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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 : SPH-i350
FCC ID(Requested) : A3LSPHI350
Report No : FG-216-R1
Job No : FG-216
Date issued : August 5, 2009

- Abstract -

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

Prepared By

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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 : A3LSPHI350
- Model : SPH-i350
- Quantity : Quantity production is planned
- Emission Designators : 247KGXW(GSM850), 249KG7W(GSM850 EDGE)
245KGXW(GSM1900), 248KG7W(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 : 1.455 W ERP GSM850 (31.63 dBm)
0.721 W EIRP GSM1900 (28.58 dBm)
0.587 W ERP GSM850 EDGE(27.69 dBm)
0.402 W EIRP GSM1900 EDGE(26.04 dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 CDMA/GSM/EDGE/GPRS/Ev-DO Phone with
Bluetooth and WLAN
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : July 20-21, 2009
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FG-216-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	2009-10-21
	E4440A(3Hz~26.5GHz)	MY46187454	2010-03-06
	E4440A(3Hz~26.5GHz)	MY41000236	2010-04-14
Network Analyzer	8753E	JP38160590	2010-06-19
Pre-Amplifier	8449B	3008A00691	2009-12-15
Communication test set	8960	MY47510060	2010-03-06
	8960	GB42230535	2009-12-18
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
	HF906	360306/011	2010-06-13
	BBHA9120	9120D-637	2009-10-24
Dipole Antenna	UHA 9105	9105-2412	2009-11-07
	UHA 9105	9105-2413	2010-06-13
Power Supply	E3640A	MY40003594	2010-06-19
	E3640A	MY40003595	2010-06-19
	E3632A	MY40022438	2010-03-06
Divider	11636B	51946	Not Required
	11636B	56913	Not Required
	11636B	56918	Not Required
High Pass Filter	WHK/3.0/18G-10SS	492	Not Required
	WHK/3.5/18G-10SS	4	Not Required
Environmental Chamber	SH-241	92000549	2009-11-14
	SH-241	92000548	2009-11-14
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

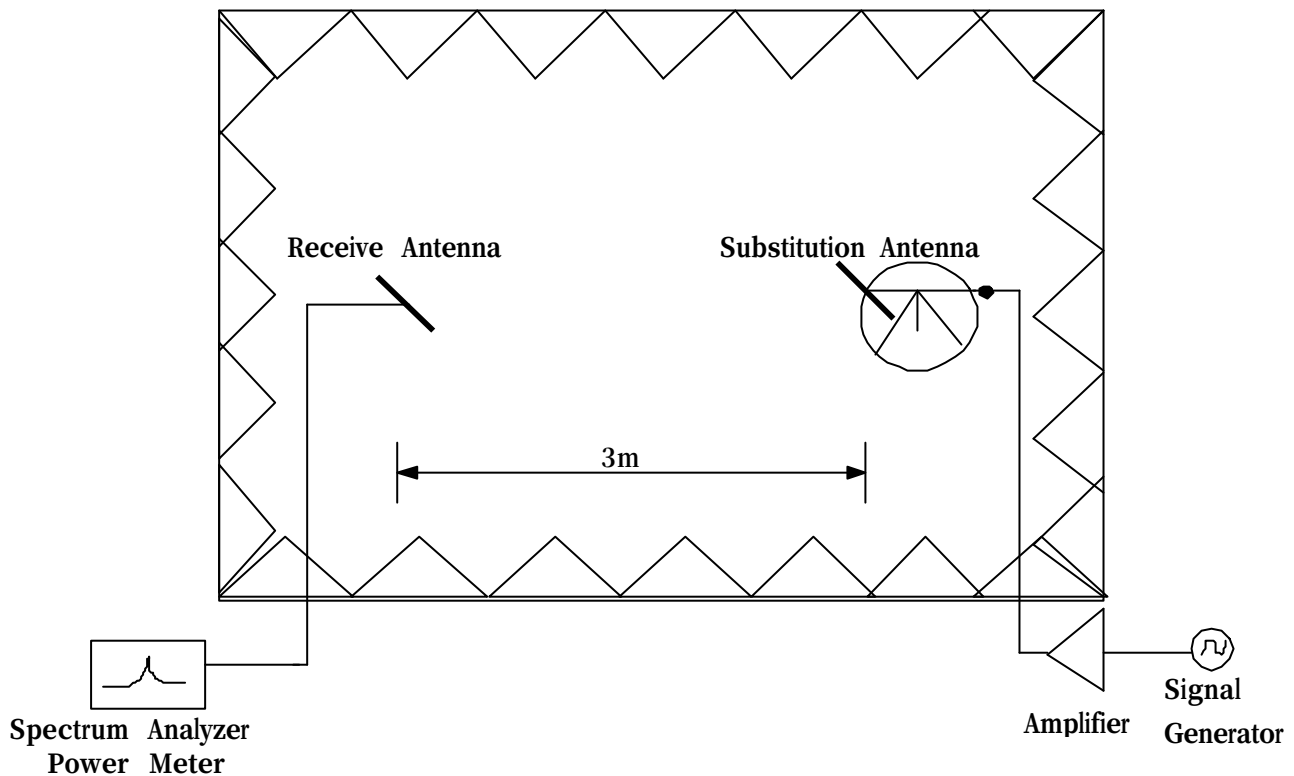


Figure 3. Diagram of ERP/EIRP test Set-up

The EUT was placed on the rotating device at 3-meters from the receive antenna. 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

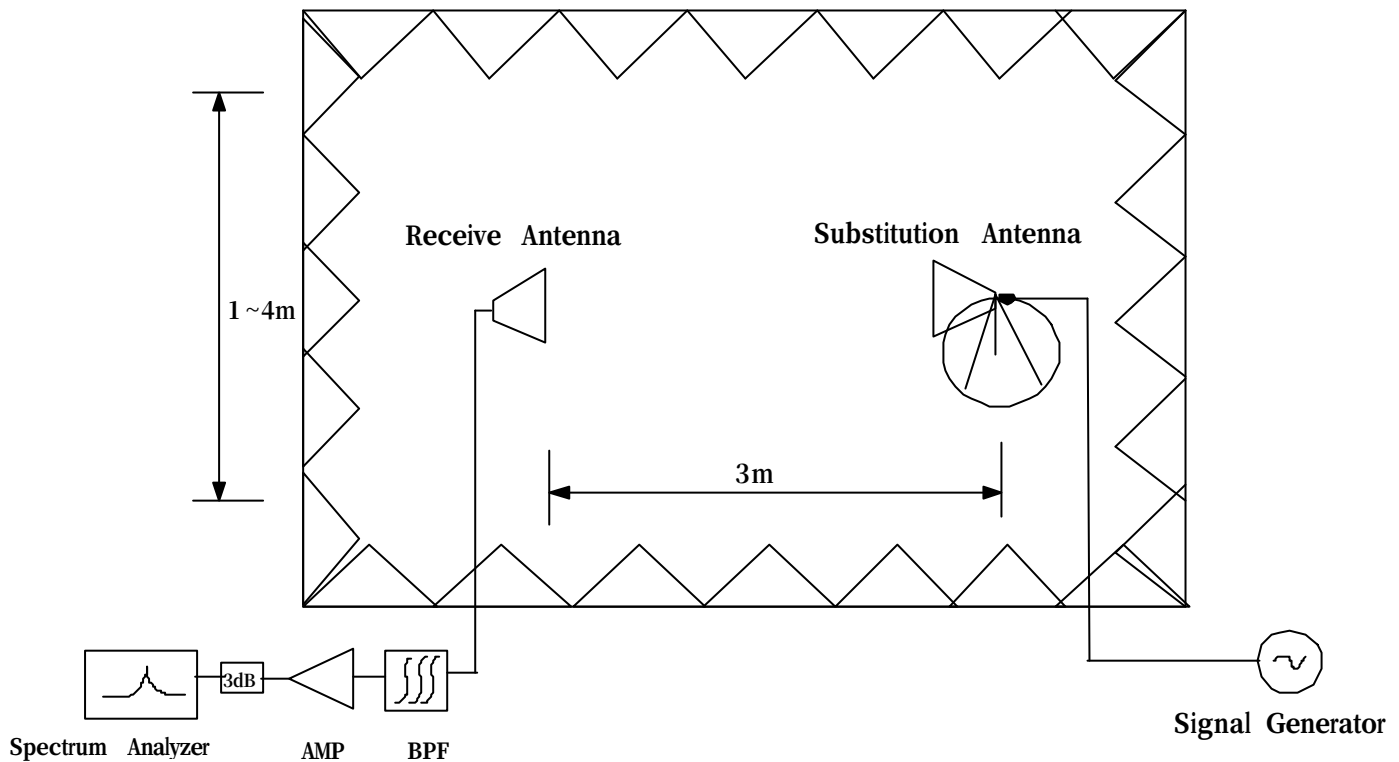


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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 $25.5\text{dBm} - (-24.8) = 50.3\text{dBc}$.

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.
- (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

5.5.2. 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.

$$43 + 10\log (1.455 \text{ W}) = 44.63 \text{ dB}$$

$$31.63 \text{ dBm} - 44.63 \text{ dB} = -13 \text{ dBm}$$

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

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 +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 (± 2.5 ppm) of the center frequency.

