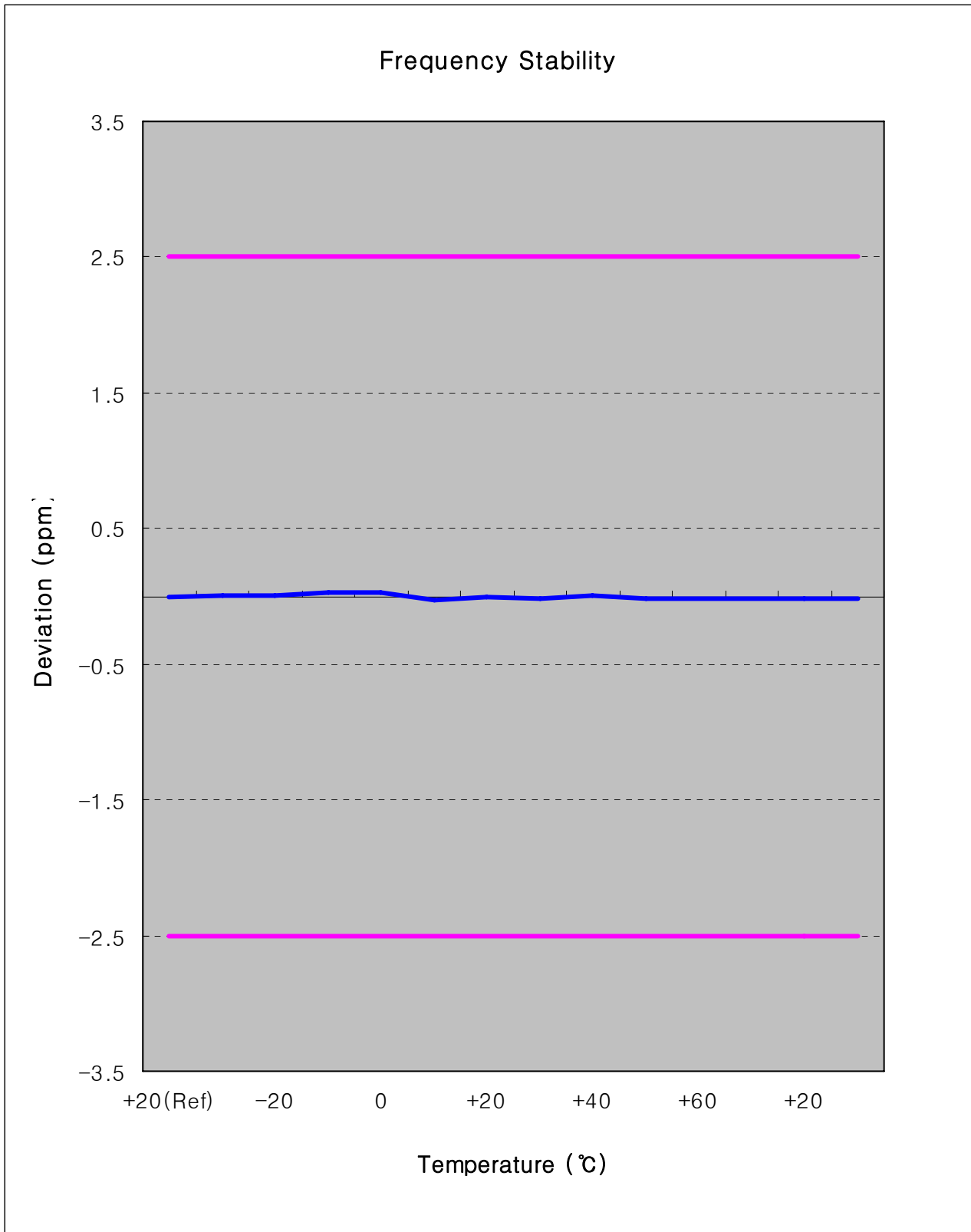
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	8.40	1,880,000,008	0.000000	0.004
100%		-30	48.70	1,880,000,049	0.000003	0.026
100%		-20	-34.00	1,879,999,966	-0.000002	-0.018
100%		-10	38.30	1,880,000,038	0.000002	0.020
100%		0	39.50	1,880,000,040	0.000002	0.021
100%		+10	18.10	1,880,000,018	0.000001	0.010
100%		+20	8.40	1,880,000,008	0.000000	0.004
100%		+30	8.20	1,880,000,008	0.000000	0.004
100%		+40	-22.20	1,879,999,978	-0.000001	-0.012
100%		+50	29.90	1,880,000,030	0.000002	0.016
100%		+60	6.10	1,880,000,006	0.000000	0.003
115%		4.26	+20	42.40	1,880,000,042	0.000002
Batt.Endpoint	3.35	+20	-14.60	1,879,999,985	-0.000001	-0.008

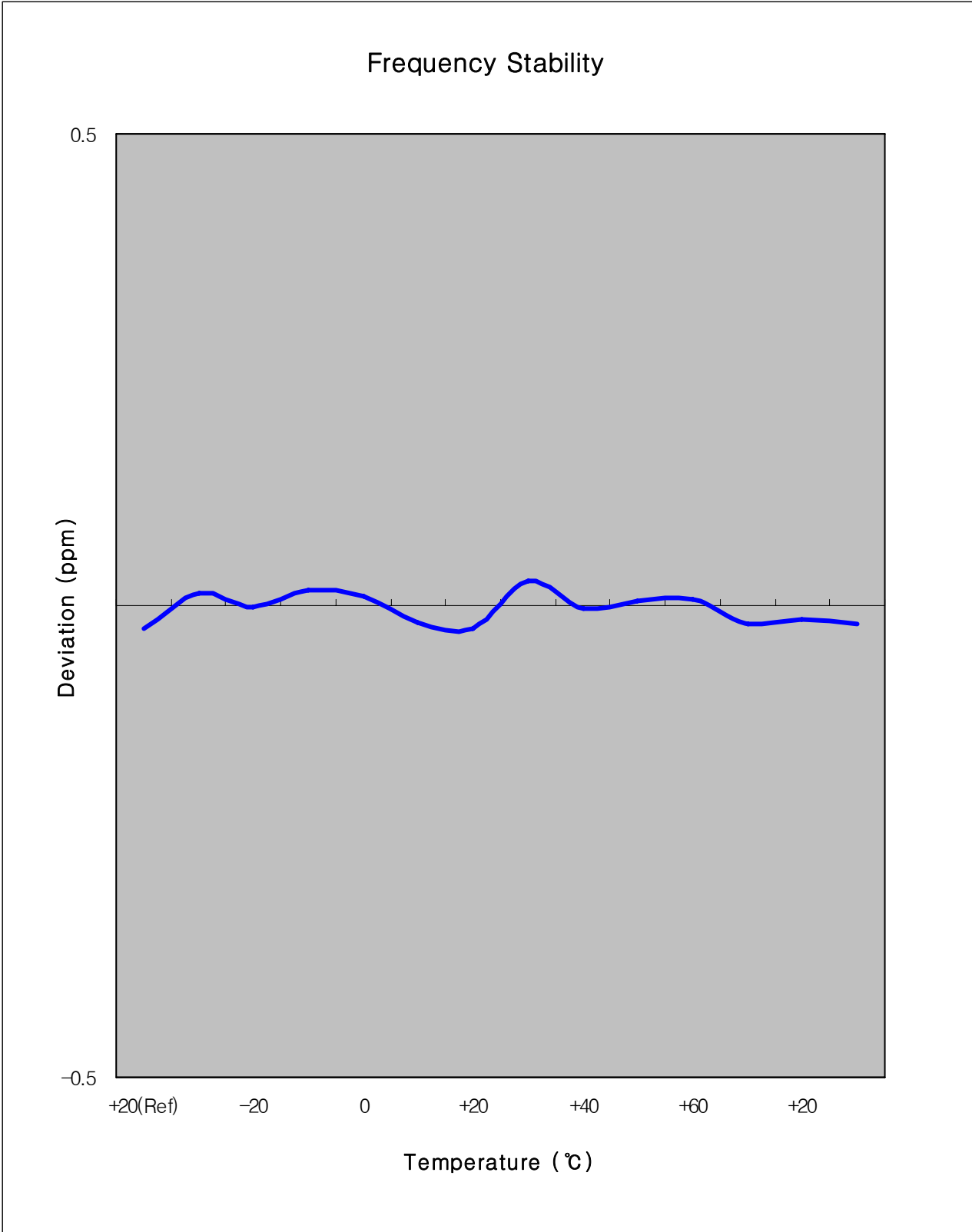
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

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

FCC ID : A3LSGHI847 complies with all the requirements of Parts 2,22,24 of the FCC Rules.



8. TEST PLOTS

Agilent

R T

Ch Freq 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.128
Ref 33 dBm Atten 40 dB

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

Occupied Bandwidth	Occ BW % Pwr	99.00 %
243.5970 kHz	x dB	-26.00 dB
Transmit Freq Error	-200.244 Hz	
x dB Bandwidth	310.325 kHz	

Freq/Channel

Center Freq
824.200000 MHz

Start Freq
823.700000 MHz

Stop Freq
824.700000 MHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Ch Freq 836.6 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.190
Ref 33 dBm Atten 40 dB

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

Occupied Bandwidth	Occ BW % Pwr	99.00 %
242.4265 kHz	x dB	-26.00 dB
Transmit Freq Error	254.323 Hz	
x dB Bandwidth	307.281 kHz	

Freq/Channel

Center Freq
836.600000 MHz

Start Freq
836.100000 MHz

Stop Freq
837.100000 MHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

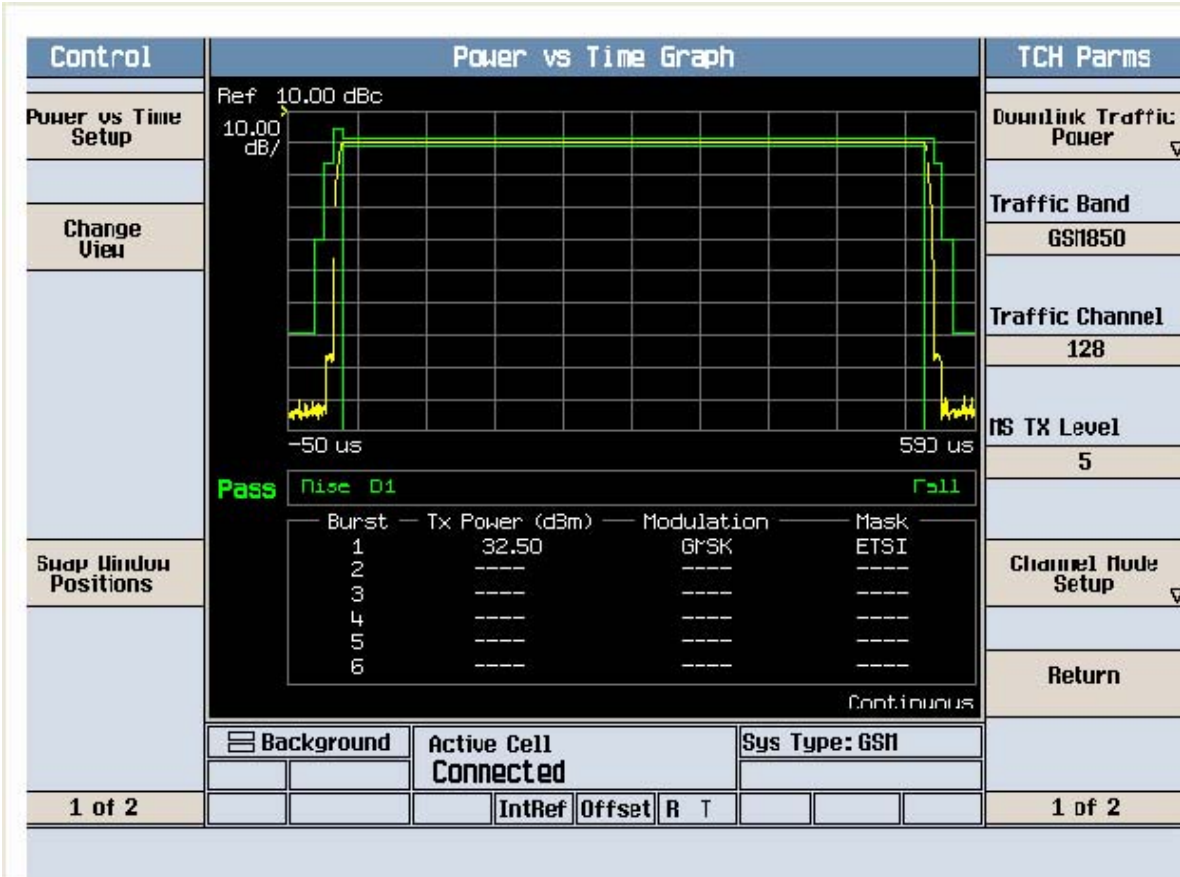
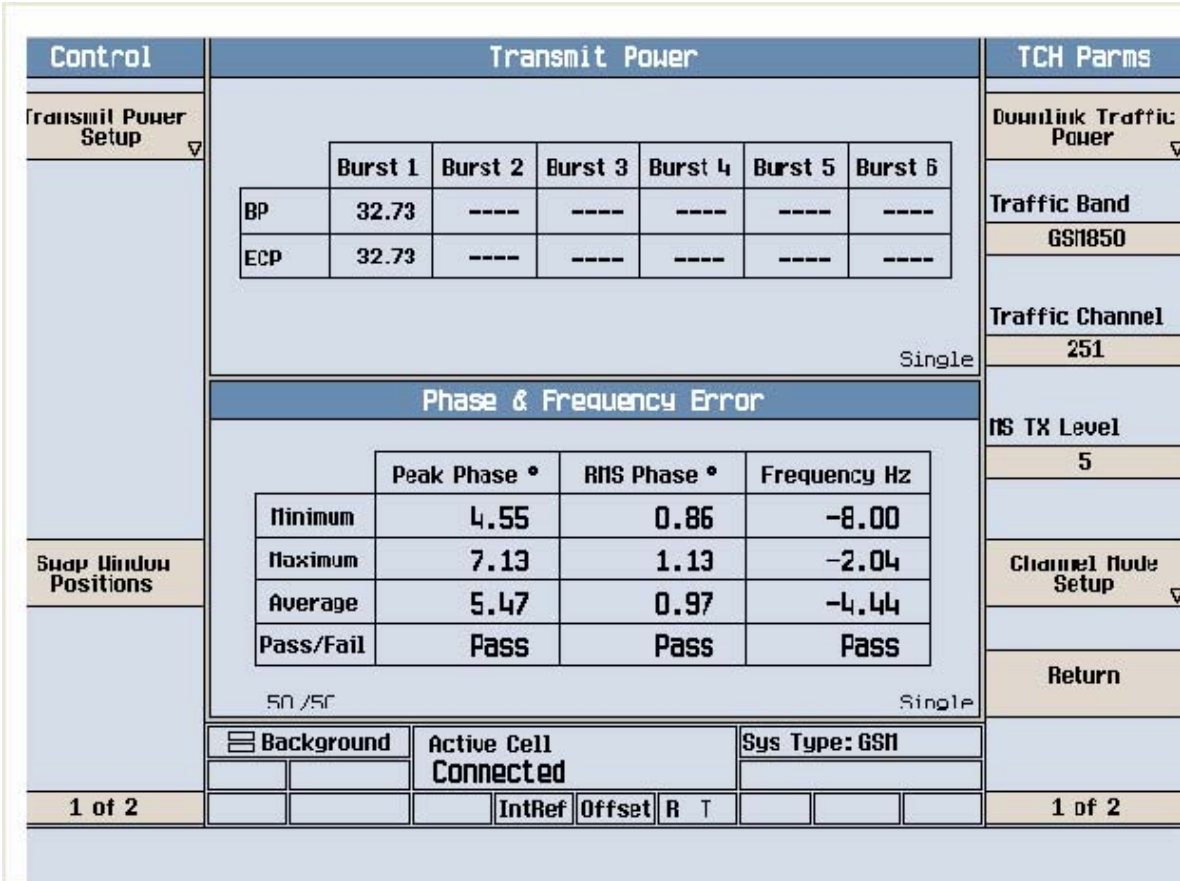
Signal Track
On Off