Time Period and Procedure:

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

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

6. TEST DATA

6.1. Conducted Output Power

A base station simulator was used to establish communication with the Samsung 850/1900 CDMA/GSM/EDGE/Ev-DO Phone with Bluetooth and WLAN FCC ID: A3LSPHI350. 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			
			1 Tx Slot	2 Tx Slot	3 Tx Slot	4 Tx Slot
PCS	512	29.67	29.76	29.76	26.04	24.79
	661	29.86	29.93	29.93	26.20	24.96
	810	29.85	29.92	29.93	26.21	24.96
Cellular	128	32.85	32.82	32.44	29.16	27.91
	190	32.77	32.72	32.36	29.10	27.84
	251	32.73	32.69	32.32	29.05	27.80

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	32.00	H	-4.37	-0.67	-3.70
		V	-4.59	-0.67	-3.92
836.60	31.00	H	-6.82	-0.73	-6.09
		V	-6.34	-0.73	-5.61
848.80	31.00	H	-9.52	-0.79	-8.73
		V	-8.17	-0.79	-7.38

■Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-4.07	H	285/90	31.63	1.455	Standard
836.60	-6.06	H	288/80	31.03	1.268	Standard
848.80	-8.78	H	281/80	30.95	1.245	Standard
824.20	-4.17	H	285/90	31.53	1.422	Extended

■EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-8.08	H	285/90	27.69	0.587	Standard

- 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	25.00	H	-13.74	9.70	-23.44
		V	-13.38	9.70	-23.08
1880.00	25.00	H	-14.11	9.70	-23.81
		V	-14.11	9.70	-23.81
1909.80	29.00	H	-10.11	9.70	-19.81
		V	-9.80	9.70	-19.50

■Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-23.57	V	211/90	24.51	0.282	Standard
1880.00	-24.07	H	141/0	24.74	0.298	Standard
1909.80	-19.92	V	216/90	28.58	0.721	Standard
1909.80	-19.98	V	216/90	28.52	0.711	Extended

■EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1909.80	-22.46	V	216/90	26.04	0.402	Standard

- 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 : 31.63 dBm = 1.455 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 44.63 \text{ dBc}$

■Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
128	2	1648.40	-65.65	H	85.74
	3	2472.60	-68.18	V	83.33
	4	3296.80	-67.59	V	78.93
	5	4121.00	-	-	-
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-65.36	V	83.50
	3	2509.80	-67.48	H	81.85
	4	3346.40	-67.35	V	78.45
	5	4183.00	-	-	-
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-63.77	V	82.79
	3	2546.40	-66.95	H	80.79
	4	3395.20	-67.60	V	78.79
	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 : 28.58 dBm = 0.721 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 41.58 \text{ dBc}$

■Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-61.35	H	65.21
	3	5550.60	-59.57	V	58.15
	4	7400.80	-66.35	H	60.52
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-62.20	V	65.63
	3	5640.00	-60.59	V	58.87
	4	7520.00	-67.51	H	61.46
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-64.57	H	67.85
	3	5729.40	-64.40	H	62.31
	4	7639.20	-68.98	V	62.42
	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 : 2009. 07. 21

Test Engineer : KJ KWON

- 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	-9.02	9.50	-13.50	-26.68	-27.10	-65.65	-66.30	85.74	85.97
	3	2472.60	-11.25	10.70	-12.50	-32.14	-31.45	-68.70	-68.18	83.33	83.50
	4	3296.80	-13.26	12.30	-12.00	-35.31	-35.43	-67.65	-67.59	79.11	78.93
	5	4121.00	-14.79	12.50	-10.70	-38.87	-38.90	-	-	-	-
	6	4945.20	-16.60	12.70	-9.10	-40.93	-40.69	-	-	-	-
	7	5769.40	-18.02	12.90	-7.90	-43.59	-43.30	-	-	-	-
190	2	1673.20	-9.05	9.50	-13.50	-28.00	-28.63	-65.77	-65.36	84.54	83.50
	3	2509.80	-11.31	10.70	-12.40	-32.40	-31.64	-67.48	-67.67	81.85	82.80
	4	3346.40	-13.33	12.30	-12.00	-35.73	-35.60	-67.41	-67.35	78.45	78.52
	5	4183.00	-15.01	12.50	-10.50	-39.30	-39.11	-	-	-	-
	6	5019.60	-16.84	12.70	-8.90	-41.59	-41.32	-	-	-	-
	7	5856.20	-18.26	12.90	-7.60	-43.87	-43.84	-	-	-	-
251	2	1697.60	-9.07	9.50	-13.40	-28.83	-27.75	-65.87	-63.77	83.81	82.79
	3	2546.40	-11.35	10.70	-12.40	-32.38	-32.94	-66.95	-66.96	81.34	80.79
	4	3395.20	-13.26	12.30	-12.00	-35.94	-35.46	-67.96	-67.60	78.79	78.91
	5	4244.00	-15.20	12.50	-10.30	-39.34	-39.07	-	-	-	-
	6	5092.80	-16.99	12.70	-8.70	-41.96	-41.42	-	-	-	-
	7	5941.60	-18.38	12.90	-7.50	-43.98	-43.32	-	-	-	-

6.7. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : 2009. 07. 21

Test Engineer : KJ KWON

- 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	-14.02	12.40	-11.40	-37.72	-37.72	-61.35	-62.73	65.21	66.59
	3	5550.60	-17.68	12.90	-8.20	-42.81	-43.00	-60.69	-59.57	59.46	58.15
	4	7400.80	-20.47	10.50	-3.00	-47.41	-47.39	-66.35	-66.80	60.52	60.99
	5	9251.00	-23.65	11.20	-0.50	-50.87	-51.74	-	-	-	-
	6	11101.20	-26.73	11.60	2.10	-55.94	-55.98	-	-	-	-
	7	12951.40	-28.60	12.90	2.70	-59.18	-59.44	-	-	-	-
661	2	3760.00	-14.17	12.40	-11.20	-38.11	-38.15	-65.34	-62.20	68.81	65.63
	3	5640.00	-17.83	12.90	-8.10	-42.84	-43.30	-61.08	-60.59	59.82	58.87
	4	7520.00	-20.58	10.60	-3.00	-47.63	-47.25	-67.51	-67.75	61.46	62.08
	5	9400.00	-23.19	11.60	-1.40	-51.86	-52.85	-	-	-	-
	6	11280.00	-26.31	12.10	1.20	-56.33	-56.80	-	-	-	-
	7	13160.00	-28.22	12.80	2.40	-59.42	-59.52	-	-	-	-
810	2	3819.60	-14.18	12.40	-11.20	-38.30	-38.19	-64.57	-67.42	67.85	70.81
	3	5729.40	-17.92	13.00	-8.10	-43.67	-43.62	-64.40	-67.58	62.31	65.54
	4	7639.20	-20.95	11.20	-3.30	-47.83	-48.14	-69.05	-68.98	62.80	62.42
	5	9549.00	-23.60	11.70	-1.10	-52.43	-52.81	-	-	-	-
	6	11458.80	-26.67	11.70	2.00	-56.85	-56.63	-	-	-	-
	7	13368.60	-28.41	12.30	3.10	-60.50	-59.87	-	-	-	-

6.8. Frequency Stability

6.8.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

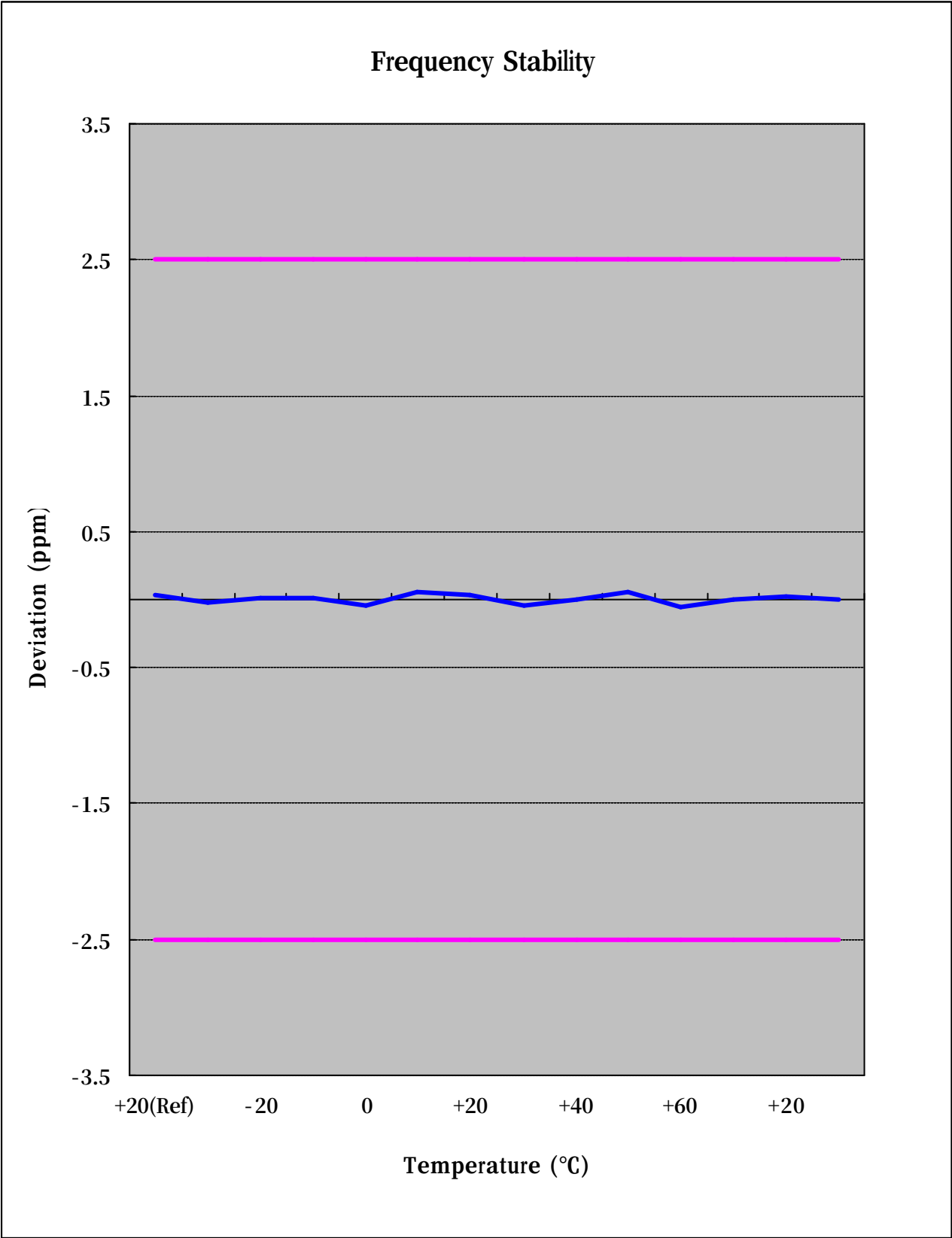
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	37.00	836,600,037	0.000004	0.044
100%		-30	-16.30	836,599,984	-0.000002	-0.019
100%		-20	20.40	836,600,020	0.000002	0.024
100%		-10	15.90	836,600,016	0.000002	0.019
100%		0	-35.00	836,599,965	-0.000004	-0.042
100%		+10	46.40	836,600,046	0.000006	0.055
100%		+20	37.00	836,600,037	0.000004	0.044
100%		+30	-36.40	836,599,964	-0.000004	-0.044
100%		+40	1.10	836,600,001	0.000000	0.001
100%		+50	49.30	836,600,049	0.000006	0.059
100%		+60	-41.80	836,599,958	-0.000005	-0.050
85%	3.35	+20	11.90	836,600,012	0.000001	0.014
115%	4.26	+20	21.80	836,600,022	0.000003	0.026
Batt.Endpoint	3.35	+20	11.90	836,600,012	0.000001	0.014

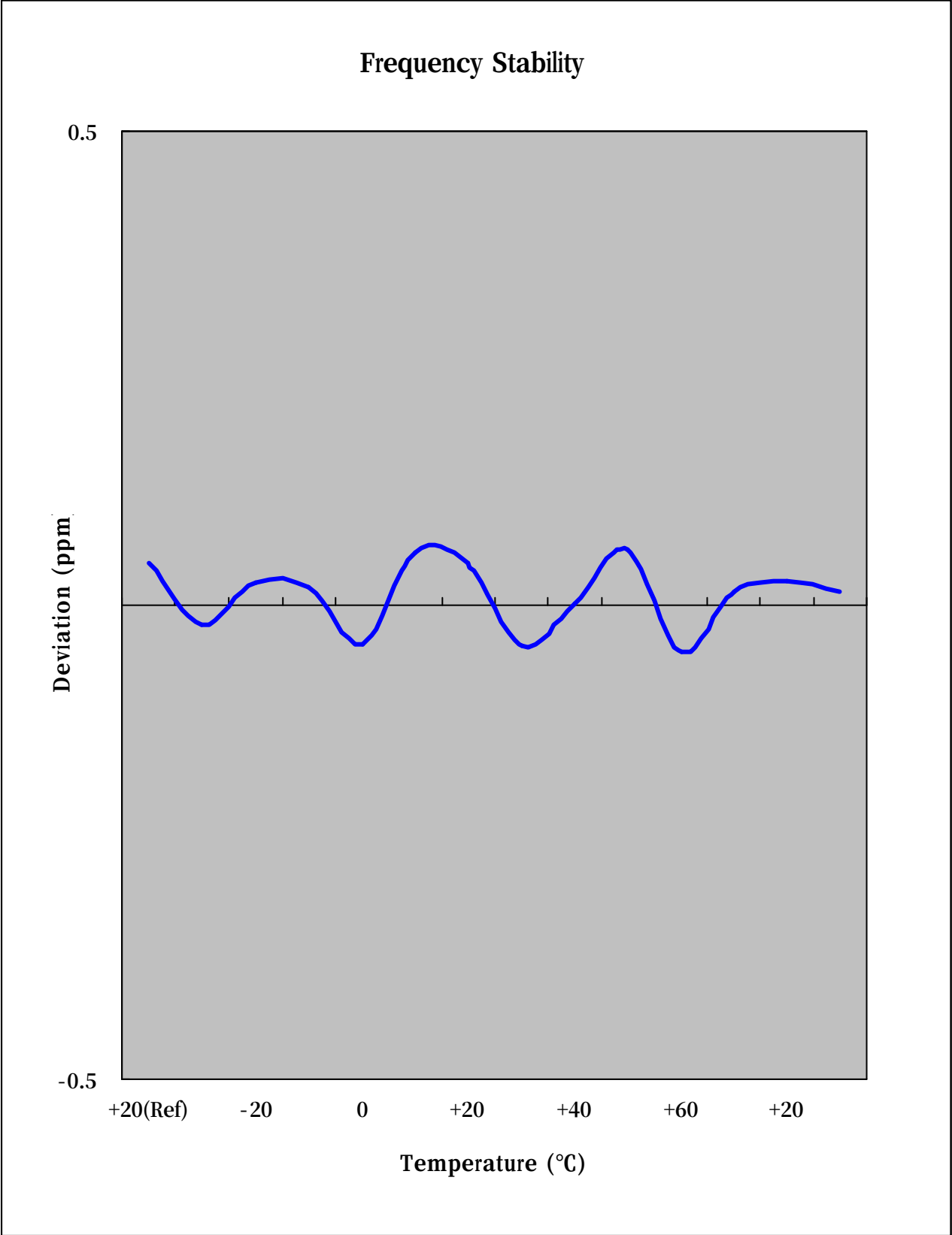
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.2. 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

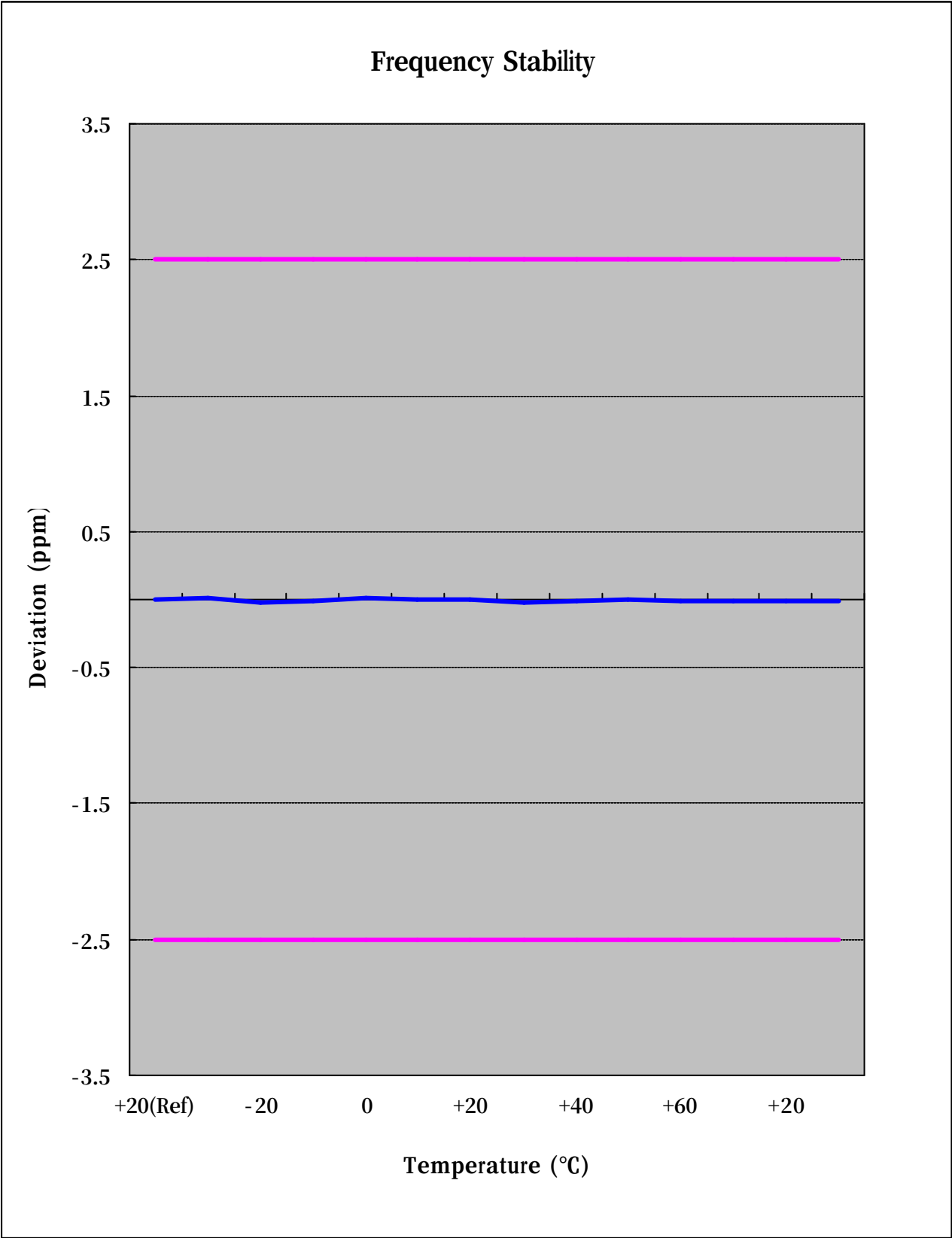
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	5.70	1,880,000,006	0.000000	0.003
100%		-30	43.10	1,880,000,043	0.000002	0.023
100%		-20	-34.40	1,879,999,966	-0.000002	-0.018
100%		-10	-18.80	1,879,999,981	-0.000001	-0.010
100%		0	34.80	1,880,000,035	0.000002	0.019
100%		+10	10.20	1,880,000,010	0.000001	0.005
100%		+20	5.70	1,880,000,006	0.000000	0.003
100%		+30	-45.60	1,879,999,954	-0.000002	-0.024
100%		+40	-21.30	1,879,999,979	-0.000001	-0.011
100%		+50	12.80	1,880,000,013	0.000001	0.007
100%		+60	-22.80	1,879,999,977	-0.000001	-0.012
85%	3.35	+20	-12.20	1,879,999,988	-0.000001	-0.006
115%	4.26	+20	-14.50	1,879,999,986	-0.000001	-0.008
Batt.Endpoint	3.35	+20	-12.20	1,879,999,988	-0.000001	-0.006