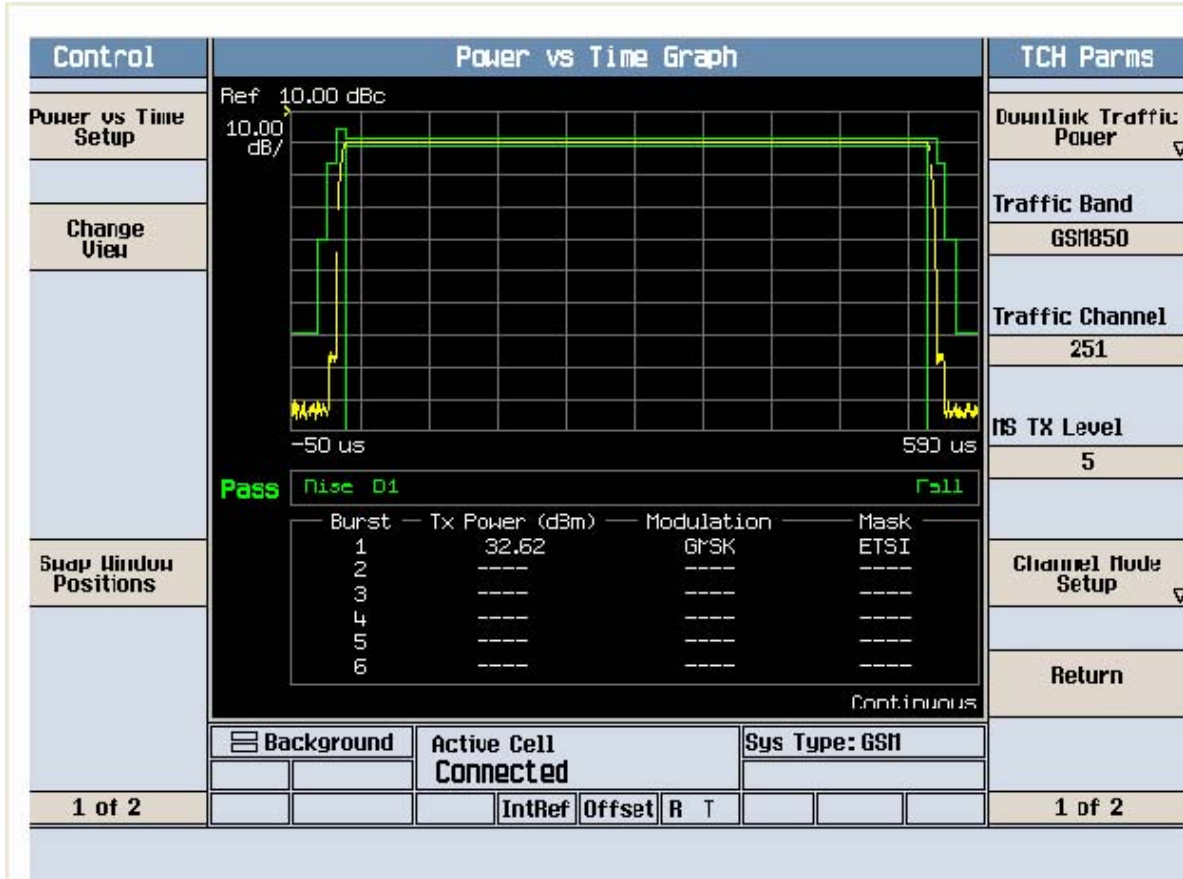
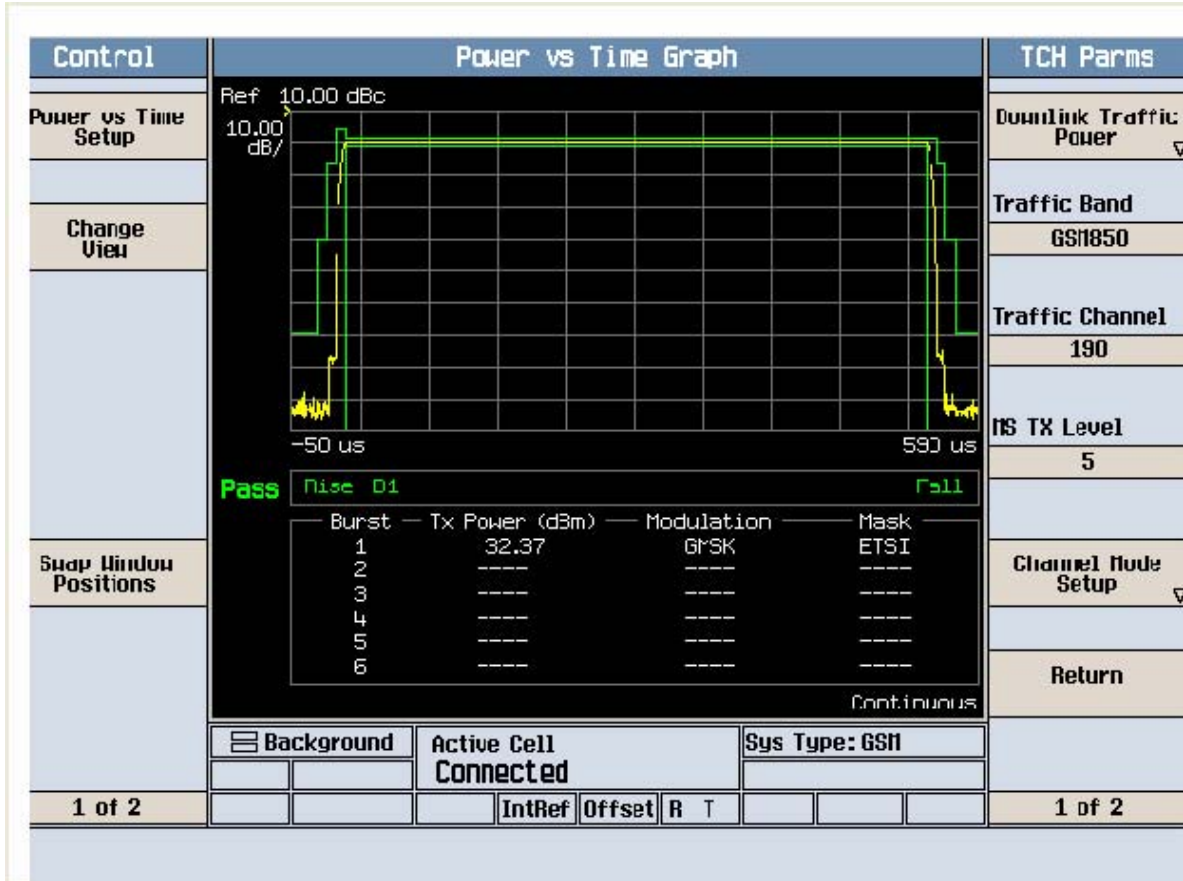
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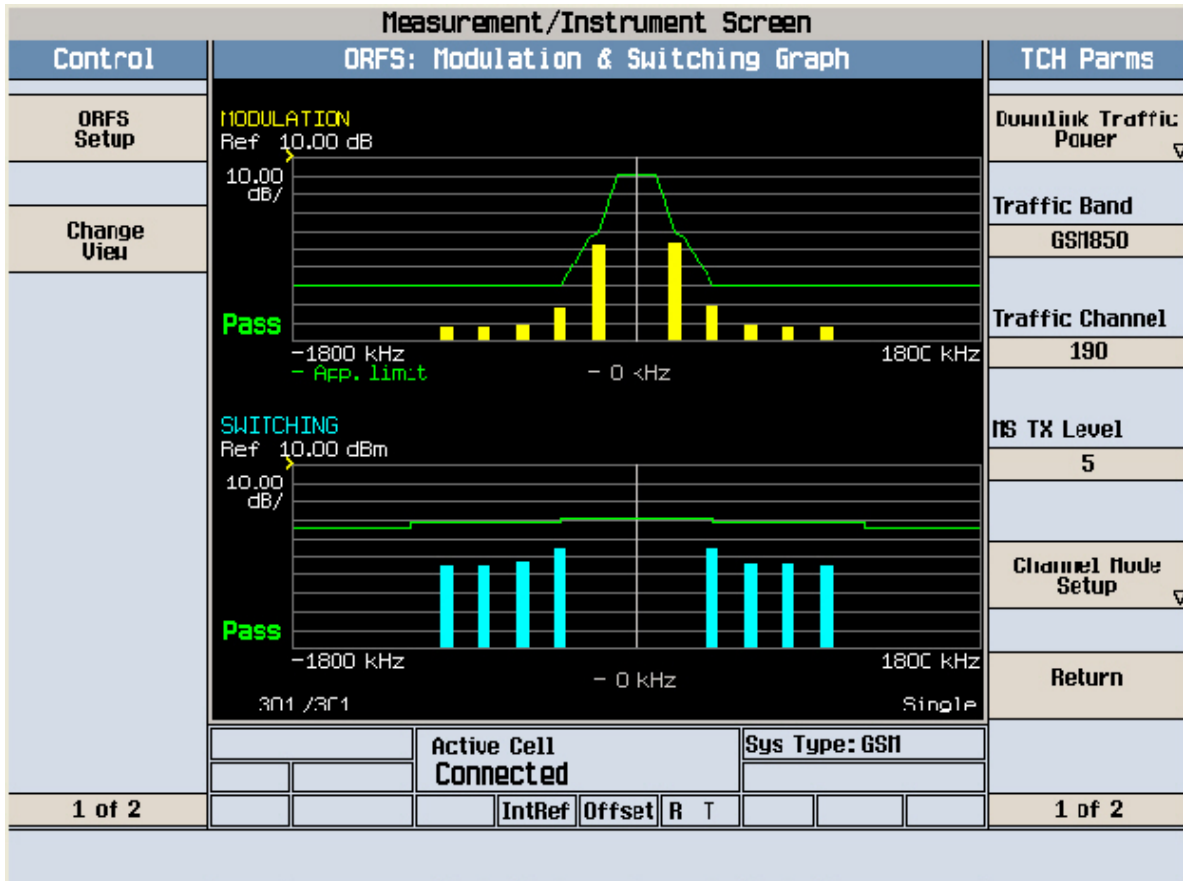
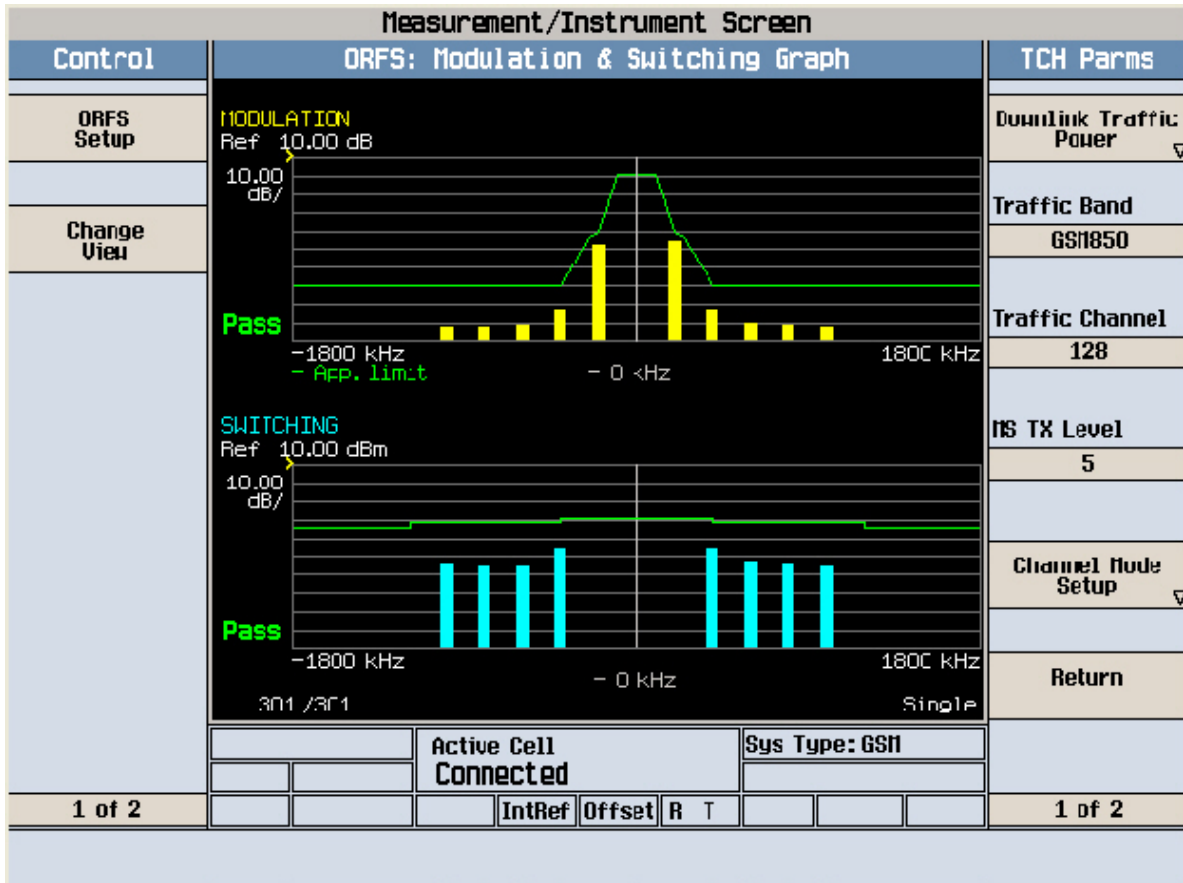
Ch Freq 848.8 MHz Trig Free		Center Freq 848.800000 MHz	
Occupied Bandwidth [] []		Start Freq 848.300000 MHz	
FCC ID: A3LSGHI847 0BW Ch.251 Ref 33 dBm Atten 40 dB		Stop Freq 849.300000 MHz	
#Peak Log 10 dB/ Offst 10.6 dB		CF Step 100.000000 kHz Auto Man	
		Freq Offset 0.00000000 Hz	
Center 848.800 0 MHz Span 1 MHz		Signal Track On Off	
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)		Occupied Bandwidth Occ BW % Pwr 99.00 % 245.4036 kHz x dB -26.00 dB	
Transmit Freq Error 171.101 Hz x dB Bandwidth 312.300 kHz			
File Operation Status, C:\TEMP.GIF file saved			

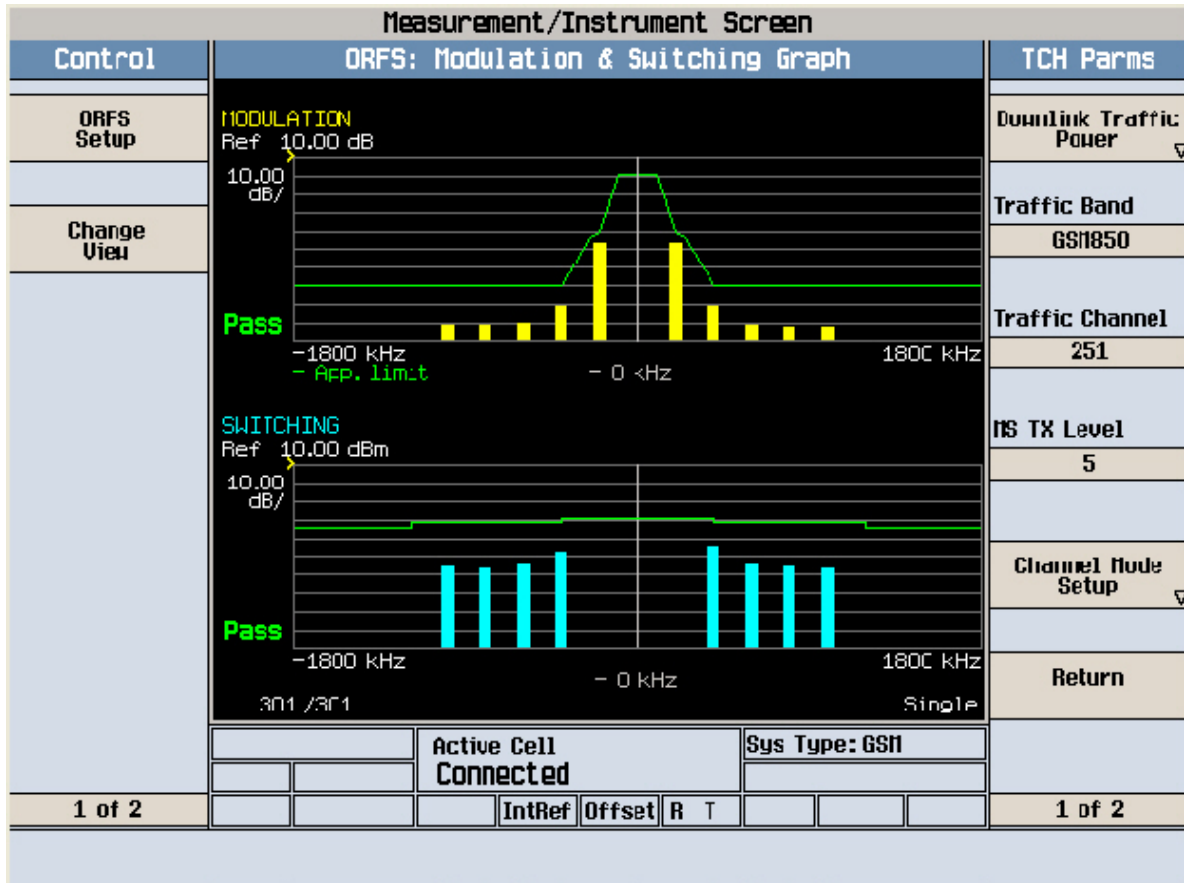
Control	Transmit Power							TCH Parms																							
Transmit Power Setup	<table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>32.64</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>32.64</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>								Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	BP	32.64	----	----	----	----	----	ECP	32.64	----	----	----	----	----	Downlink Traffic Power		
		Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																								
BP	32.64	----	----	----	----	----																									
ECP	32.64	----	----	----	----	----																									
Swap Window Positions	<table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.82</td> <td>0.91</td> <td>4.38</td> </tr> <tr> <td>Maximum</td> <td>6.94</td> <td>1.29</td> <td>8.77</td> </tr> <tr> <td>Average</td> <td>5.83</td> <td>1.05</td> <td>6.67</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table>								Peak Phase °	RMS Phase °	Frequency Hz	Minimum	4.82	0.91	4.38	Maximum	6.94	1.29	8.77	Average	5.83	1.05	6.67	Pass/Fail	Pass	Pass	Pass	Traffic Band GSM850			
		Peak Phase °	RMS Phase °	Frequency Hz																											
Minimum	4.82	0.91	4.38																												
Maximum	6.94	1.29	8.77																												
Average	5.83	1.05	6.67																												
Pass/Fail	Pass	Pass	Pass																												
50 / 50 Single							Traffic Channel 128																								
Background Active Cell Connected Sys Type: GSM							MS TX Level 5																								
1 of 2							Channel Mode Setup																								
							Return																								
							1 of 2																								

Control	Transmit Power							TCH Parms																							
Transmit Power Setup	<table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>32.52</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>32.52</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>								Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	BP	32.52	----	----	----	----	----	ECP	32.52	----	----	----	----	----	Downlink Traffic Power		
		Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																								
BP	32.52	----	----	----	----	----																									
ECP	32.52	----	----	----	----	----																									
Swap Window Positions	<table border="1"> <thead> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.01</td> <td>1.05</td> <td>-5.48</td> </tr> <tr> <td>Maximum</td> <td>6.80</td> <td>1.37</td> <td>2.09</td> </tr> <tr> <td>Average</td> <td>5.49</td> <td>1.18</td> <td>-2.15</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table>								Peak Phase °	RMS Phase °	Frequency Hz	Minimum	4.01	1.05	-5.48	Maximum	6.80	1.37	2.09	Average	5.49	1.18	-2.15	Pass/Fail	Pass	Pass	Pass	Traffic Band GSM850			
		Peak Phase °	RMS Phase °	Frequency Hz																											
Minimum	4.01	1.05	-5.48																												
Maximum	6.80	1.37	2.09																												
Average	5.49	1.18	-2.15																												
Pass/Fail	Pass	Pass	Pass																												
50 / 50 Single							Traffic Channel 190																								
Background Active Cell Connected Sys Type: GSM							MS TX Level 5																								
1 of 2							Channel Mode Setup																								
							Return																								
							1 of 2																								