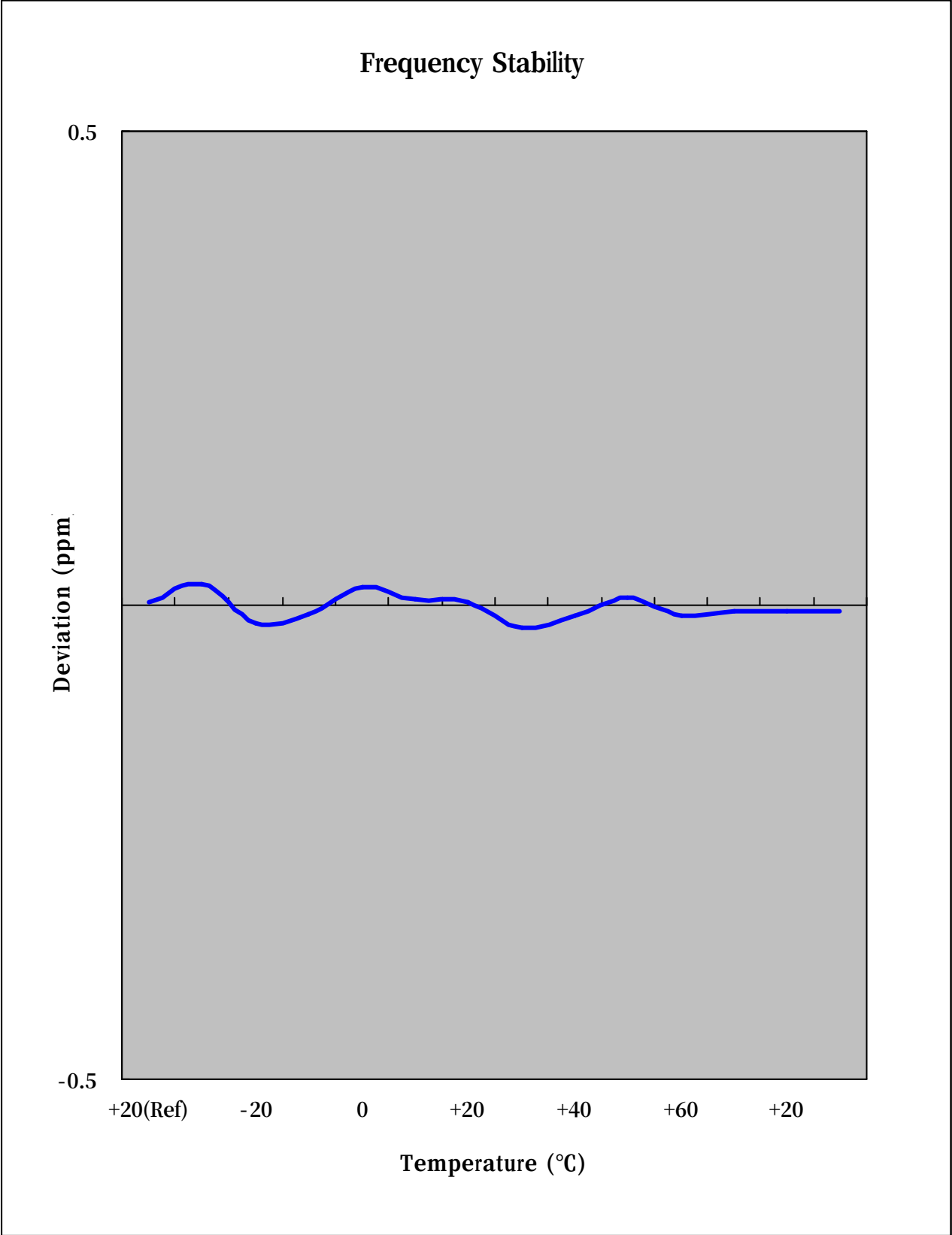
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.8.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

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

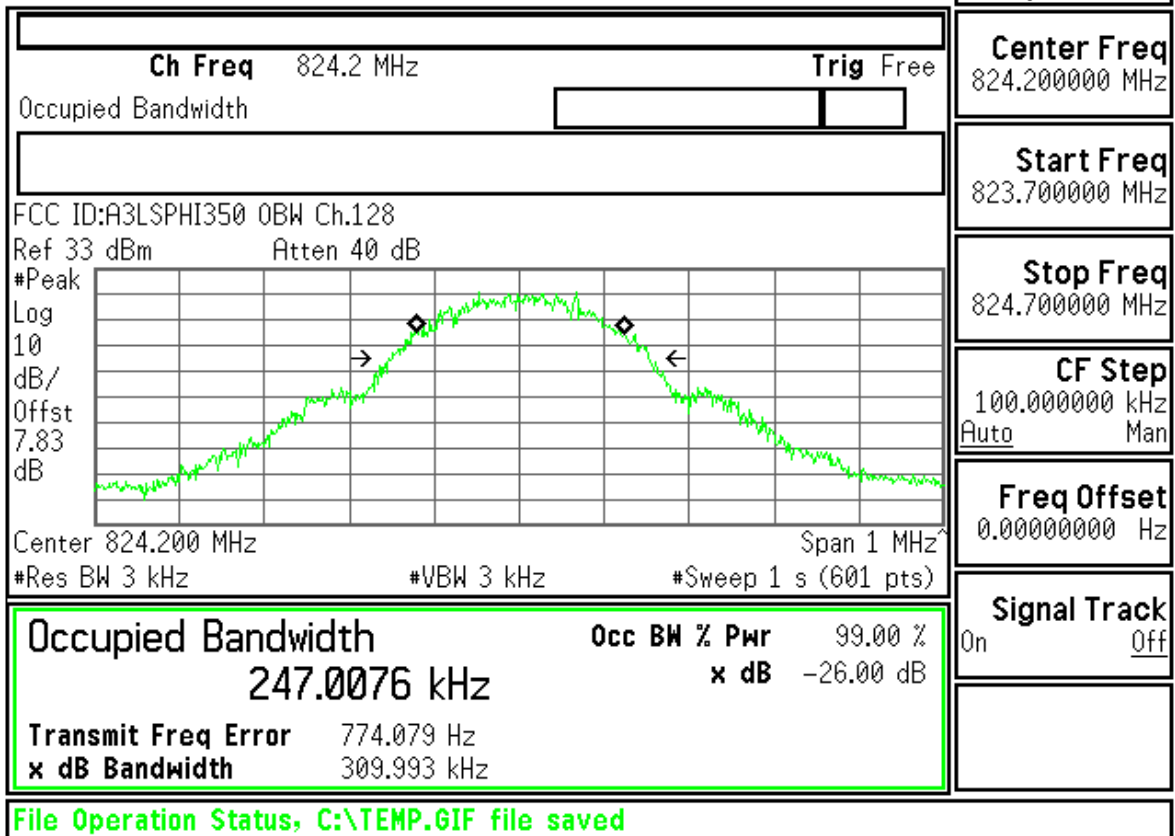
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8. TEST PLOTS

GSM850

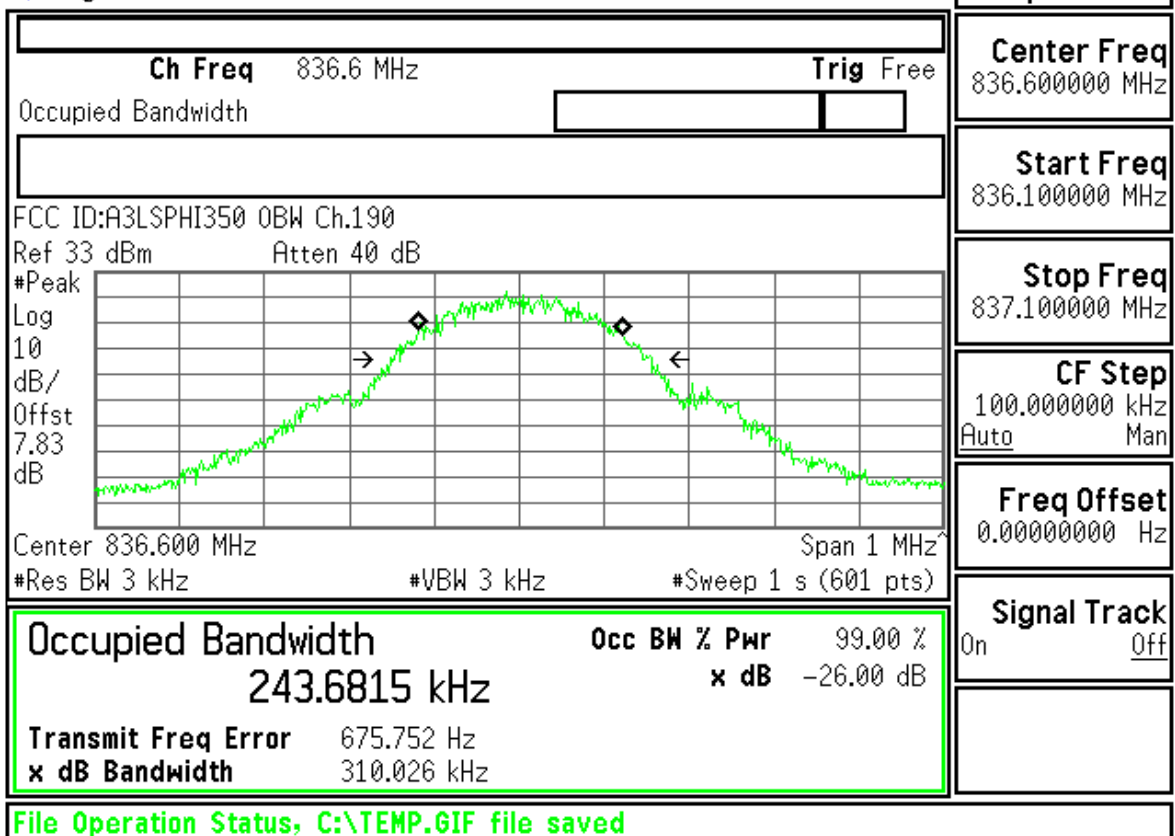
Agilent

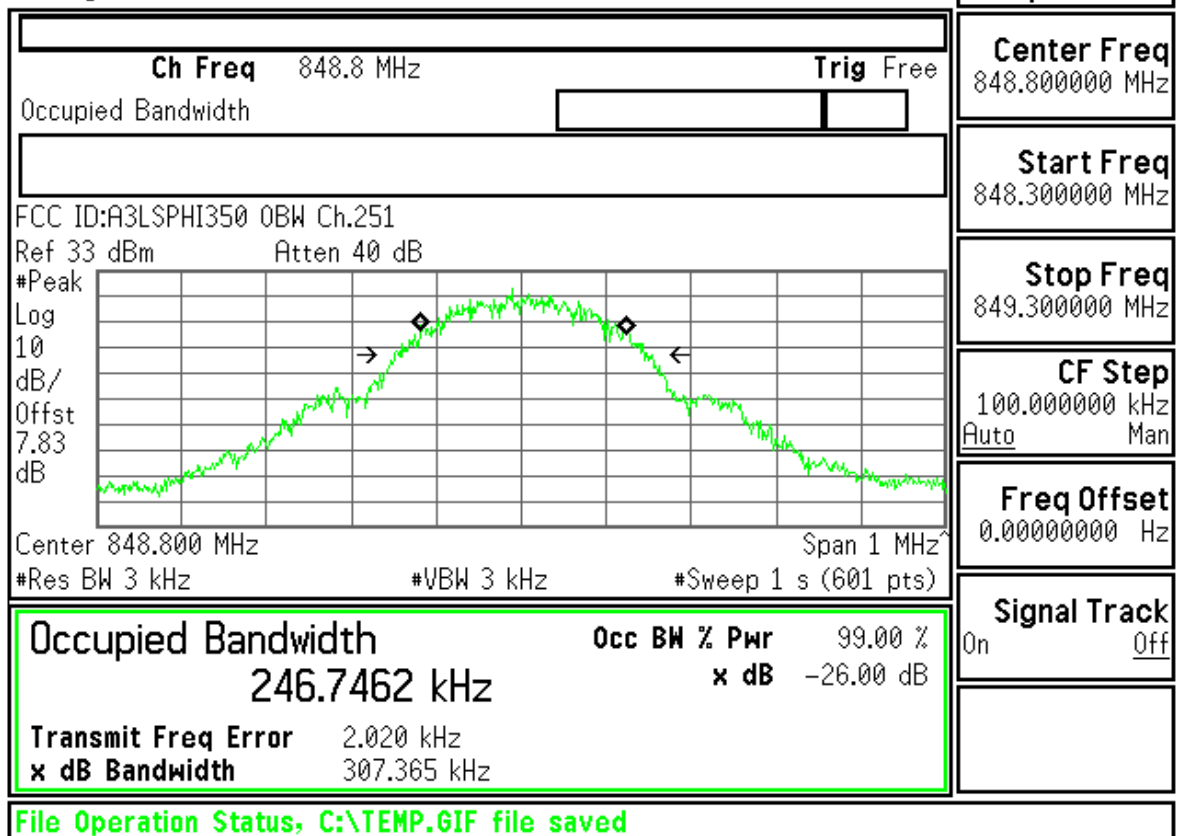
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Agilent

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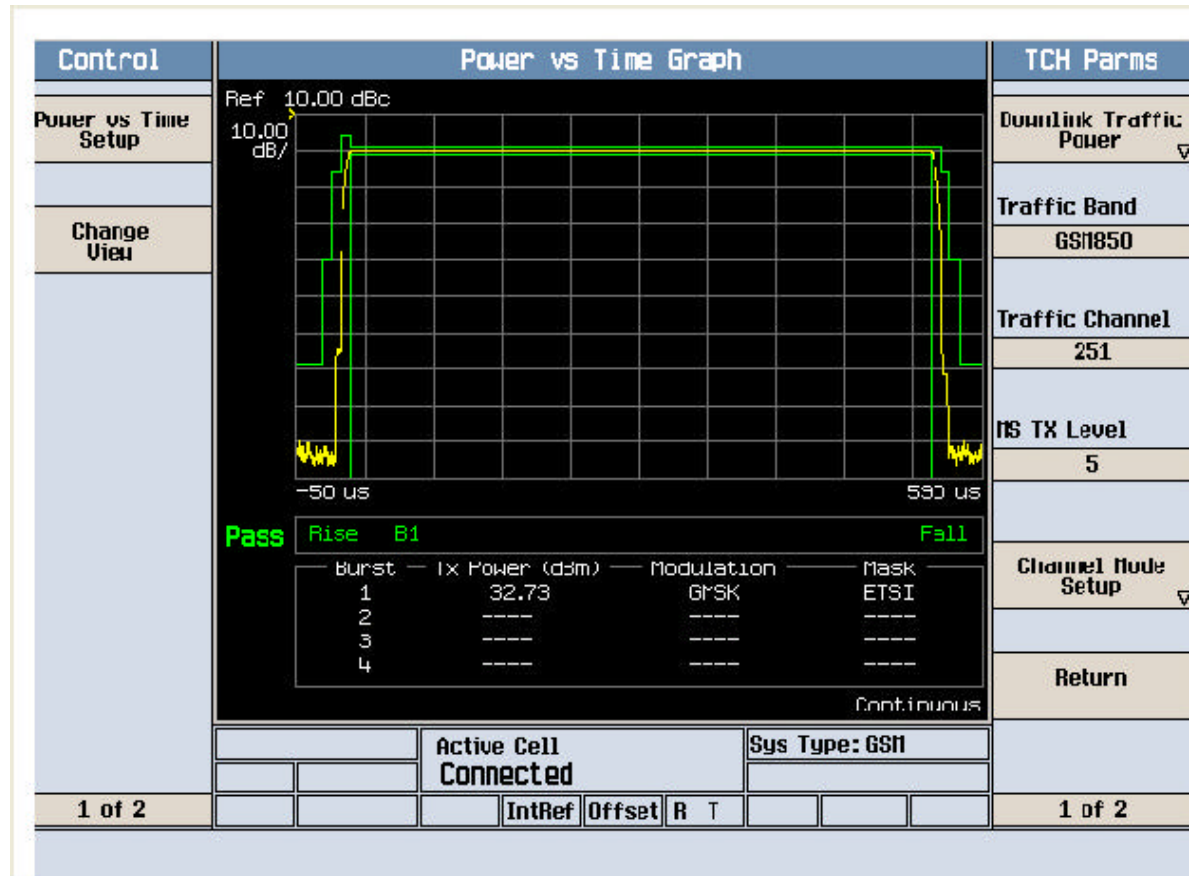
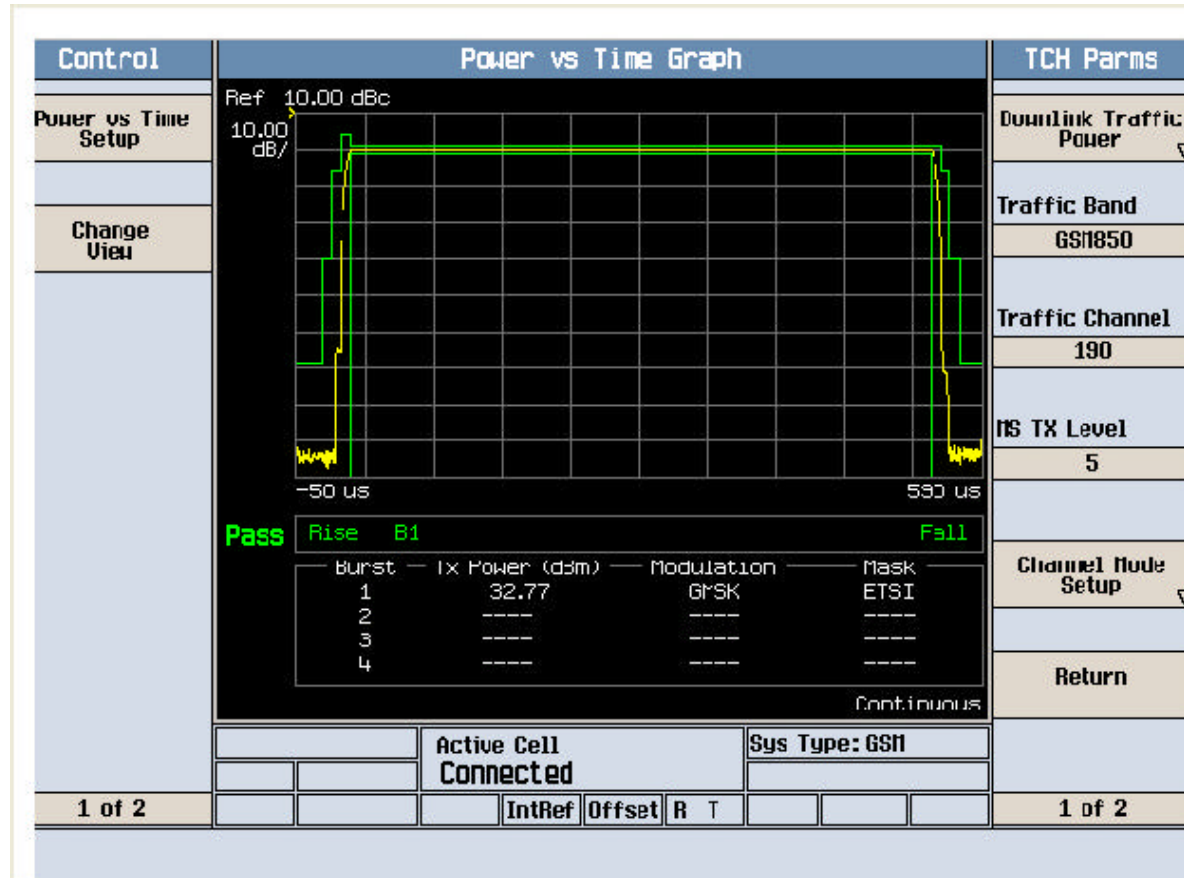
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Start Freq 848.300000 MHz
Stop Freq 849.300000 MHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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> </tr> </thead> <tbody> <tr> <td>Burst Power</td> <td>32.85</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>Estimated Carrier