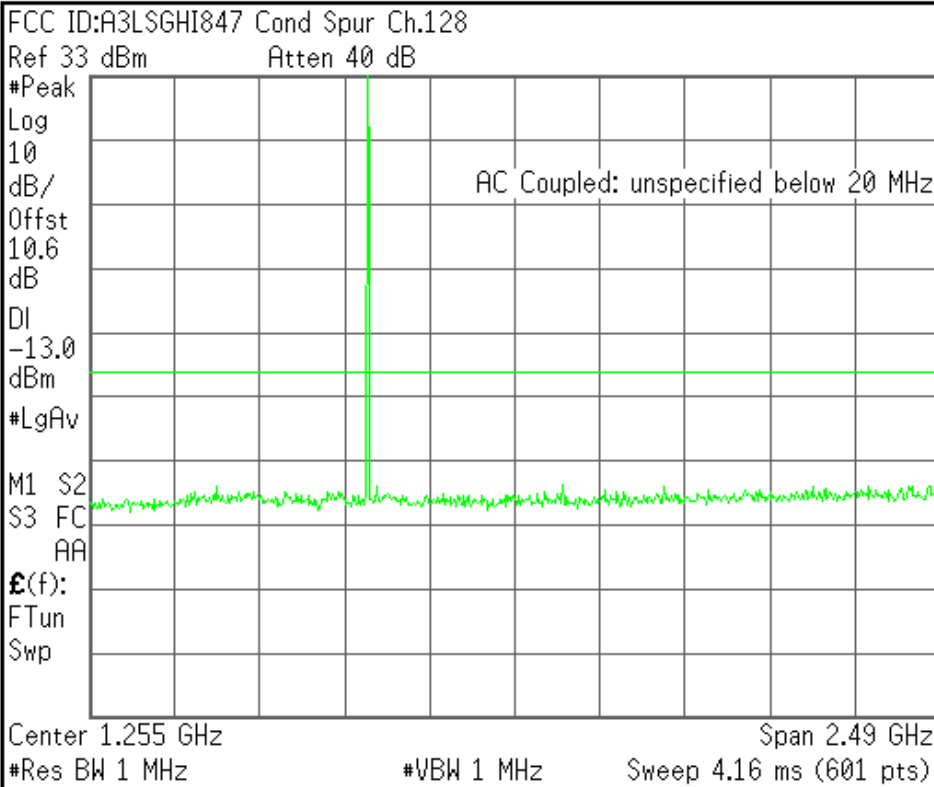




Agilent

R T

Freq/Channel



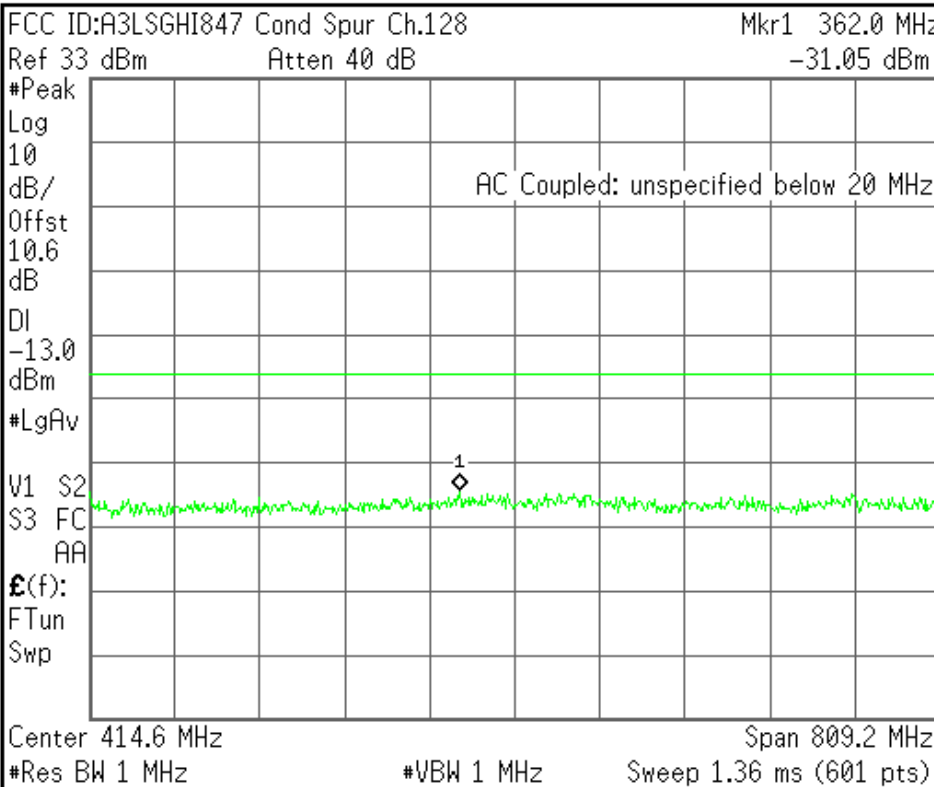
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Stop Freq 2.50000000 GHz
CF Step 249.000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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Agilent

R T

Freq/Channel



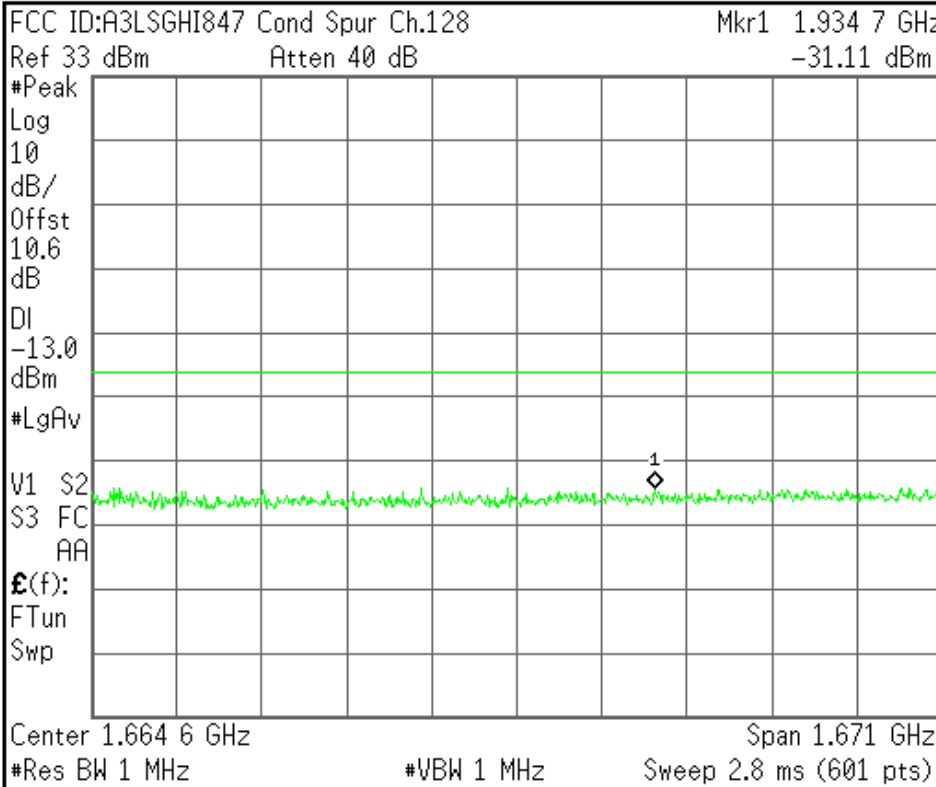
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Agilent

R T

Freq/Channel



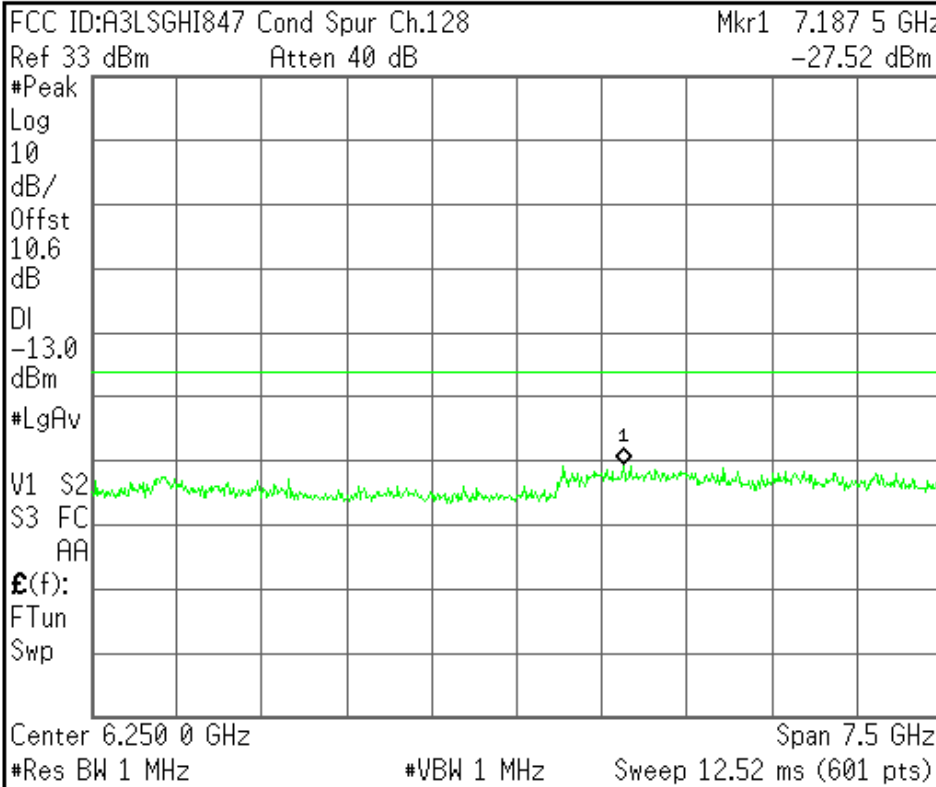
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Stop Freq 2.50000000 GHz
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Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

AA

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center Freq

1.25500000 GHz

Start Freq

10.0000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.190

Mkr1 479.7 MHz

Ref 33 dBm

Atten 40 dB

-31.17 dBm

#Peak

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

#LgAv

V1 S2

S3 FC

AA

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

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

Center 420.8 MHz

Span 821.6 MHz

#Res BW 1 MHz

#VBW 1 MHz

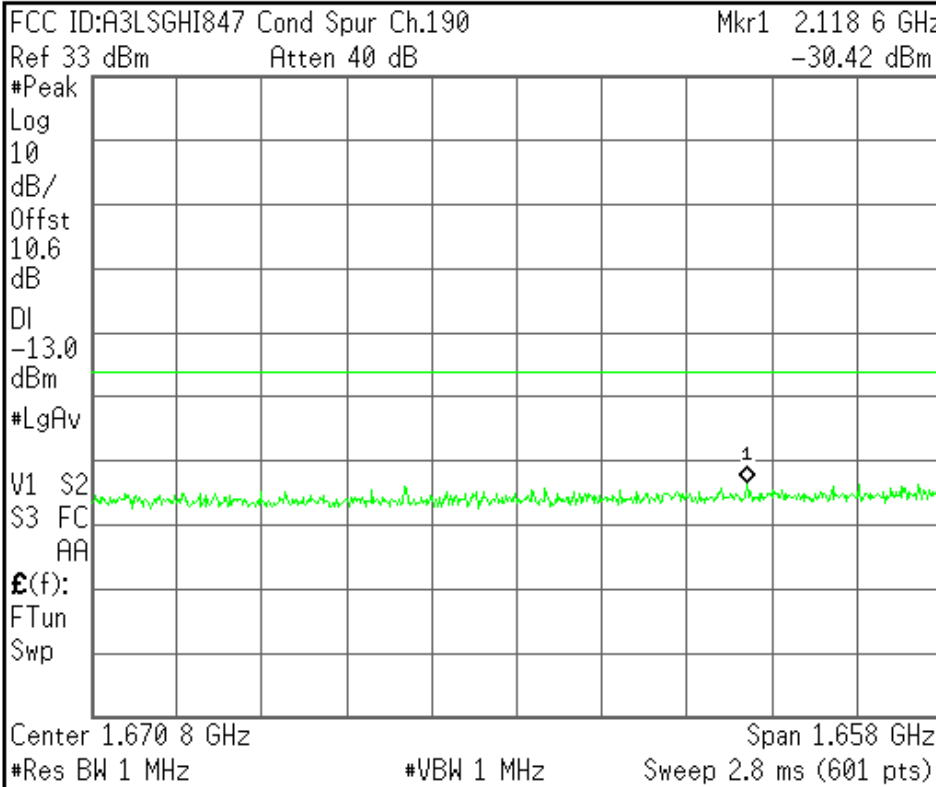
Sweep 1.4 ms (601 pts)

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

Agilent

R T

Freq/Channel



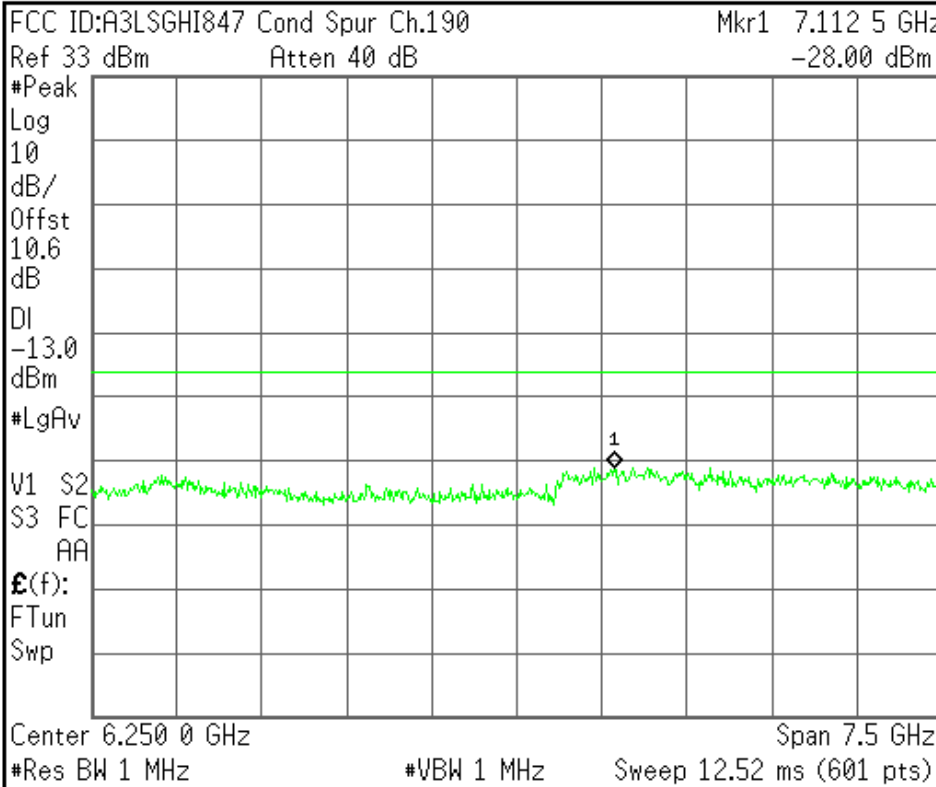
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Stop Freq 2.50000000 GHz
CF Step 165.840000 MHz Auto Man
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Signal Track On Off

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

Agilent

R T

Freq/Channel



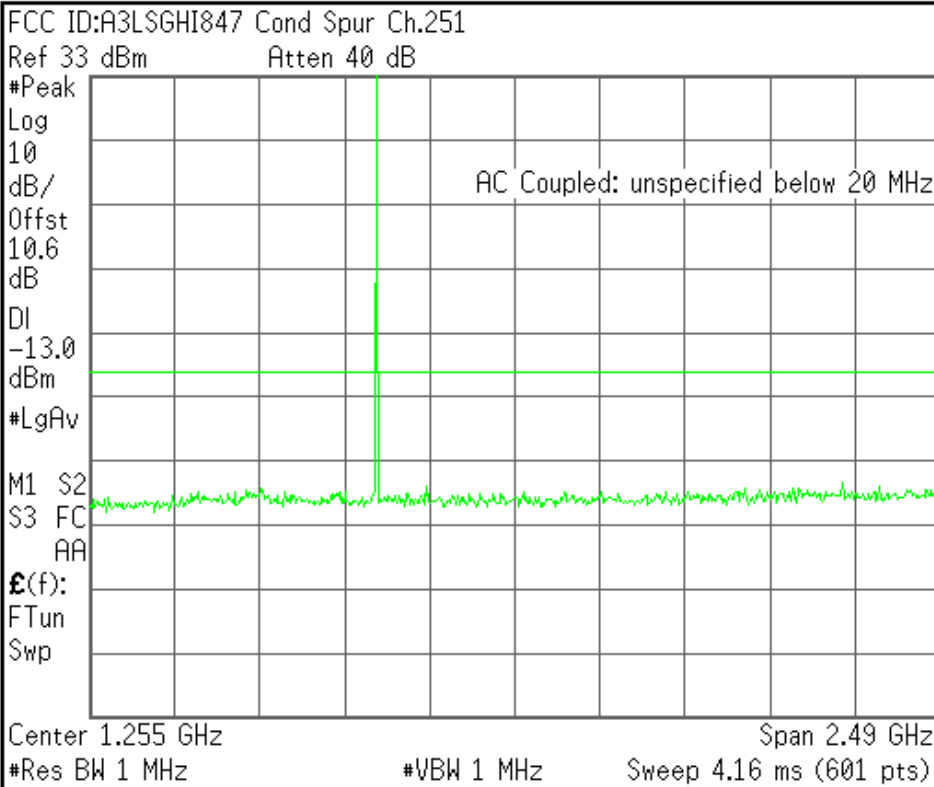
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Start Freq 2.50000000 GHz
Stop Freq 10.00000000 GHz
CF Step 750.000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



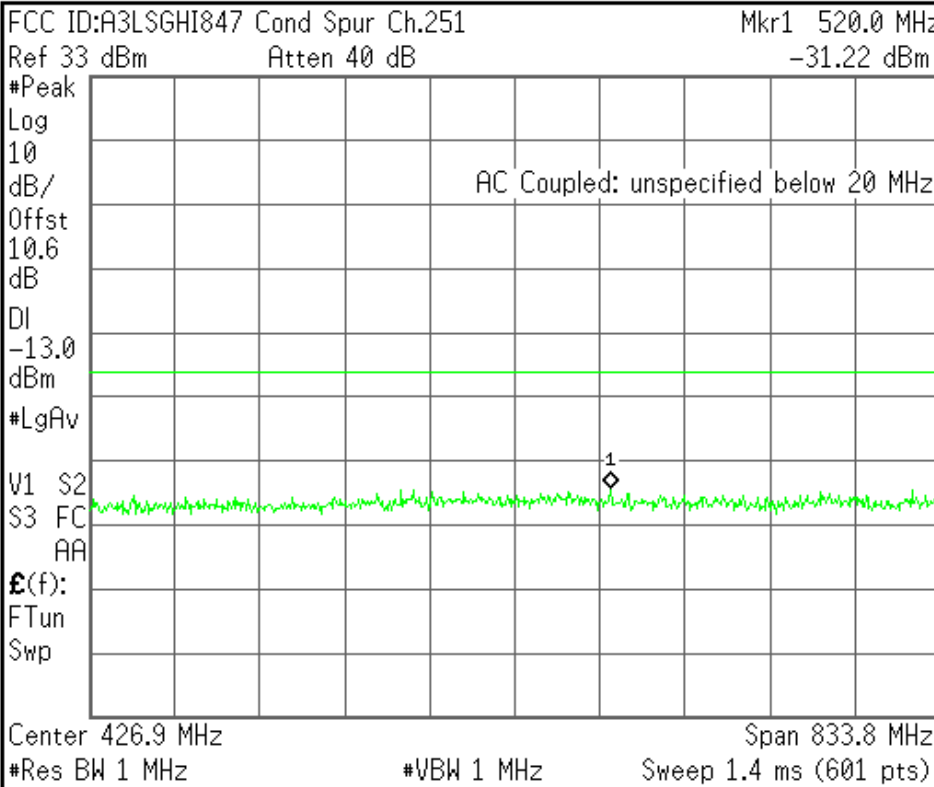
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Start Freq 10.0000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.000000 MHz Auto Man
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Signal Track On Off