Power</td> <td>32.85</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>											Burst 1	Burst 2	Burst 3	Burst 4	Burst Power	32.85	----	----	----	Estimated Carrier Power	32.85	----	----	----	Downlink Traffic Power ▾										
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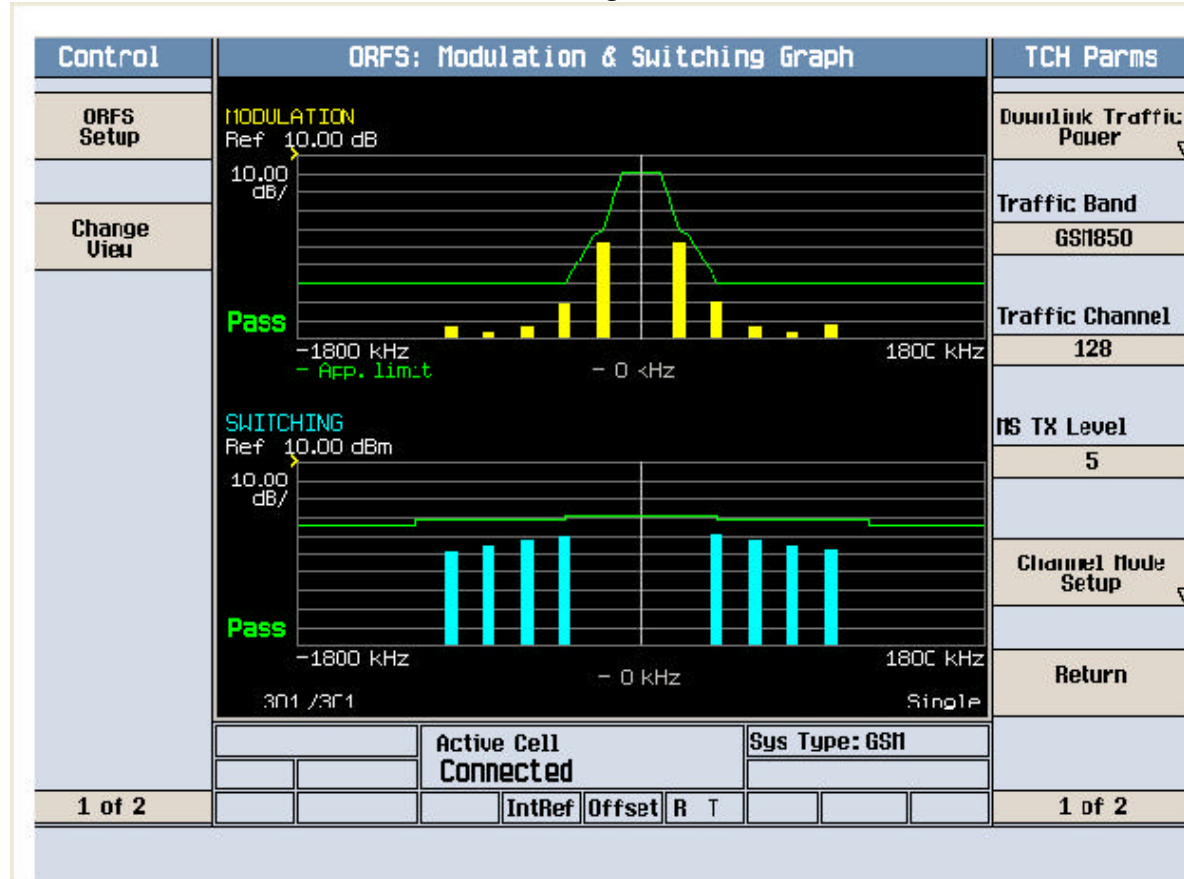
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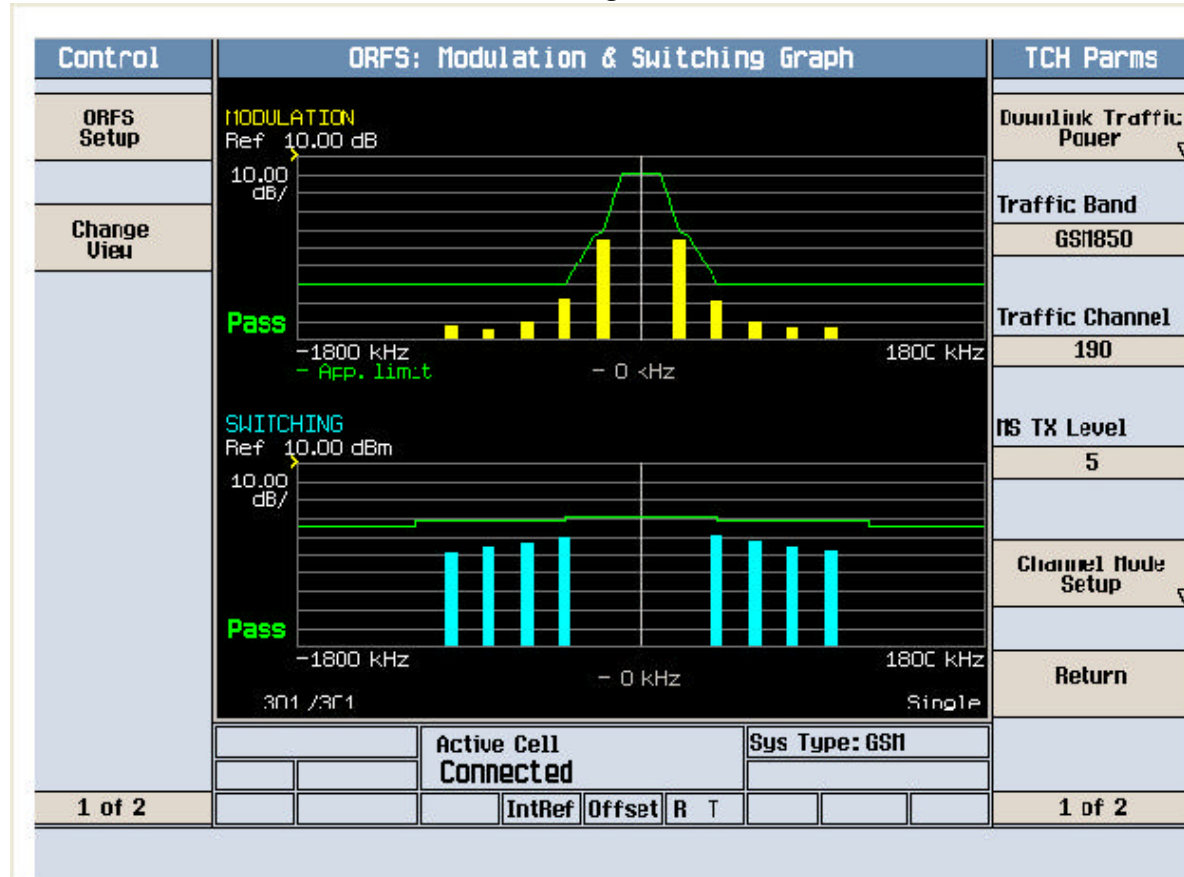
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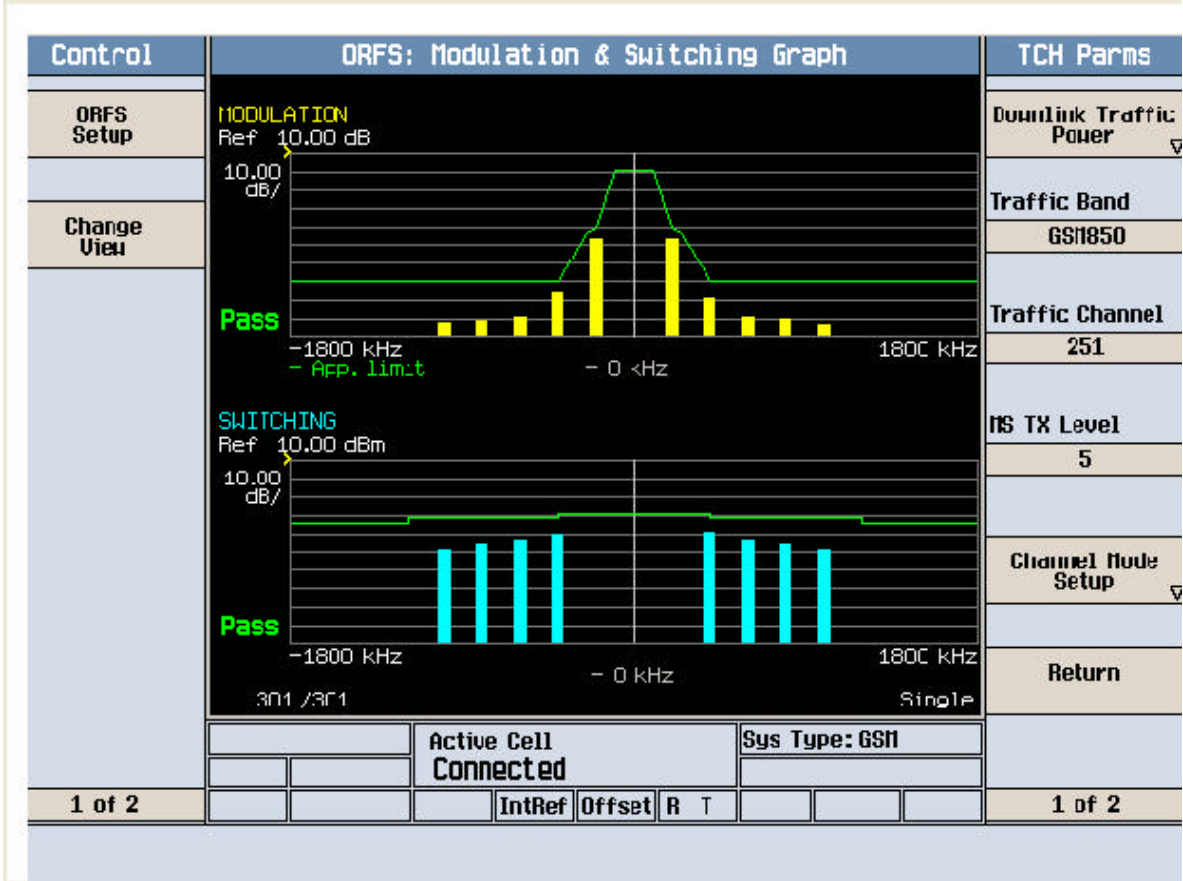