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Agilent

R T

Freq/Channel



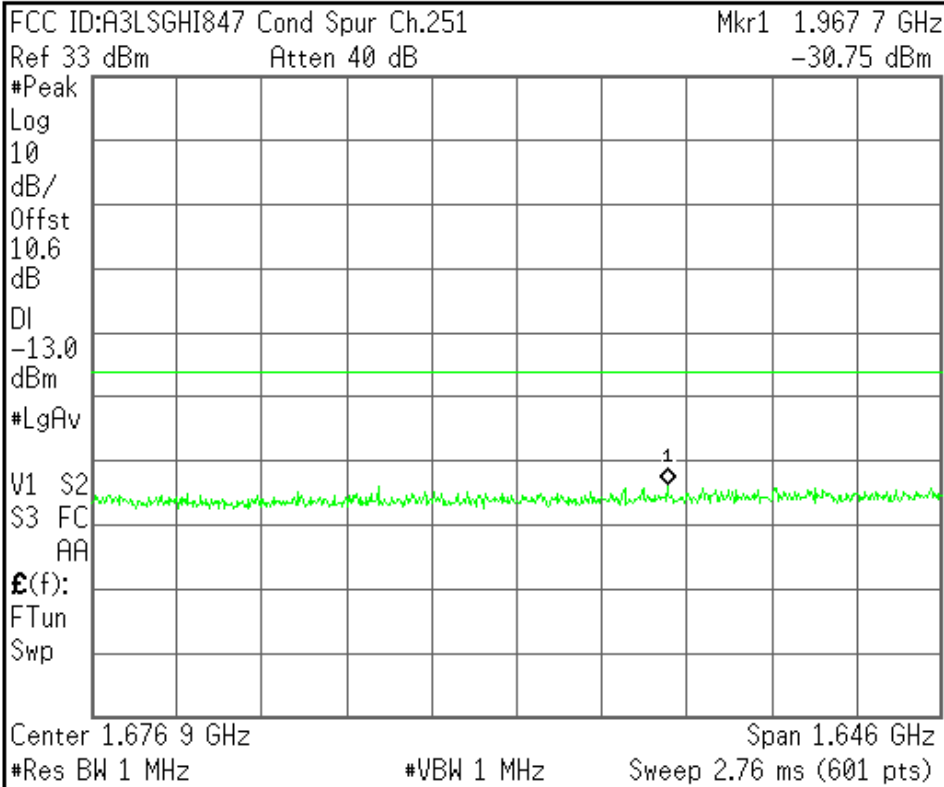
Center Freq 426.900000 MHz
Start Freq 10.0000000 MHz
Stop Freq 843.800000 MHz
CF Step 83.3800000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



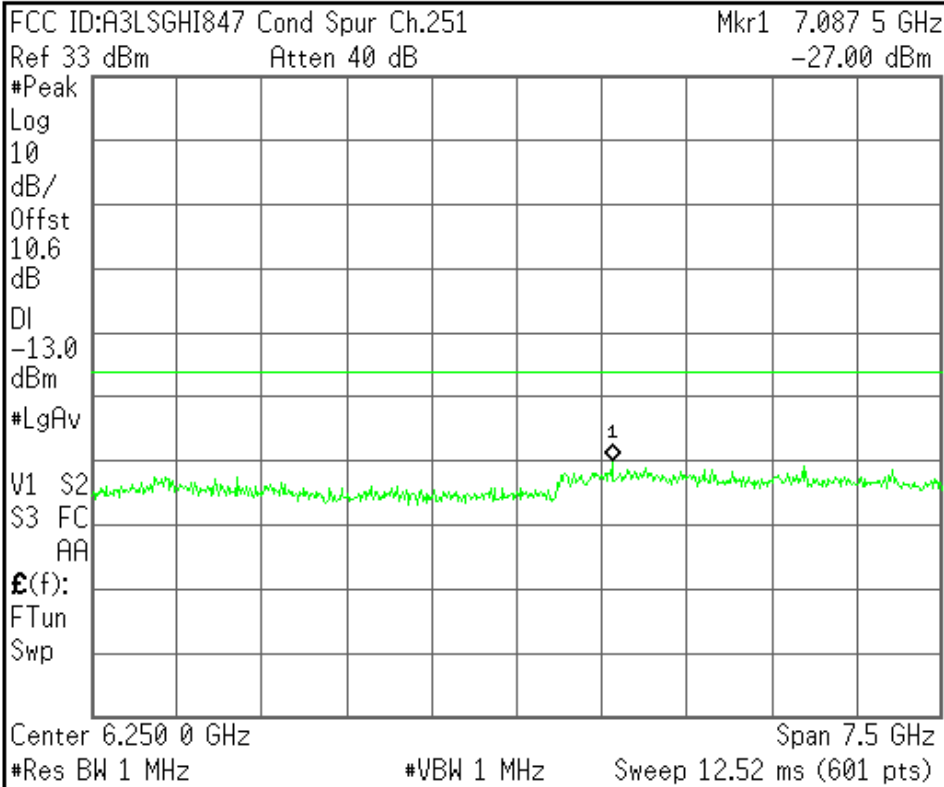
Center Freq 1.67690000 GHz
Start Freq 853.800000 MHz
Stop Freq 2.50000000 GHz
CF Step 164.620000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



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

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

Agilent

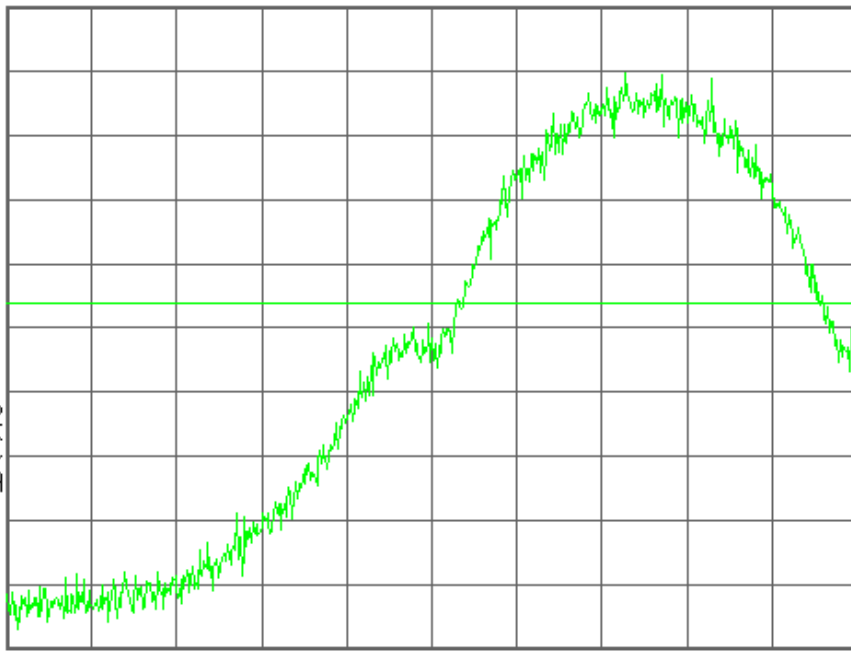
R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.128

Ref 33 dBm Atten 40 dB

#Avg
Log
10
dB/
Offst
10.6
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 824.000 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
824.000000 MHz

Start Freq
823.595000 MHz

Stop Freq
824.405000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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Agilent

R T

Freq/Channel

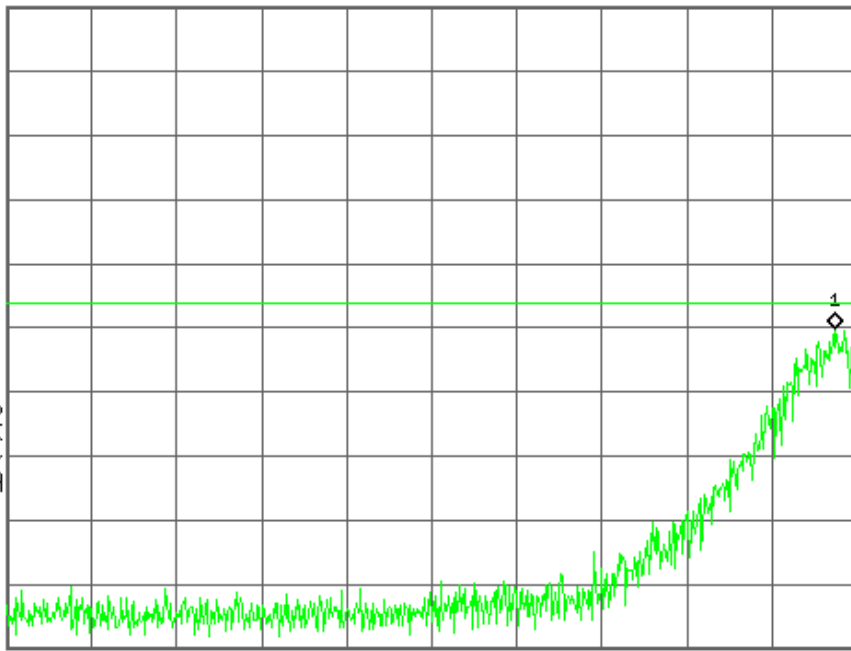
FCC ID:A3LSGHI847 Band Edge Ch.128

Mkr1 823.978 60 MHz

Ref 33 dBm Atten 40 dB

-17.10 dBm

#Avg
Log
10
dB/
Offst
10.6
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 823.595 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
823.595000 MHz

Start Freq
823.190000 MHz

Stop Freq
824.000000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.251

Ref 33 dBm Atten 40 dB

#Avg

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

PAvg

M1 S2

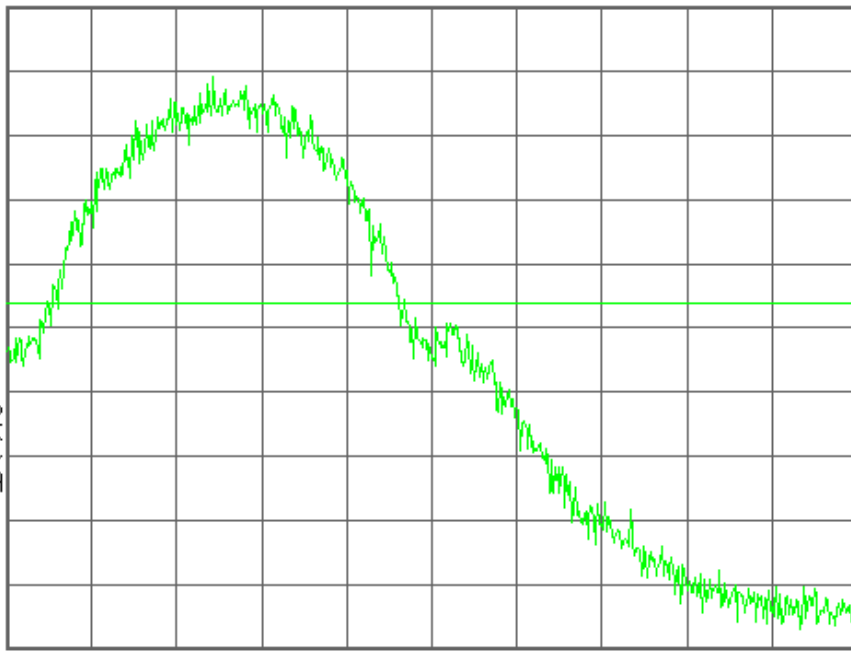
S3 FC

AA

£(f):

f>50k

Swp



Center 849.000 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.000000 MHz

Start Freq
848.595000 MHz

Stop Freq
849.405000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.251

Mkr1 849.002 67 MHz

Ref 33 dBm Atten 40 dB

-15.75 dBm

#Avg

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

PAvg

M1 S2

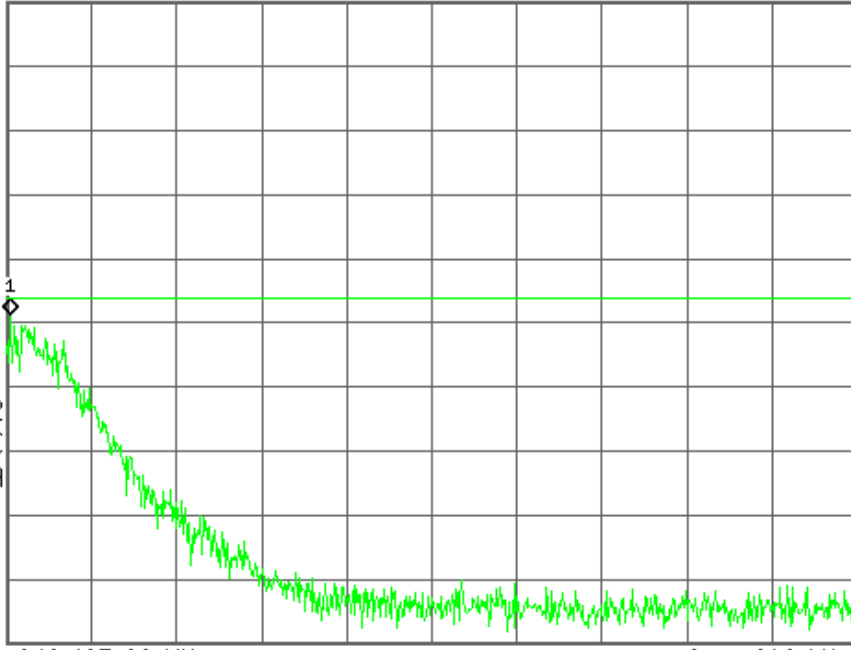
S3 FC

AA

£(f):

f>50k

Swp



Center 849.405 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.405000 MHz

Start Freq
849.000000 MHz

Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

GSM1900

Agilent

R T

Ch Freq 1.8502 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.512
Ref 30 dBm Atten 30 dB

Center 1.850 200 0 GHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
245.0531 kHz	x dB	-26.00 dB
Transmit Freq Error		-70.202 Hz
x dB Bandwidth		308.514 kHz

Freq/Channel

Center Freq
1.85020000 GHz

Start Freq
1.84970000 GHz

Stop Freq
1.85070000 GHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Ch Freq 1.88 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.661
Ref 30 dBm Atten 30 dB

Center 1.880 000 0 GHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
246.9922 kHz	x dB	-26.00 dB
Transmit Freq Error		-810.430 Hz
x dB Bandwidth		311.918 kHz

Freq/Channel

Center Freq
1.88000000 GHz

Start Freq
1.87950000 GHz

Stop Freq
1.88050000 GHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

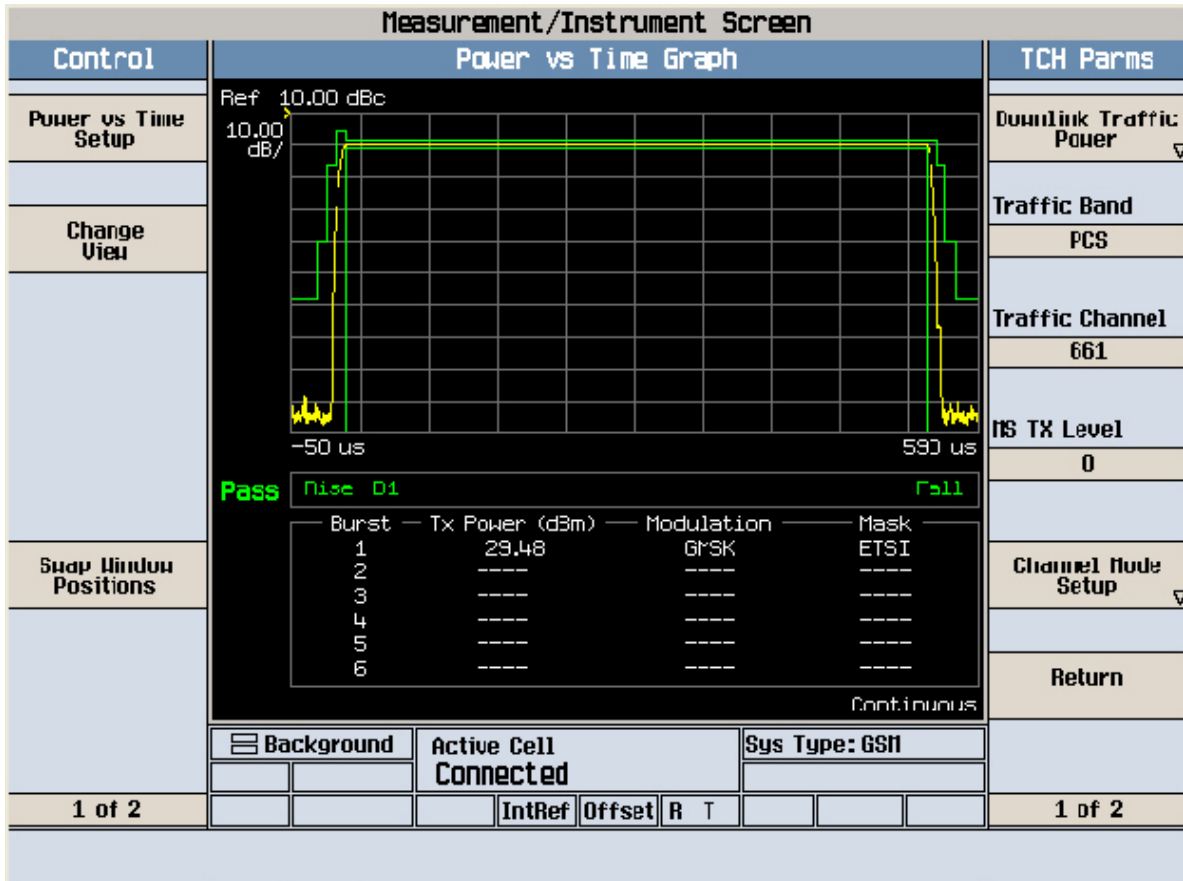
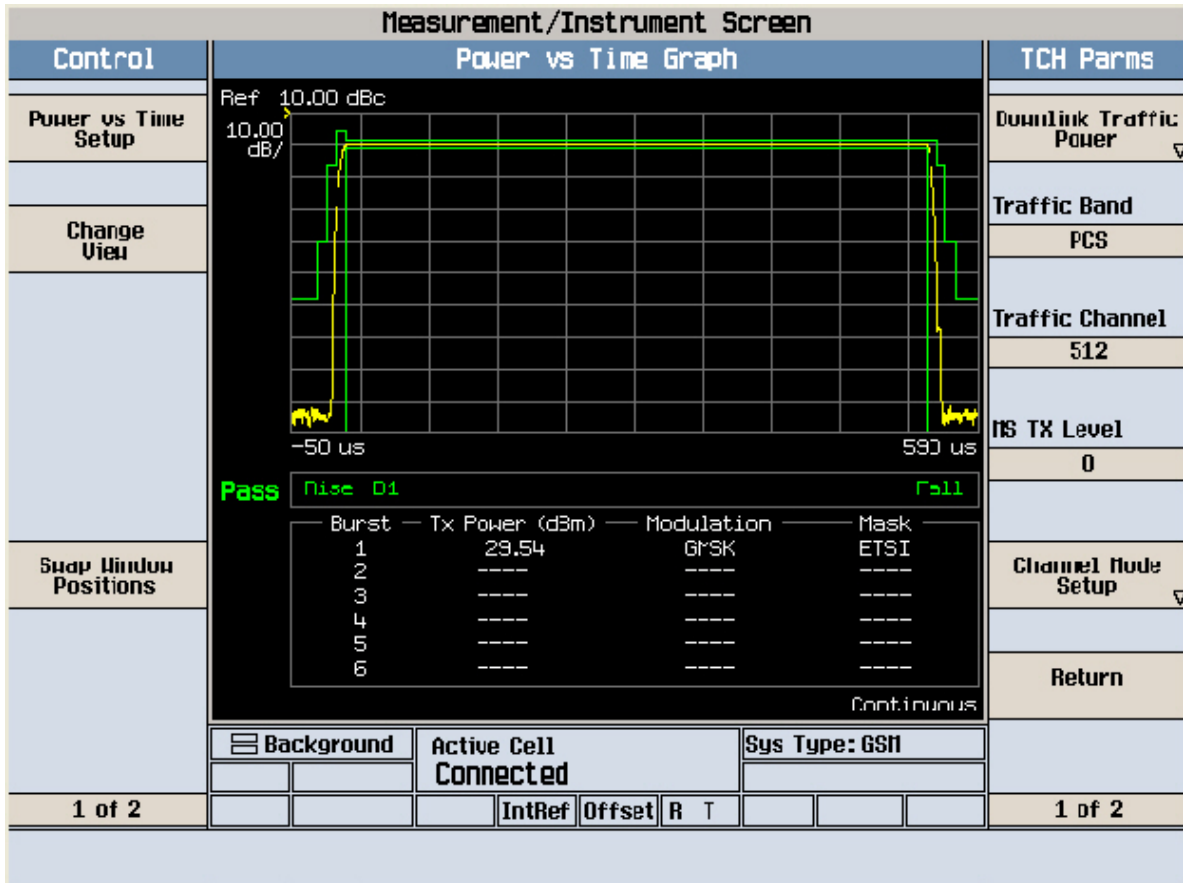
Ch Freq 1.9098 GHz		Trig Free
Occupied Bandwidth		
FCC ID:A3LSGHI847 0BW Ch.810 Ref 30 dBm Atten 30 dB		
Center 1.909 800 0 GHz		Span 1 MHz
#Res BW 3 kHz	#VBW 3 kHz	#Sweep 1 s (601 pts)
Occupied Bandwidth 243.8641 kHz		Occ BW % Pwr 99.00 % x dB -26.00 dB
Transmit Freq Error 453.554 Hz x dB Bandwidth 309.085 kHz		
File Operation Status, C:\TEMP.GIF file saved		

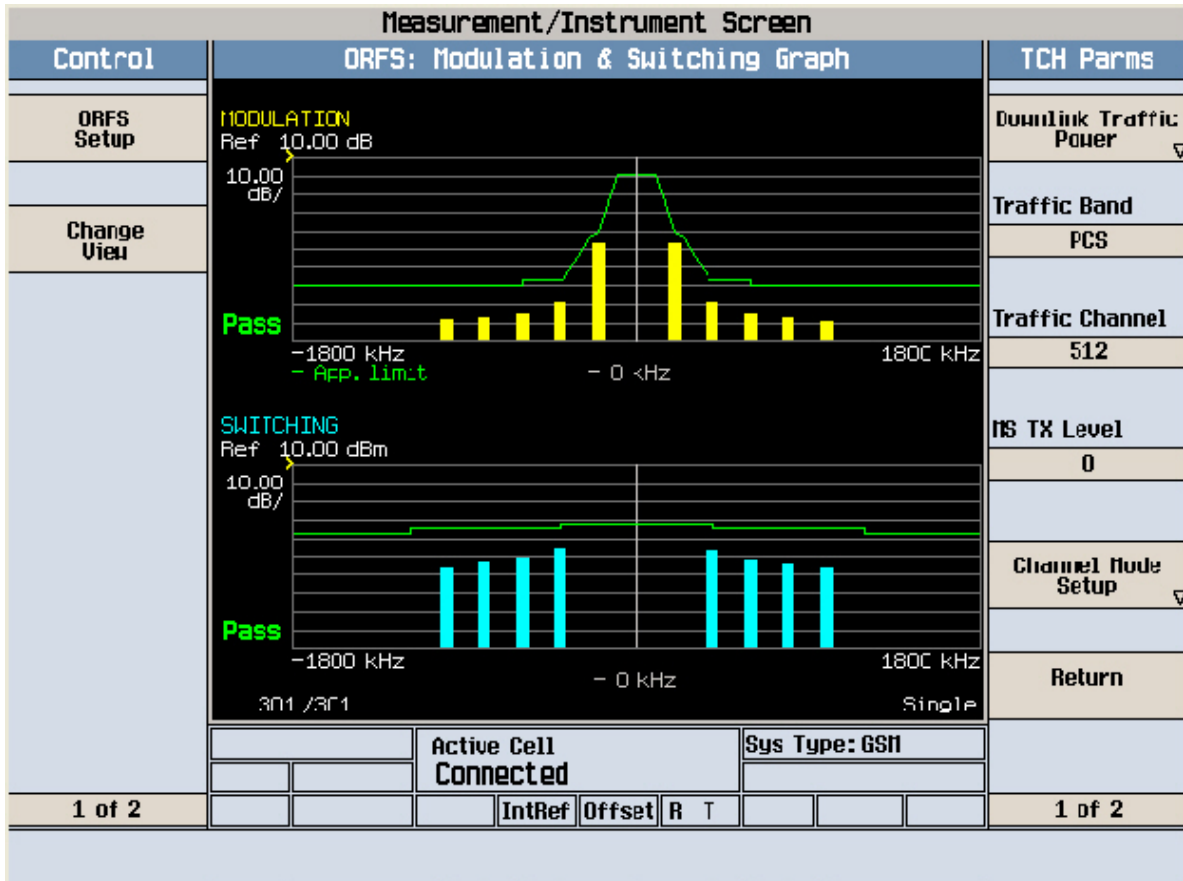
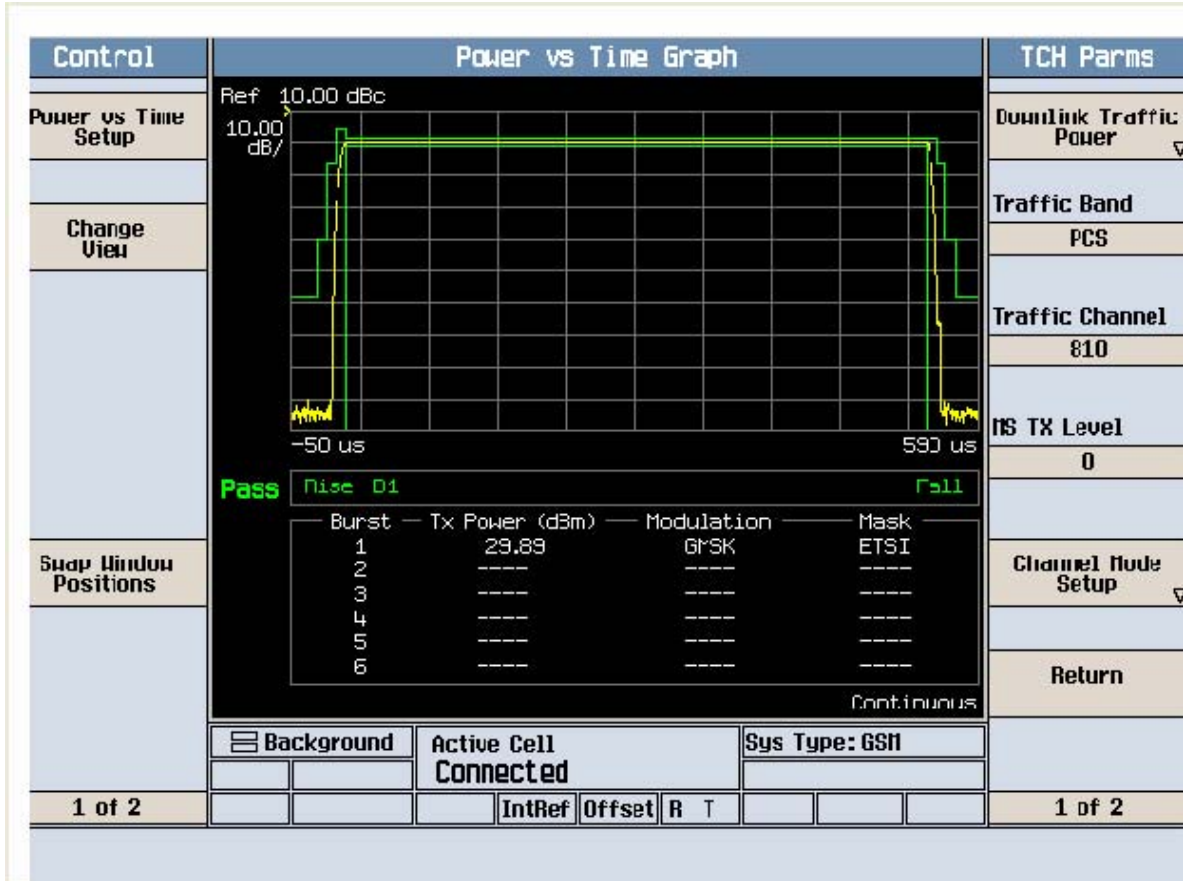
FCC ID : A3LSGHI847 Transmit Power 512CH

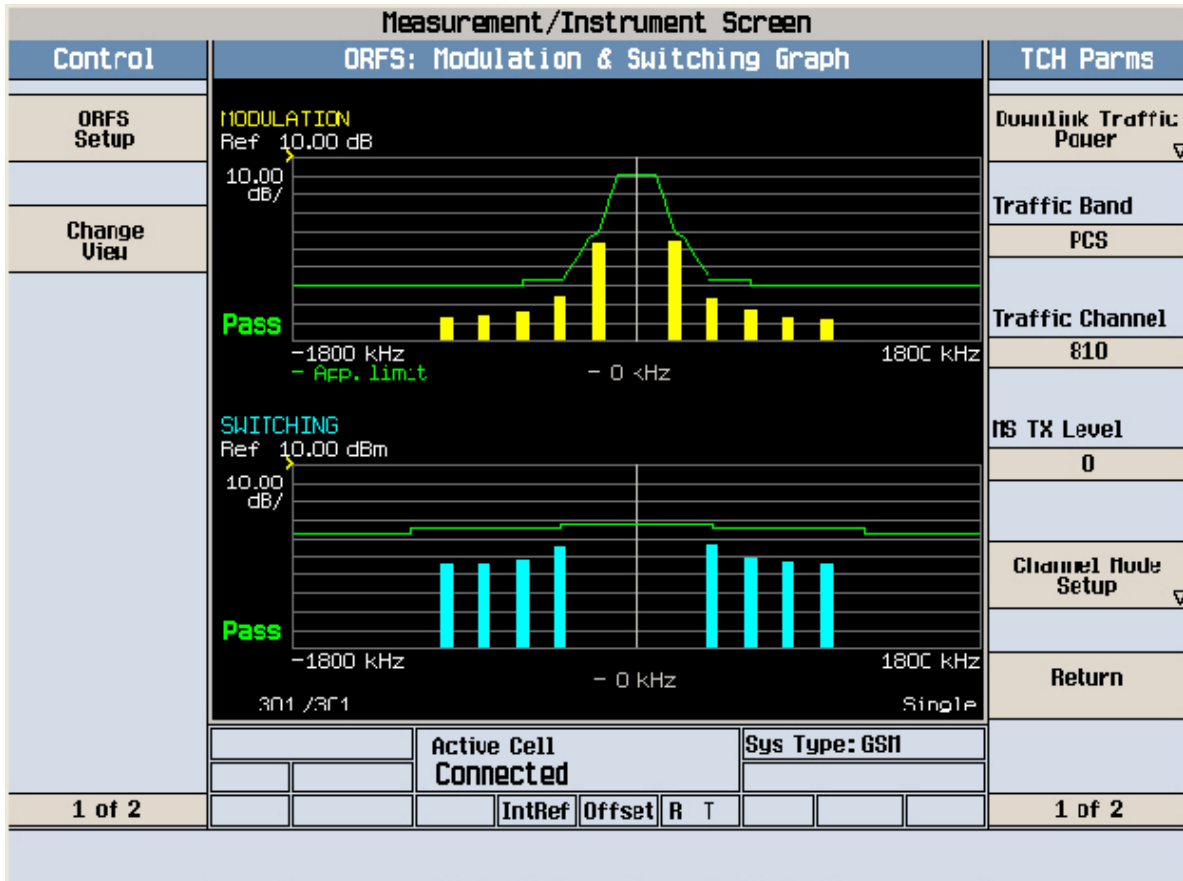
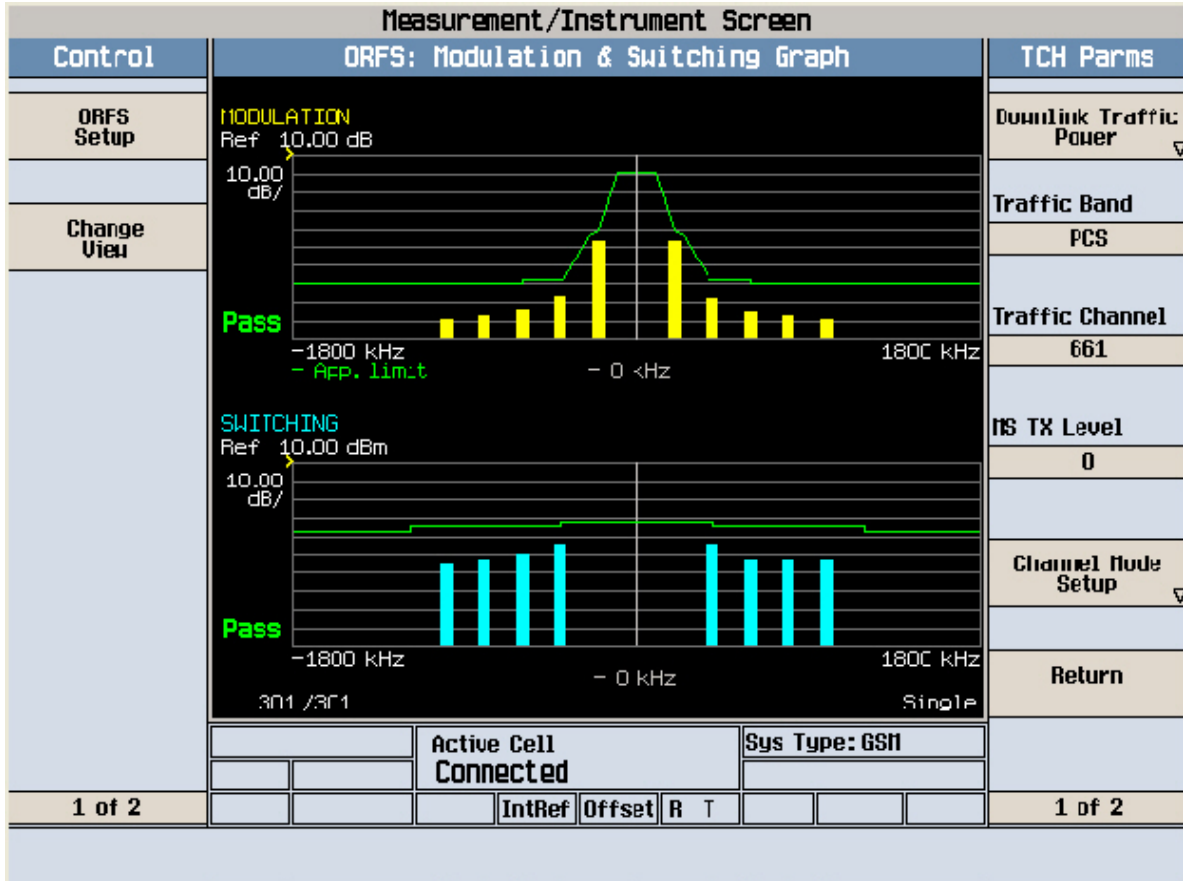
Measurement/Instrument Screen																														
Control	Transmit Power					TCH Parms																								
Transmit Power Setup	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> <th>Burst 5</th> <th>Burst 6</th> </tr> </thead> <tbody> <tr> <td>BP</td> <td>29.54</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>ECP</td> <td>29.54</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>						Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	BP	29.54	----	----	----	----	----	ECP	29.54	----	----	----	----	----	Downlink Traffic Power Traffic Band PCS Traffic Channel 512			
	Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																								
BP	29.54	----	----	----	----	----																								
ECP	29.54	----	----	----	----	----																								
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Phase & Frequency Error																														
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Pass/Fail	Pass	Pass	Pass																											
	Background		Active Cell Connected		Sys Type: GSM																									
1 of 2			IntRef	Offset	R T	1 of 2																								

Measurement/Instrument Screen																														
Control	Transmit Power							TCH Parms																						
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		Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																							
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ECP	29.50	----	----	----	----	----																								
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1 of 2	<div style="text-align: right;">Single</div>							Traffic Channel	661																					
	<div style="text-align: right;">50 / 50 Single</div>							RIS TX Level	0																					
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									Return																					
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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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									Return																					
									1 of 2																					







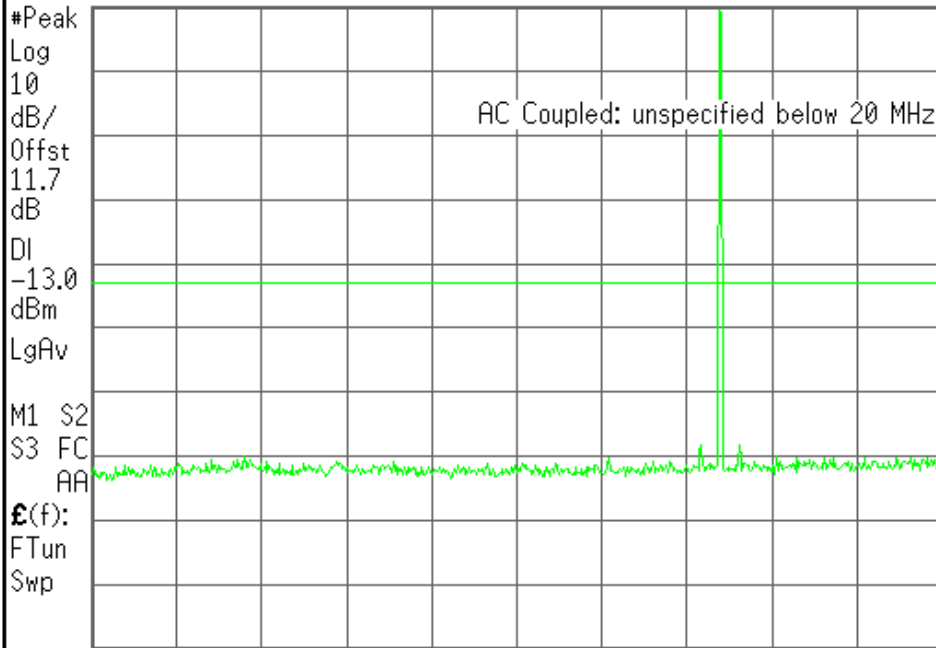
Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.512

Ref 30 dBm Atten 30 dB



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.255 GHz Span 2.49 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 4.16 ms (601 pts)