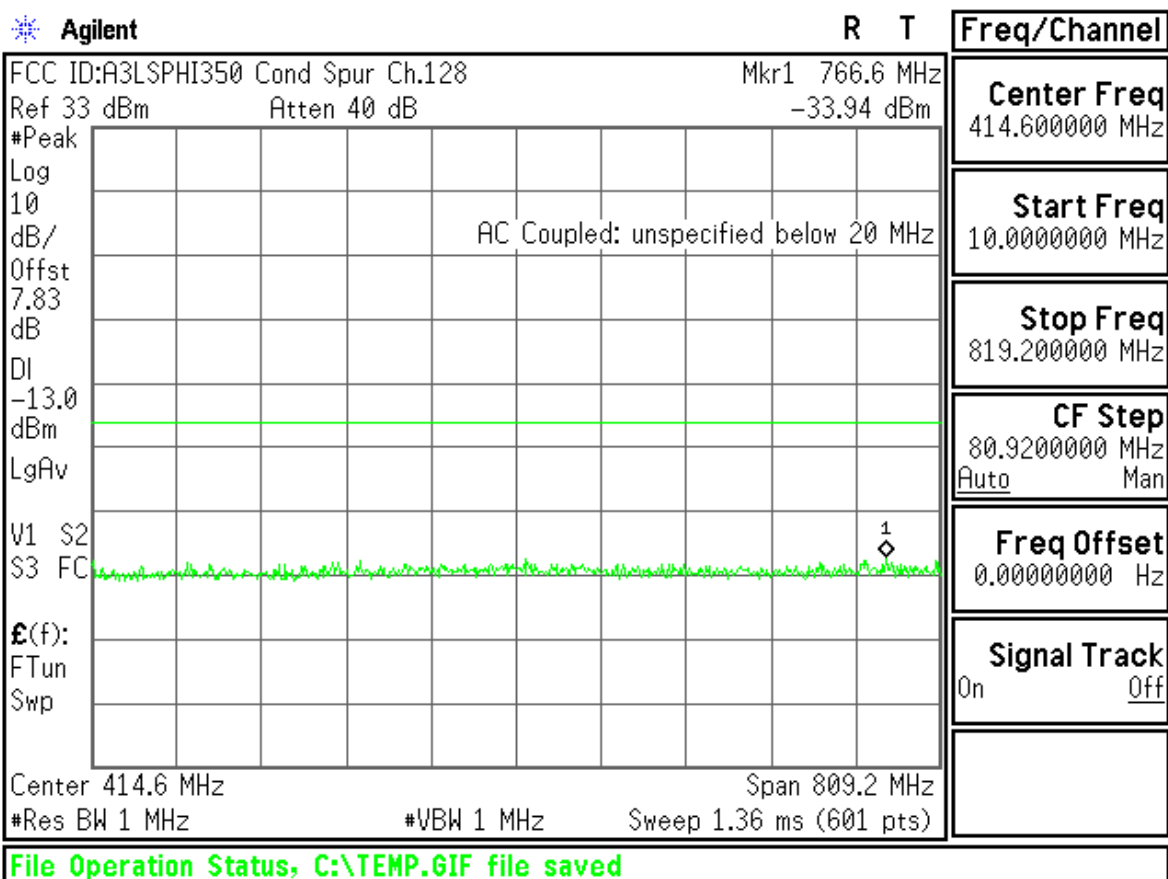
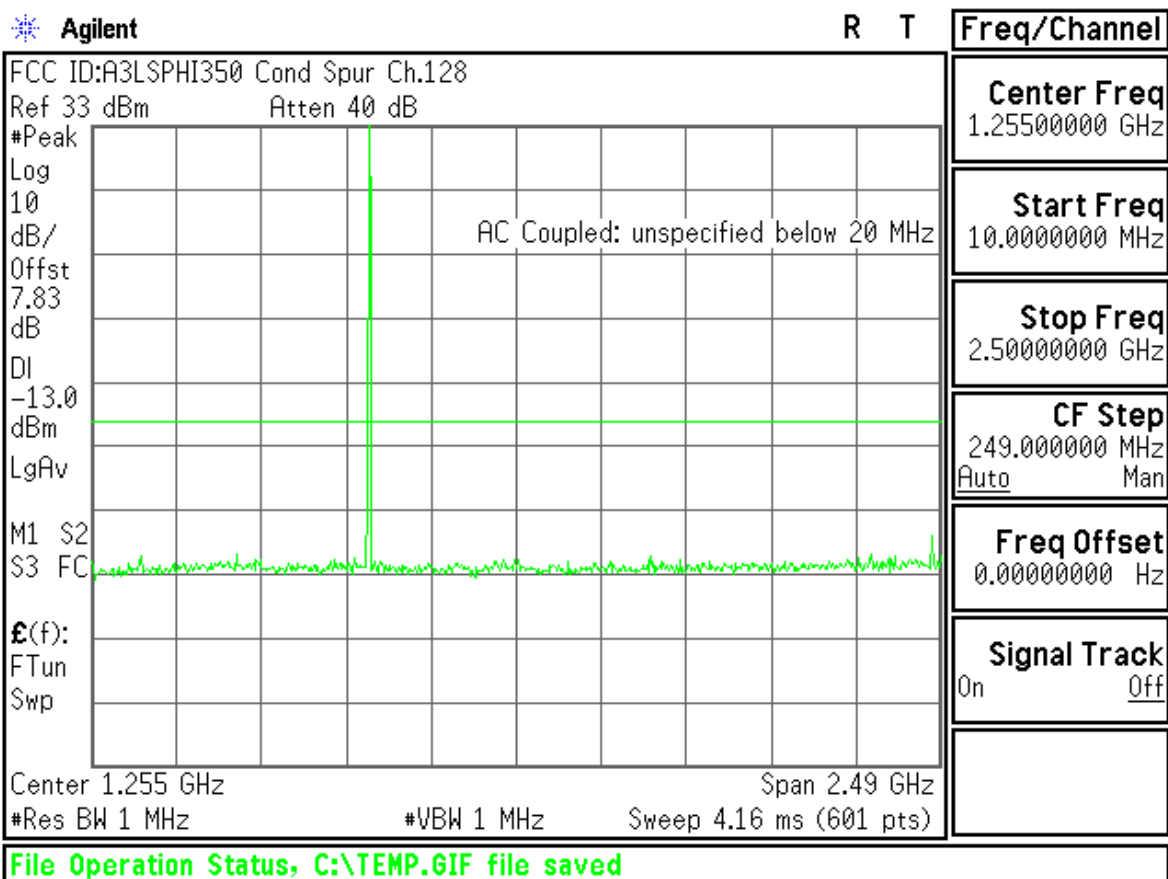
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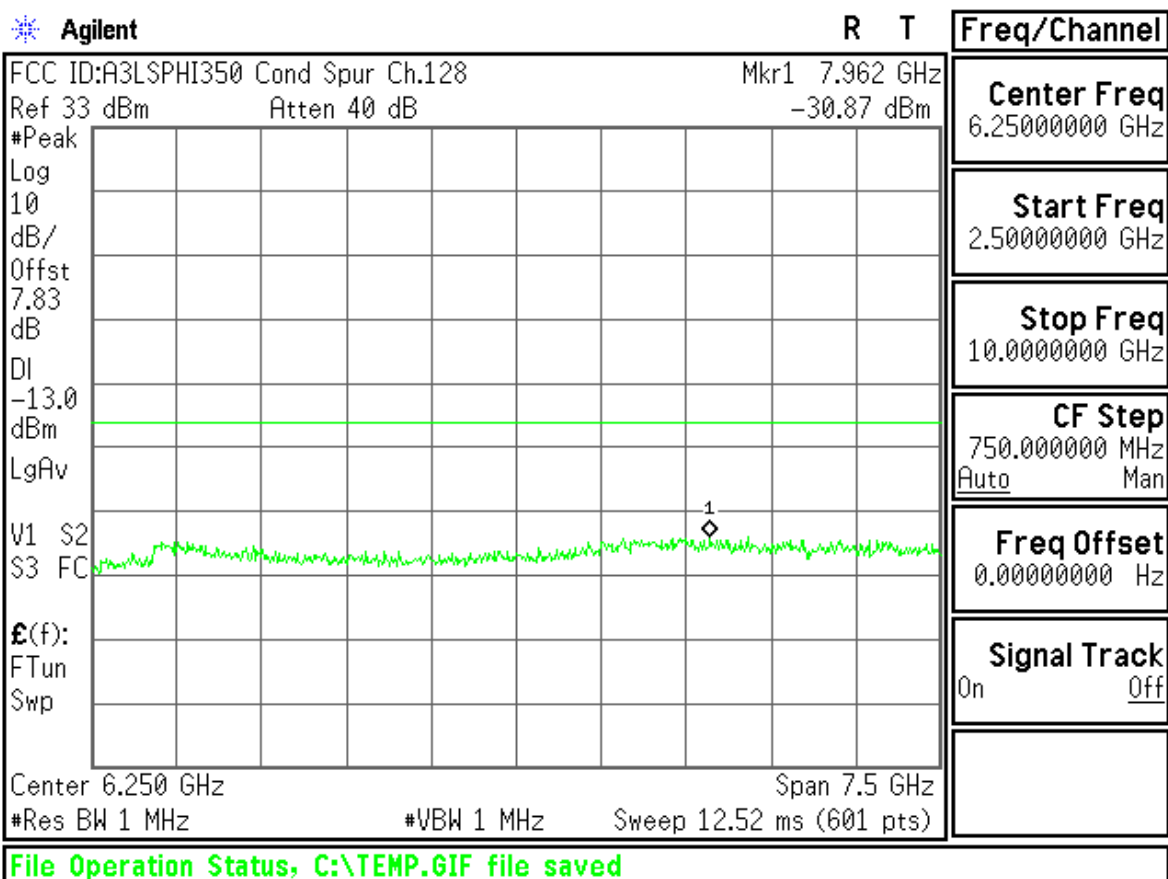
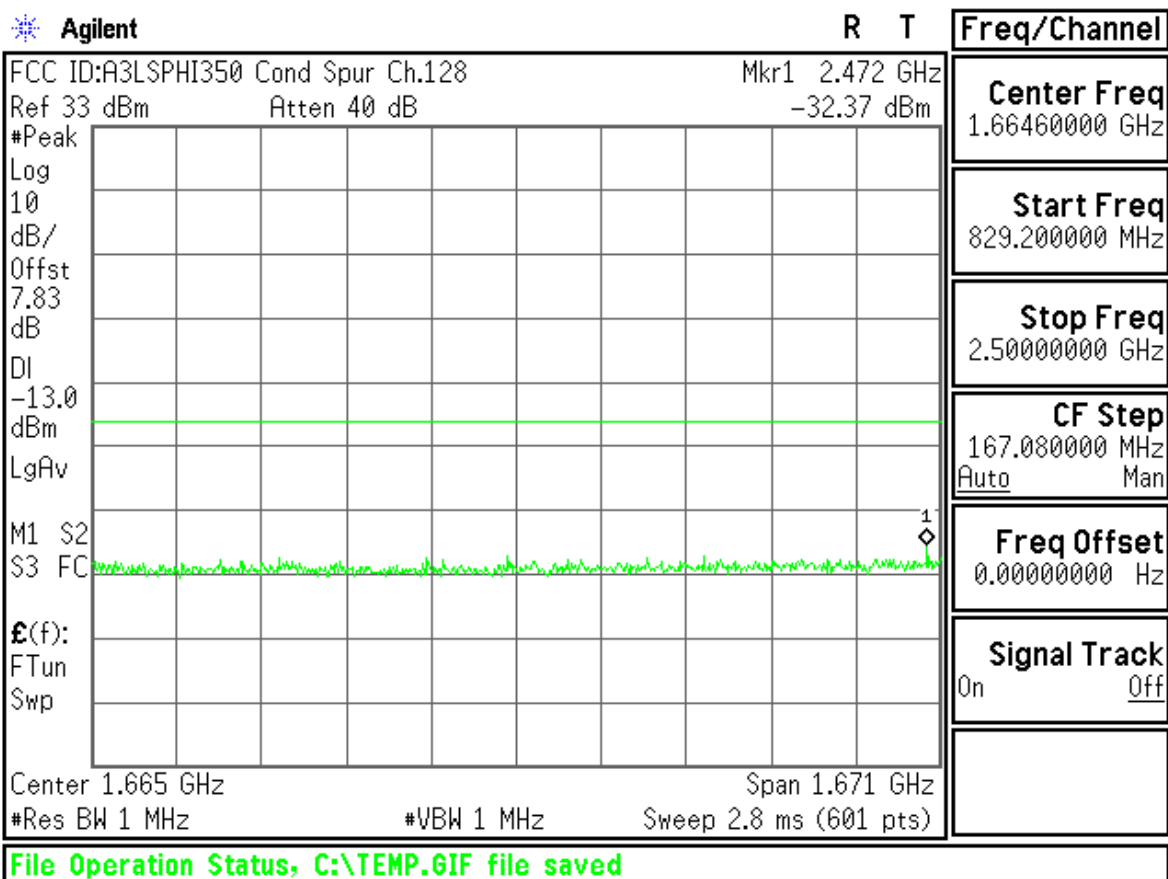