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Agilent

R T

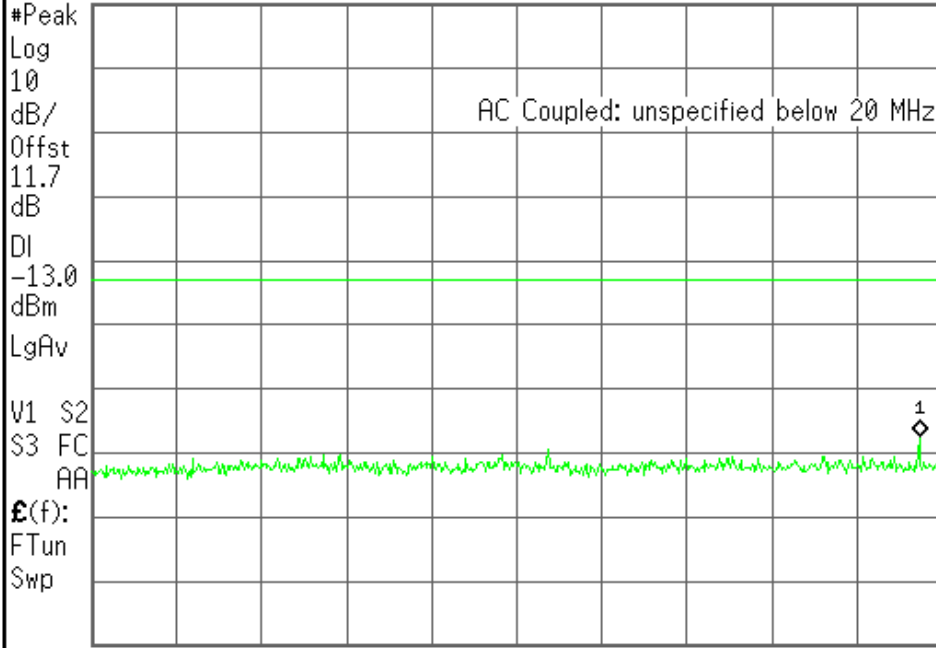
Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.512

Mkr1 1.794 GHz

Ref 30 dBm Atten 30 dB

-37.32 dBm



Center Freq
926.350000 MHz

Start Freq
10.0000000 MHz

Stop Freq
1.84270000 GHz

CF Step
183.270000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

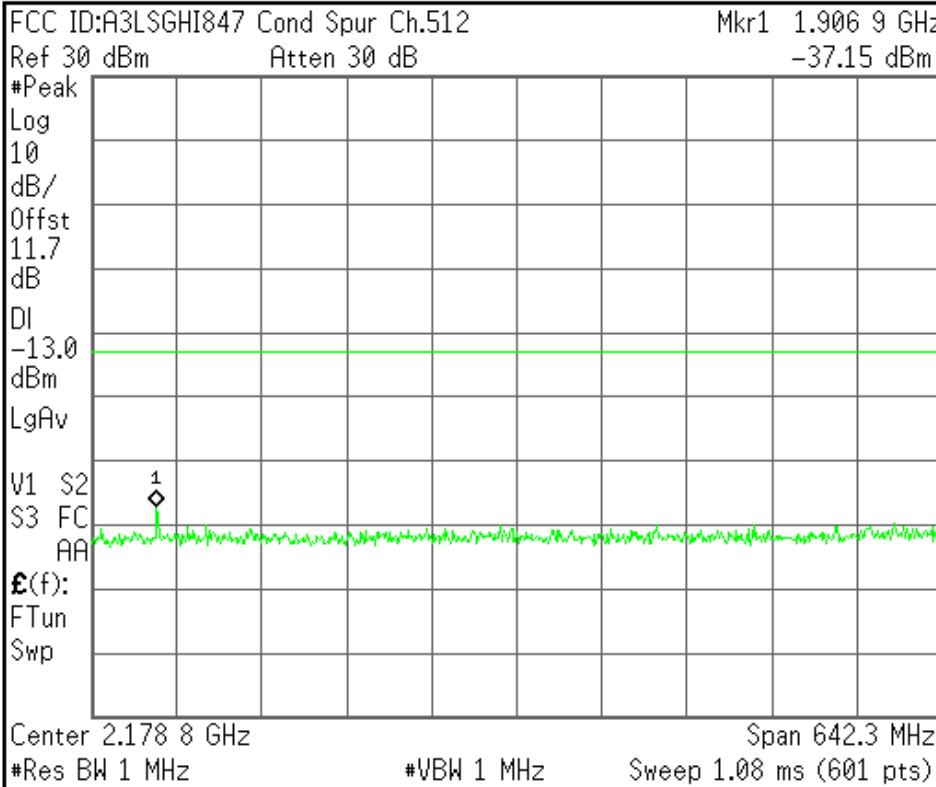
Center 926 MHz Span 1.833 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 3.08 ms (601 pts)

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

Agilent

R T

Freq/Channel



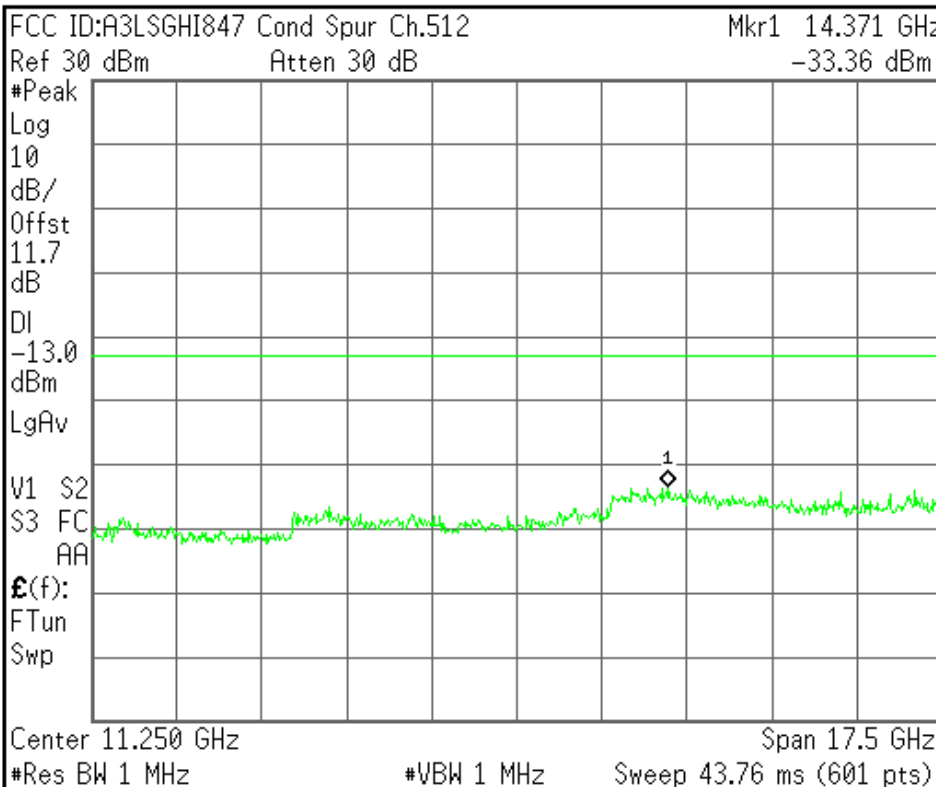
Center Freq 2.17885000 GHz
Start Freq 1.85770000 GHz
Stop Freq 2.50000000 GHz
CF Step Auto Man 64.2300000 MHz
Freq Offset 0.00000000 Hz
Signal Track On Off

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 Auto Man 1.75000000 GHz
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.661

Ref 30 dBm Atten 30 dB



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

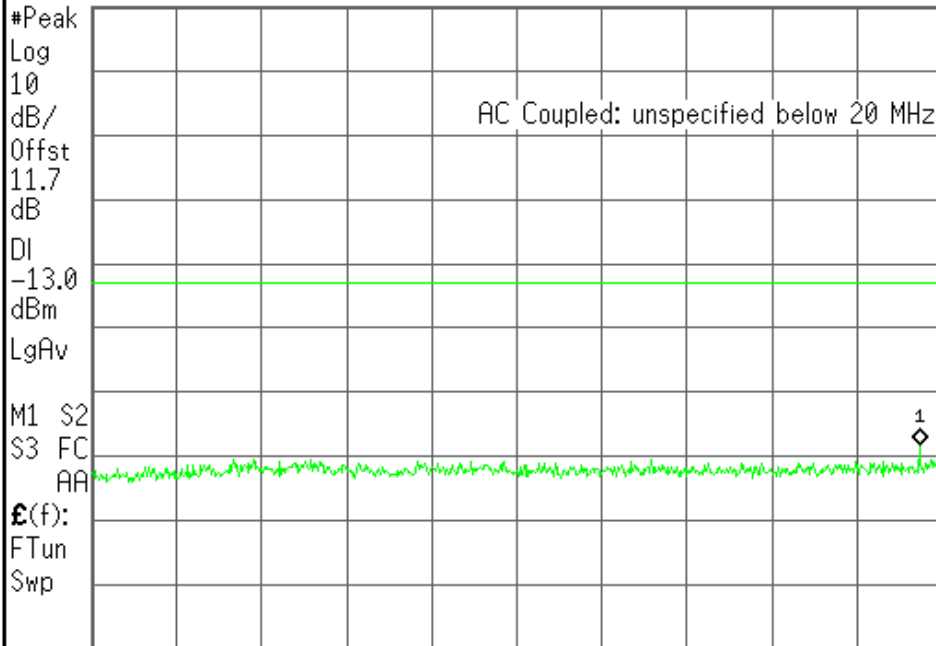
Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.661

Mkr1 1.823 GHz

Ref 30 dBm Atten 30 dB

-38.18 dBm



Center Freq
941.250000 MHz

Start Freq
10.0000000 MHz

Stop Freq
1.87250000 GHz

CF Step
186.250000 MHz
Auto Man

Freq Offset
0.00000000 Hz

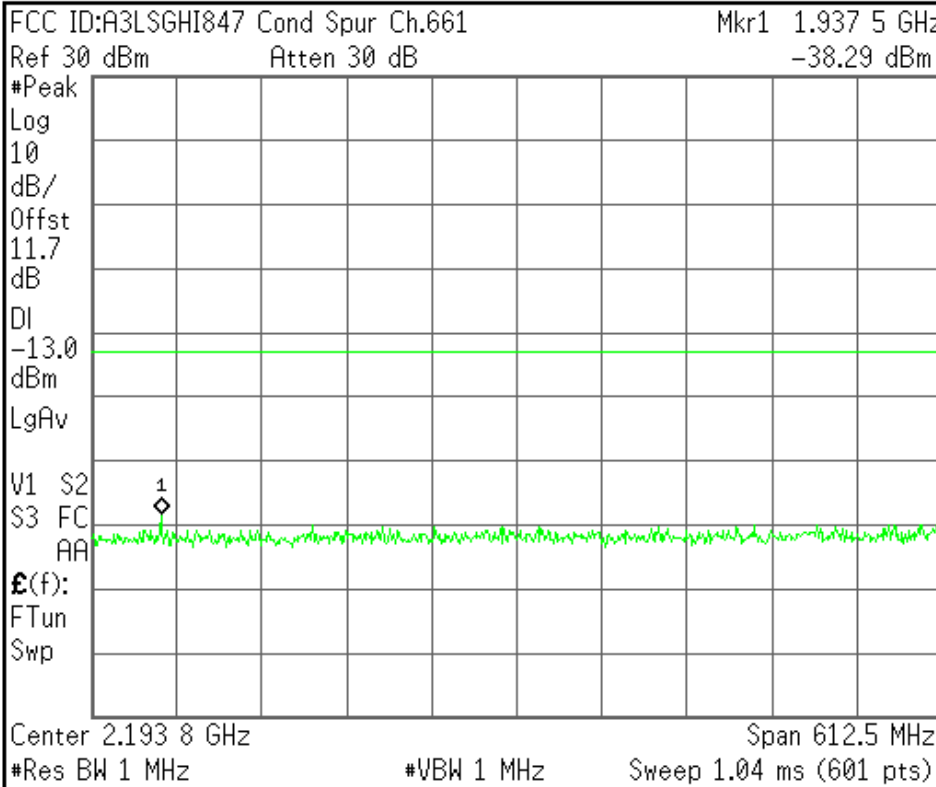
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
2.19375000 GHz

Start Freq
1.88750000 GHz

Stop Freq
2.50000000 GHz

CF Step
61.2500000 MHz
Auto Man

Freq Offset
0.00000000 Hz

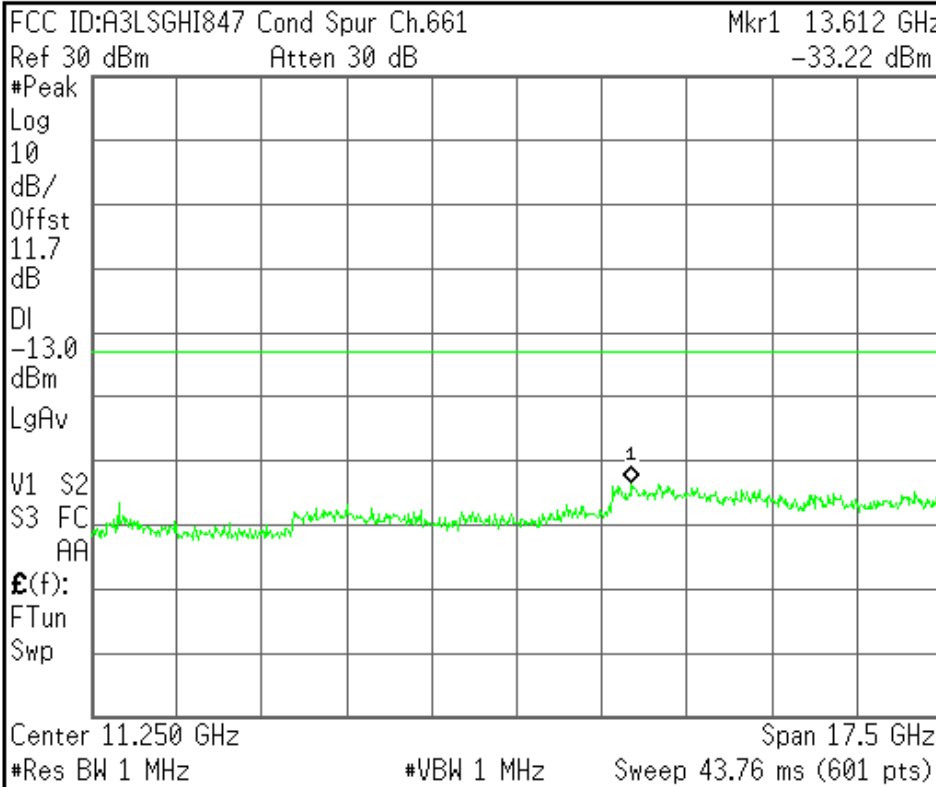
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Cond Spur Ch.810

Ref 30 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

11.7

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

AA

£(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:A3LSGHI847 Cond Spur Ch.810

Mkr1 1.852 GHz

Ref 30 dBm

Atten 30 dB

-39.12 dBm

#Peak

Log

10

dB/

Offst

11.7

dB

DI

-13.0

dBm

LgAv

V1 S2

S3 FC

AA

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

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

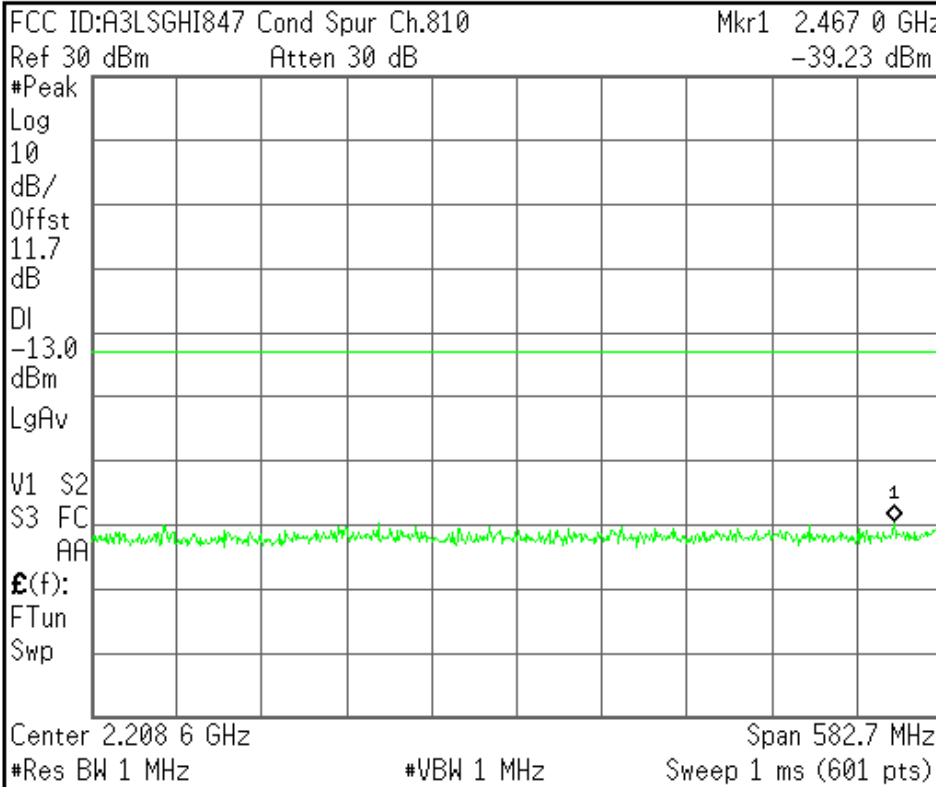
Signal Track
On Off

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

Agilent

R T

Freq/Channel



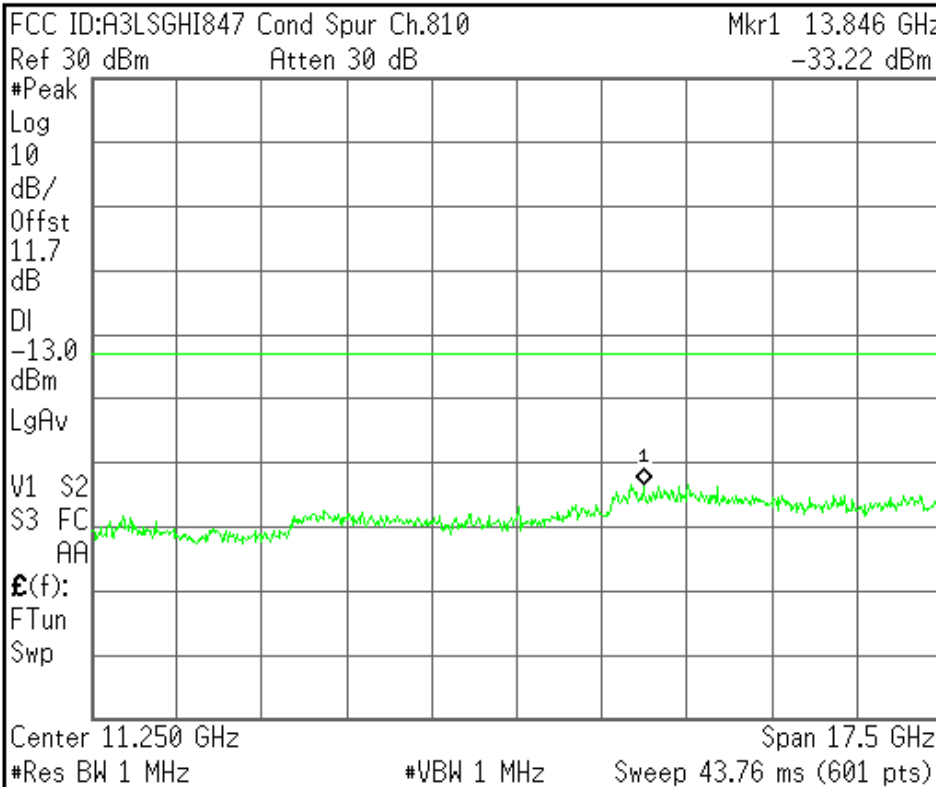
Center Freq 2.20865000 GHz
Start Freq 1.91730000 GHz
Stop Freq 2.50000000 GHz
CF Step Auto Man 58.2700000 MHz
Freq Offset 0.00000000 Hz
Signal Track On Off

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 Auto Man 1.75000000 GHz
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

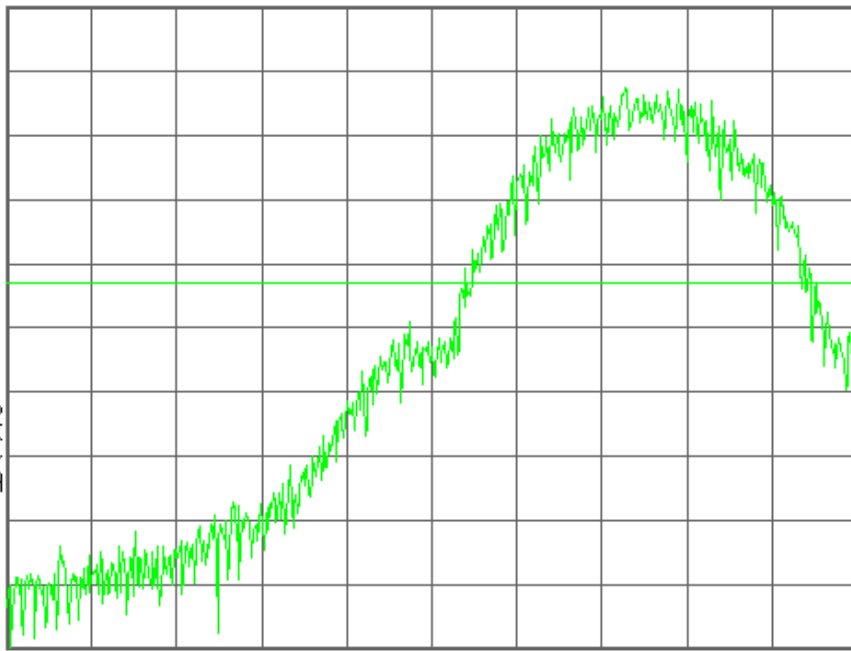
R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.512

Ref 30 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.850 000 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

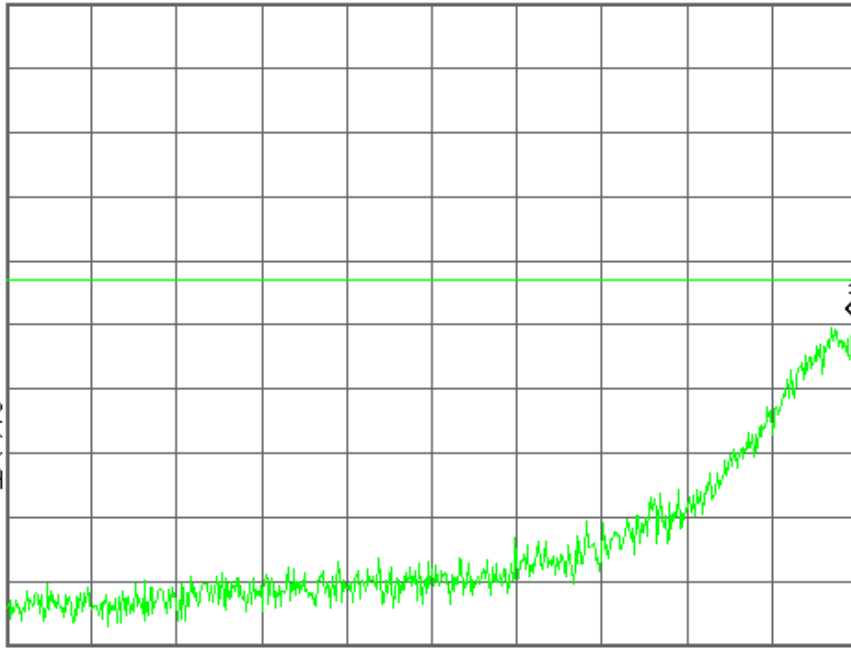
FCC ID:A3LSGHI847 Band Edge Ch.512

Mkr1 1.849 995 99 GHz

Ref 30 dBm Atten 30 dB

-18.79 dBm

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.849 595 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.84959500 GHz

Start Freq
1.84919000 GHz

Stop Freq
1.85000000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.810

Ref 30 dBm Atten 30 dB

#Avg

Log

10

dB/

Offst

11.7

dB

DI

-13.0

dBm

PAvg

M1 S2

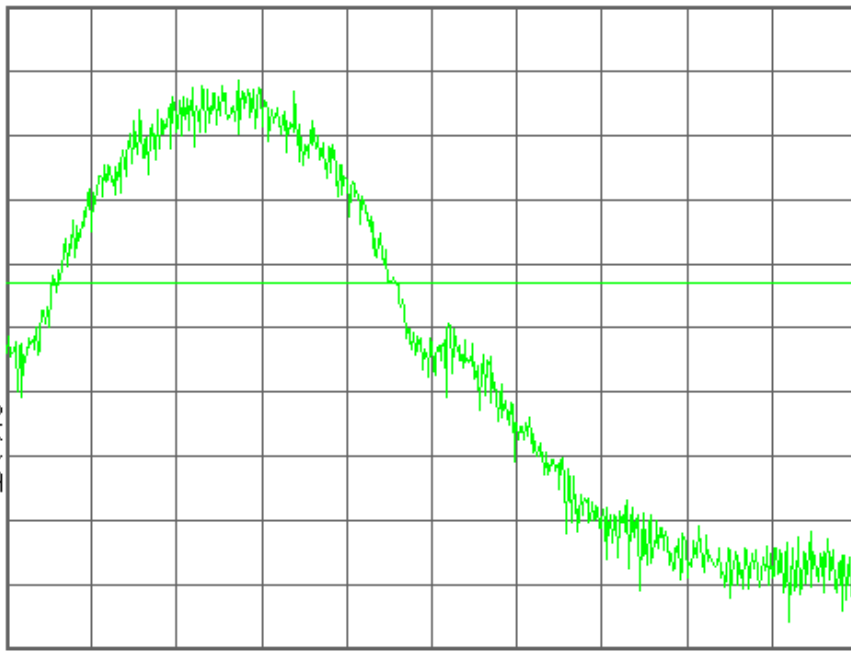
S3 FC

AA

£(f):

f>50k

Swp



Center 1.910 000 00 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.91000000 GHz

Start Freq
1.90959500 GHz

Stop Freq
1.91040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.810

Mkr1 1.910 005 07 GHz

Ref 30 dBm Atten 30 dB

-19.54 dBm

#Avg

Log

10

dB/

Offst

11.7

dB

DI

-13.0

dBm

PAvg

M1 S2

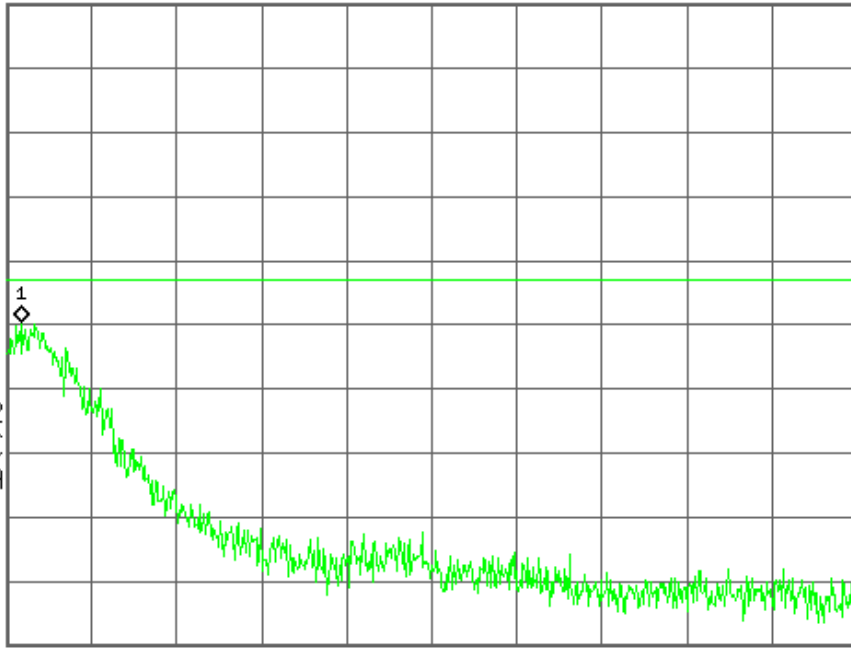
S3 FC

AA

£(f):

f>50k

Swp



Center 1.910 405 00 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.91040500 GHz

Start Freq
1.91000000 GHz

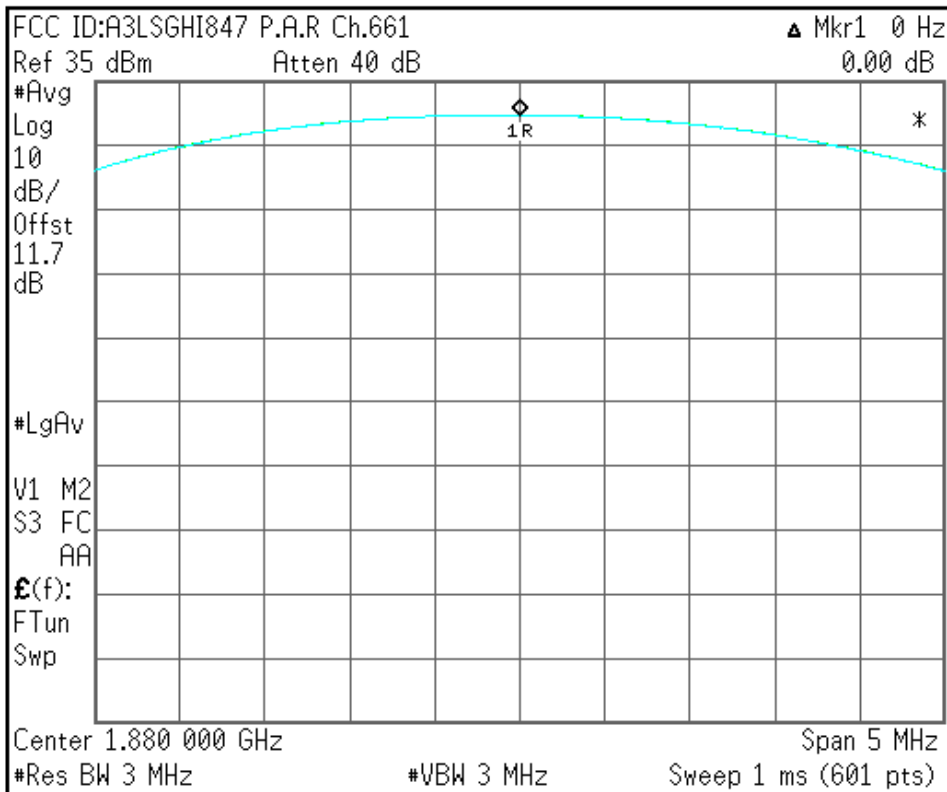
Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



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

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

Agilent

R T

Ch Freq 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.128 EDGE
 Ref 27 dBm Atten 30 dB

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

Occupied Bandwidth	Occ BW % Pwr	99.00 %
246.2225 kHz	x dB	-26.00 dB
Transmit Freq Error	507.538 Hz	
x dB Bandwidth	292.854 kHz	

Freq/Channel

Center Freq
824.200000 MHz

Start Freq
823.700000 MHz

Stop Freq
824.700000 MHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Ch Freq 836.6 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.190 EDGE
 Ref 27 dBm Atten 30 dB

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

Occupied Bandwidth	Occ BW % Pwr	99.00 %
241.3566 kHz	x dB	-26.00 dB
Transmit Freq Error	-194.846 Hz	
x dB Bandwidth	298.380 kHz	

Freq/Channel

Center Freq
836.600000 MHz

Start Freq
836.100000 MHz

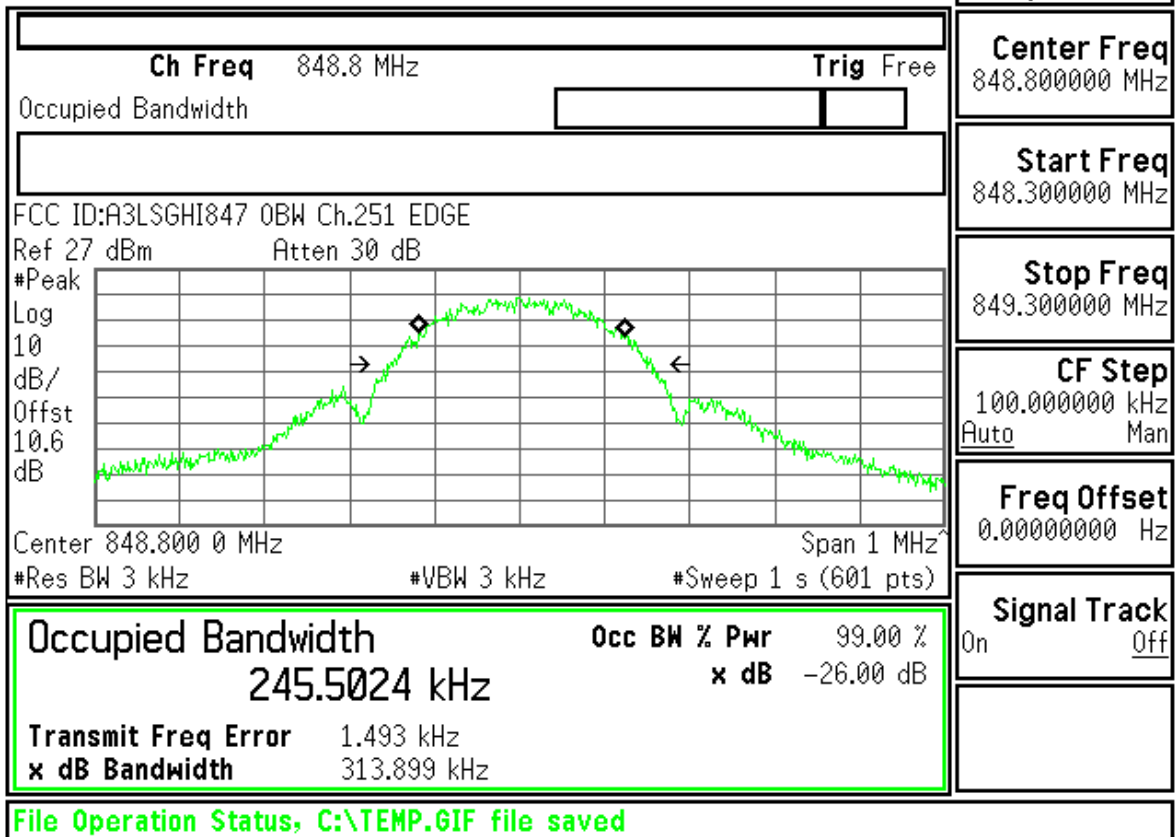
Stop Freq
837.100000 MHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



Freq/Channel	
Center Freq	848.800000 MHz
Start Freq	848.300000 MHz
Stop Freq	849.300000 MHz
CF Step	100.000000 kHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

Agilent

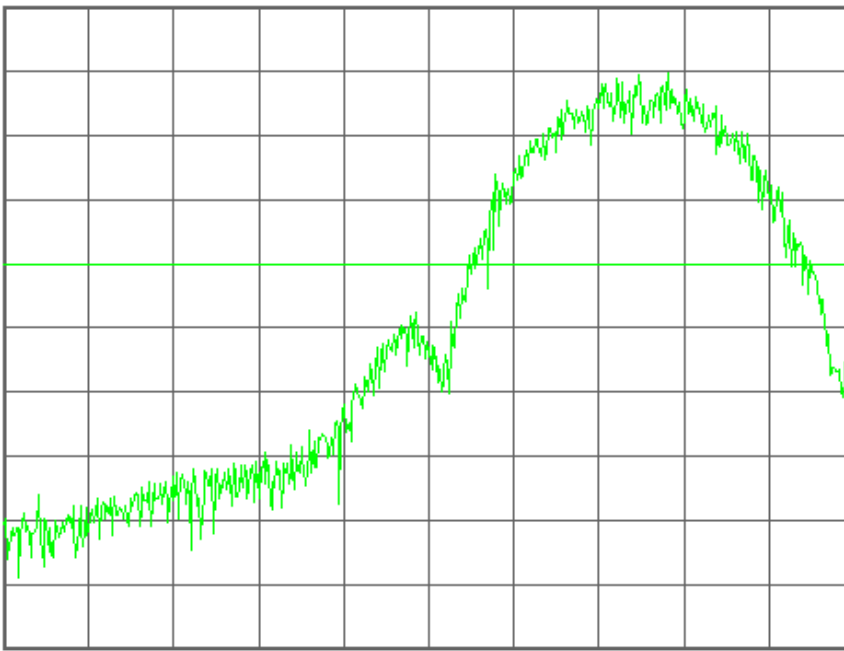
R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.128 EDGE

Ref 27 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
10.6
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 824.000 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
824.000000 MHz

Start Freq
823.595000 MHz

Stop Freq
824.405000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

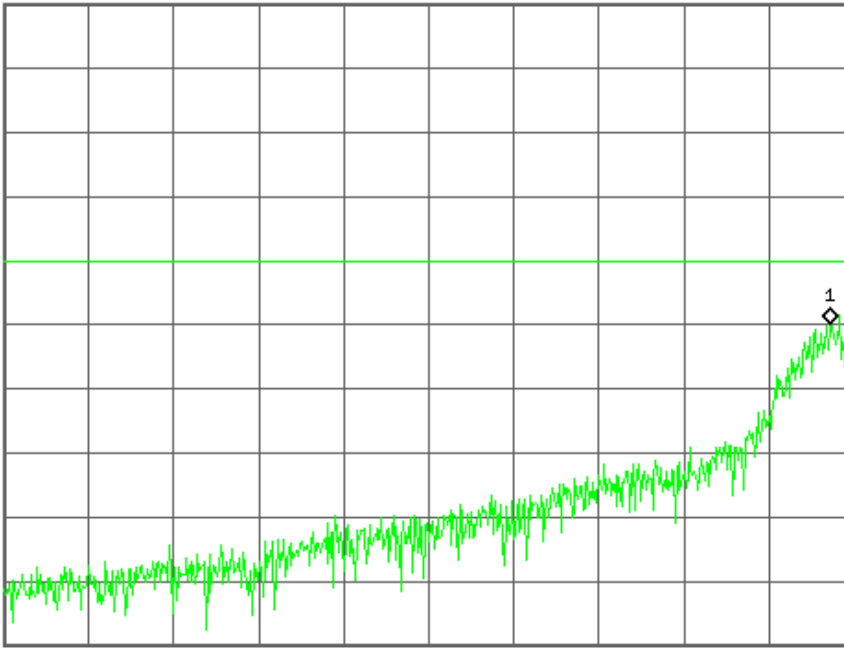
FCC ID:A3LSGHI847 Band Edge Ch.128 EDGE

Mkr1 823.977 26 MHz

Ref 27 dBm Atten 30 dB

-22.81 dBm

#Avg
Log
10
dB/
Offst
10.6
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 823.595 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
823.595000 MHz

Start Freq
823.190000 MHz

Stop Freq
824.000000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.251 EDGE

Ref 27 dBm Atten 30 dB

#Avg

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

PAvg

M1 S2

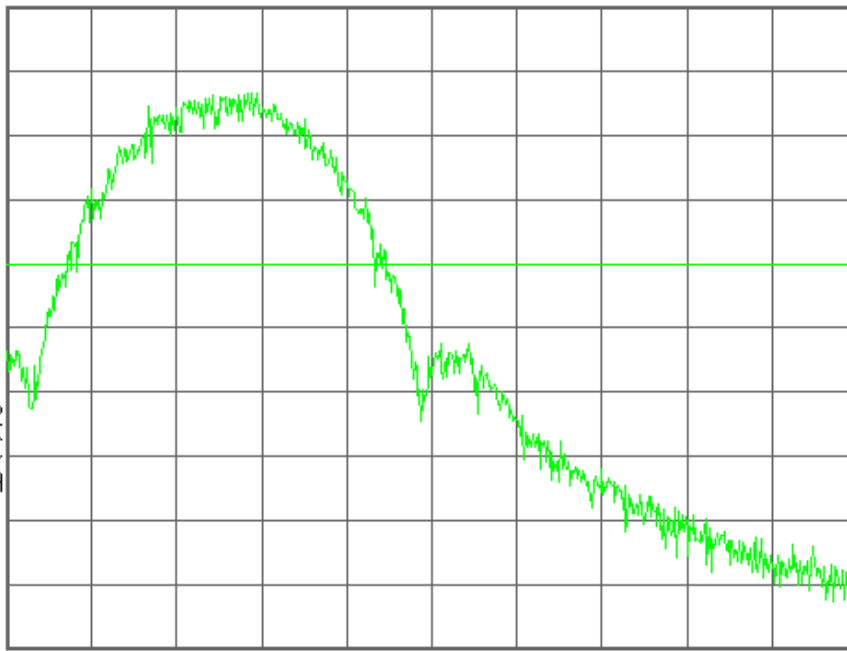
S3 FC

AA

£(f):

f>50k

Swp



Center 849.000 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.000000 MHz

Start Freq
848.595000 MHz

Stop Freq
849.405000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.251 EDGE

Mkr1 849.012 03 MHz

Ref 27 dBm

Atten 30 dB

-26.18 dBm

#Avg

Log

10

dB/

Offst

10.6

dB

DI

-13.0

dBm

PAvg

M1 S2

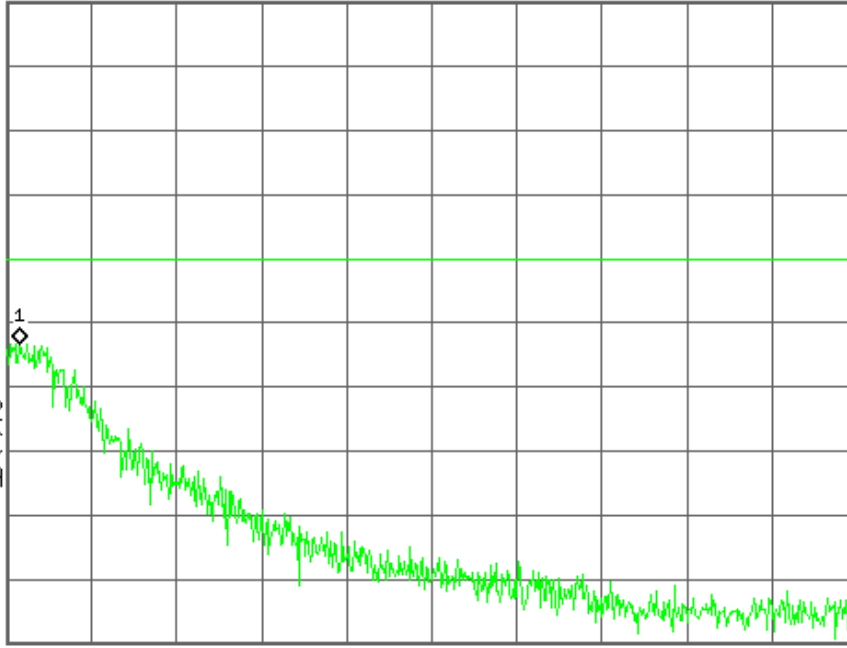
S3 FC

AA

£(f):

f>50k

Swp



Center 849.405 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.405000 MHz

Start Freq
849.000000 MHz

Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Ch Freq 1.8502 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.512 EDGE
 Ref 26 dBm Atten 30 dB

Center 1.850 200 0 GHz Span 1 MHz
 #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
241.0343 kHz	x dB	-26.00 dB
Transmit Freq Error	1.742 kHz	
x dB Bandwidth	296.952 kHz	

Freq/Channel

Center Freq
1.85020000 GHz

Start Freq
1.84970000 GHz

Stop Freq
1.85070000 GHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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R T

Ch Freq 1.88 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSGHI847 0BW Ch.661 EDGE
 Ref 26 dBm Atten 30 dB

Center 1.880 000 0 GHz Span 1 MHz
 #Res BW 3 kHz #VBW 3 kHz #Sweep 1 s (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
239.7967 kHz	x dB	-26.00 dB
Transmit Freq Error	-751.357 Hz	
x dB Bandwidth	294.150 kHz	

Freq/Channel

Center Freq
1.88000000 GHz

Start Freq
1.87950000 GHz

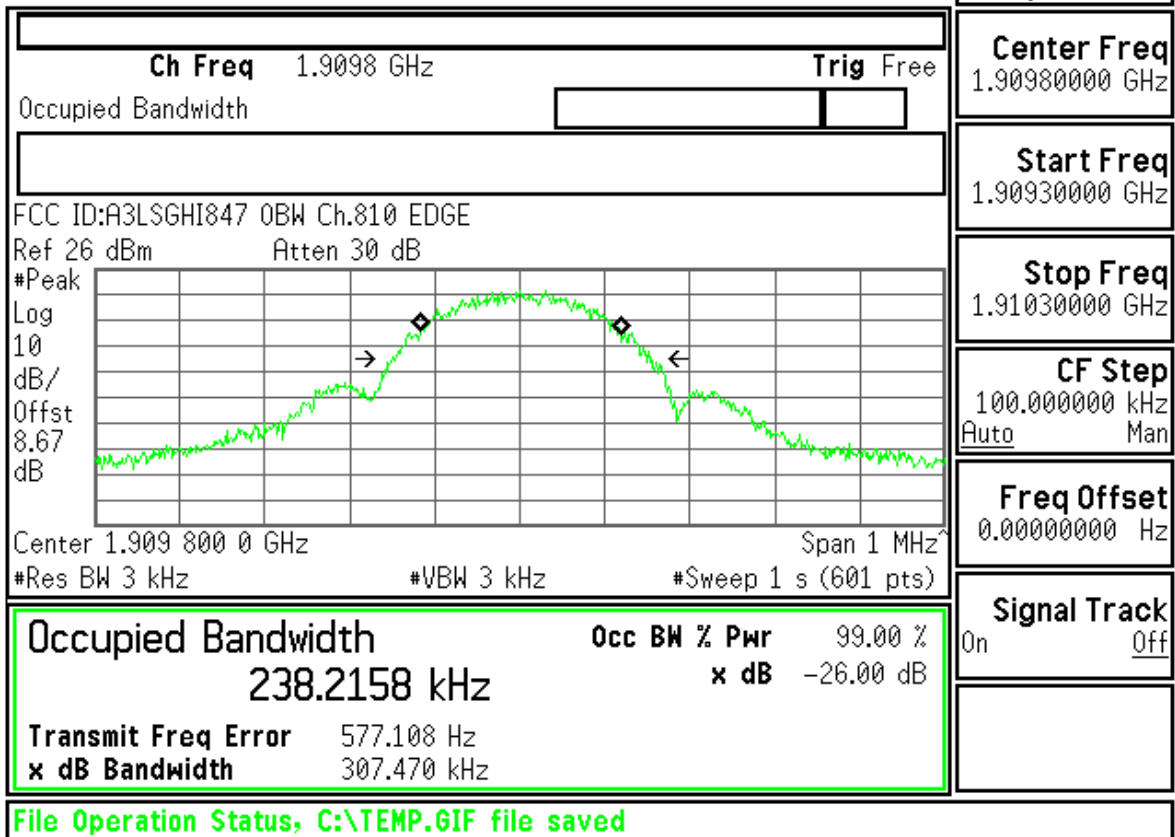
Stop Freq
1.88050000 GHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



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

Agilent

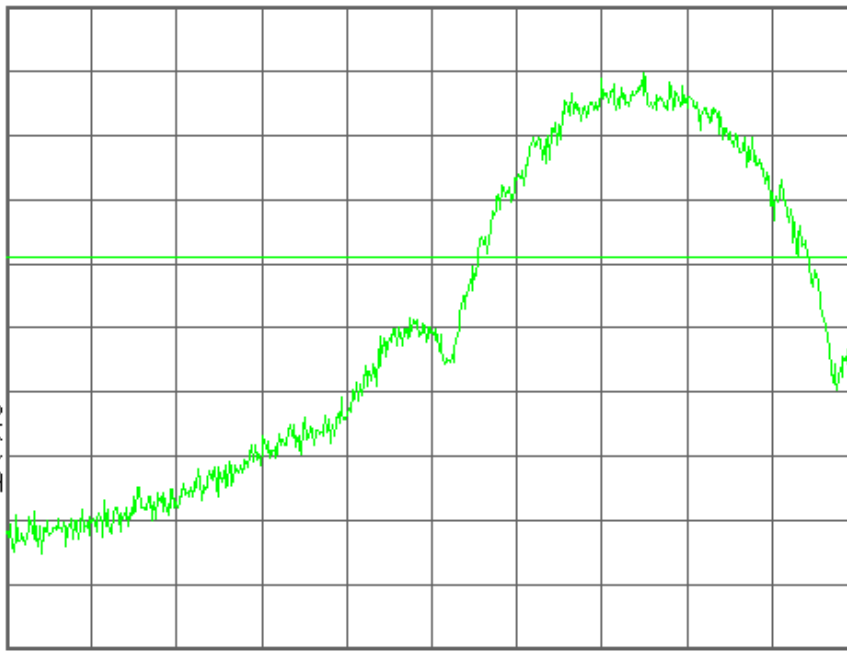
R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.512 EDGE

Ref 26 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.850 000 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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Agilent

R T

Freq/Channel

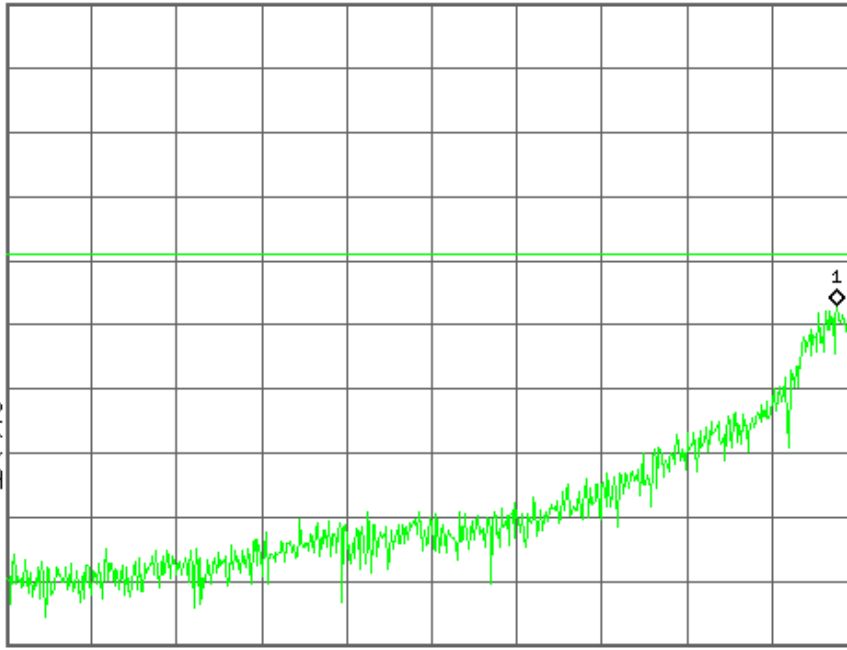
FCC ID:A3LSGHI847 Band Edge Ch.512 EDGE

Mkr1 1.849 981 28 GHz

Ref 26 dBm Atten 30 dB

-21.00 dBm

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.849 595 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.84959500 GHz

Start Freq
1.84919000 GHz

Stop Freq
1.85000000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

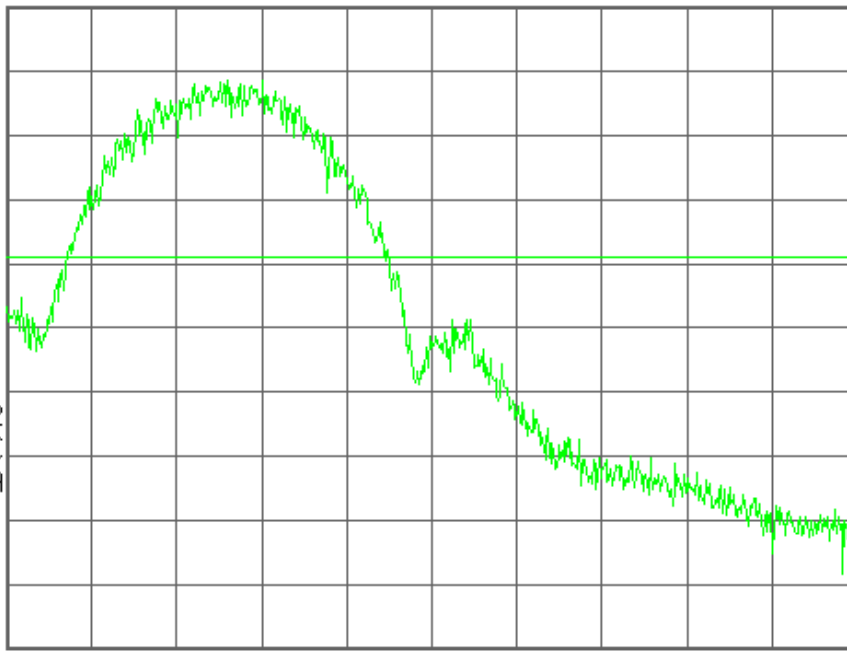
R T

Freq/Channel

FCC ID:A3LSGHI847 Band Edge Ch.810 EDGE

Ref 26 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.910 000 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.91000000 GHz

Start Freq
1.90959500 GHz

Stop Freq
1.91040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

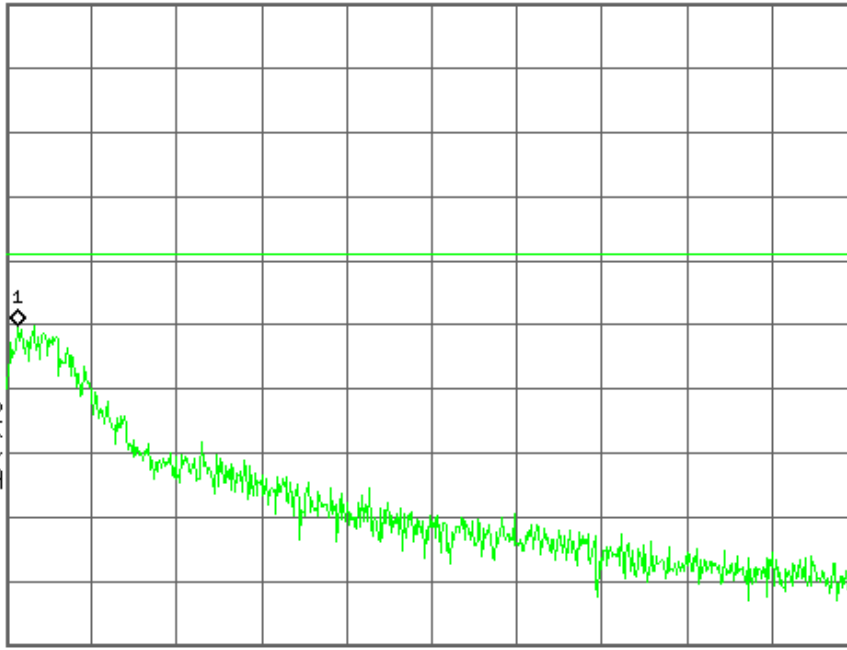
FCC ID:A3LSGHI847 Band Edge Ch.810 EDGE

Mkr1 1.910 002 28 GHz

Ref 26 dBm Atten 30 dB

-24.09 dBm

#Avg
Log
10
dB/
Offst
11.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
AA
£(f):
f>50k
Swp



Center 1.910 405 00 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 343.2 ms (601 pts)

Center Freq
1.91040500 GHz

Start Freq
1.91000000 GHz

Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LSGHI847 P.A.R Ch.661 EDGE

▲ Mkr1 0 Hz

Ref 35 dBm

Atten 40 dB

0.04 dB

#Avg

Log

10

dB/

Offst

8.67

dB

PAvg

V1 M2

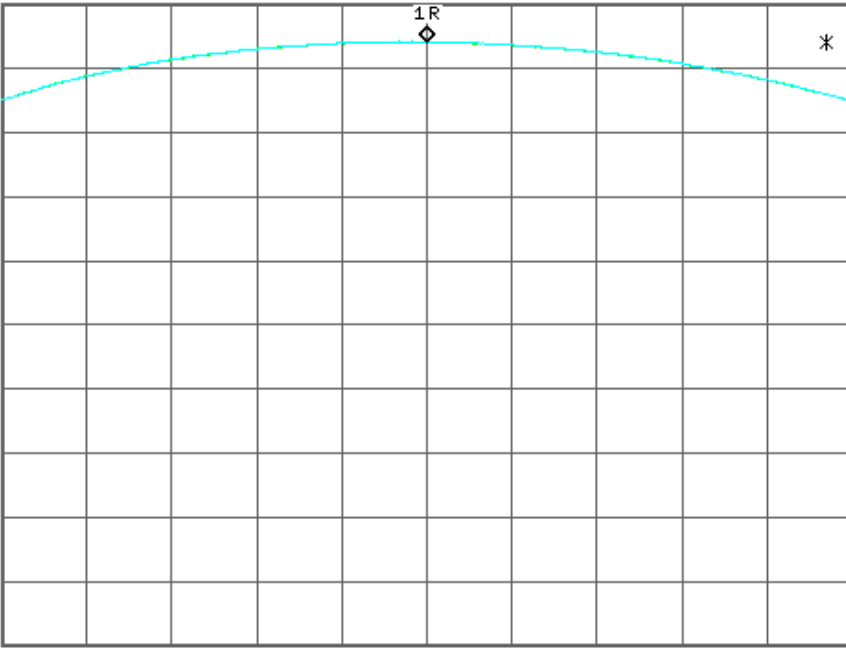
S3 FC

AA

£(f):

FTun

Swp



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

Center 1.880 000 GHz

Span 5 MHz

#Res BW 3 MHz

VBW 3 MHz

Sweep 1 ms (601 pts)

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