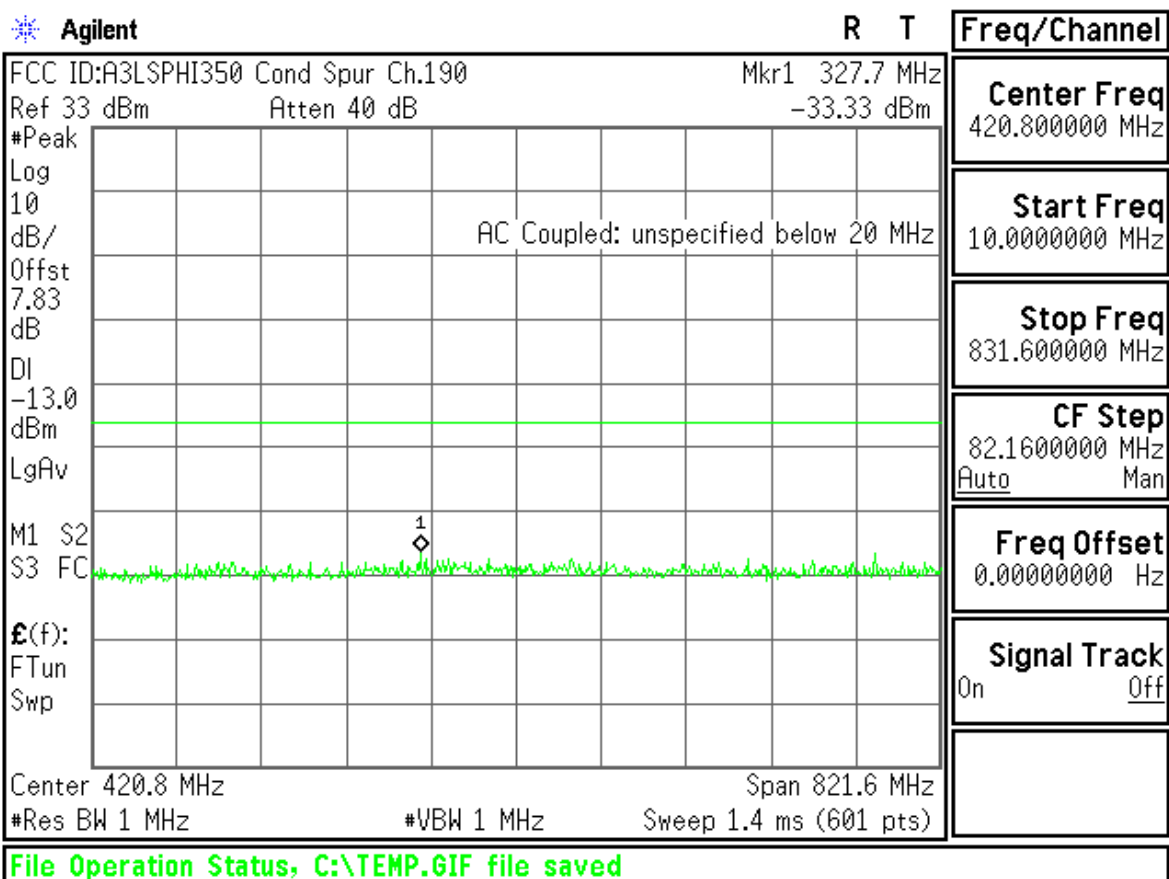
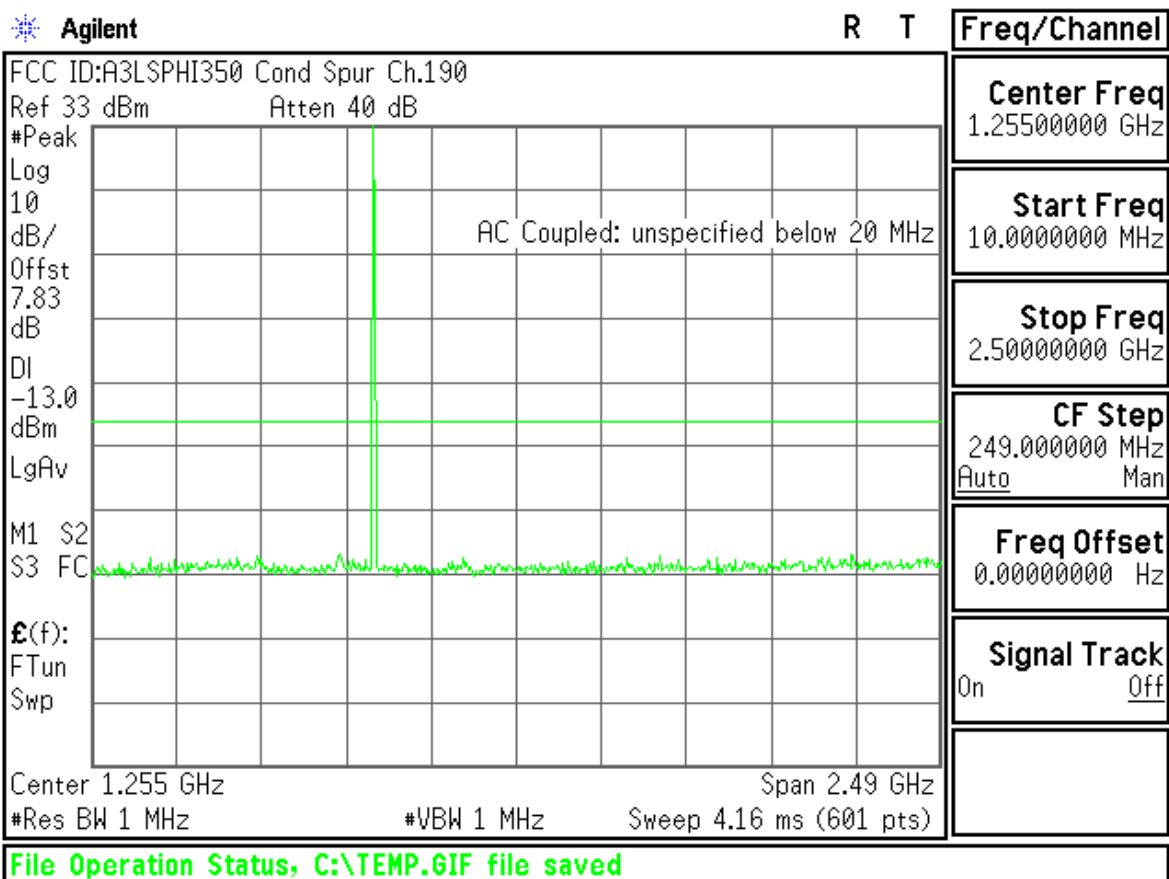
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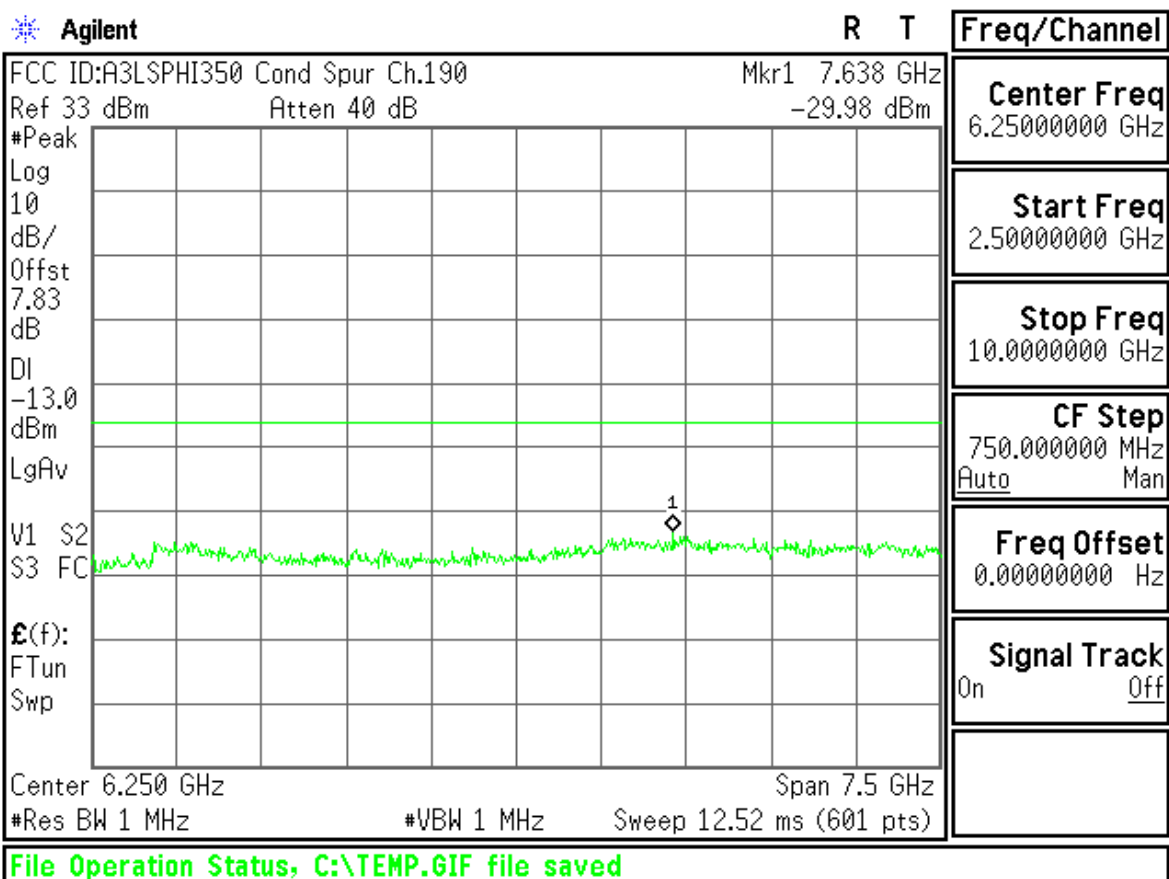
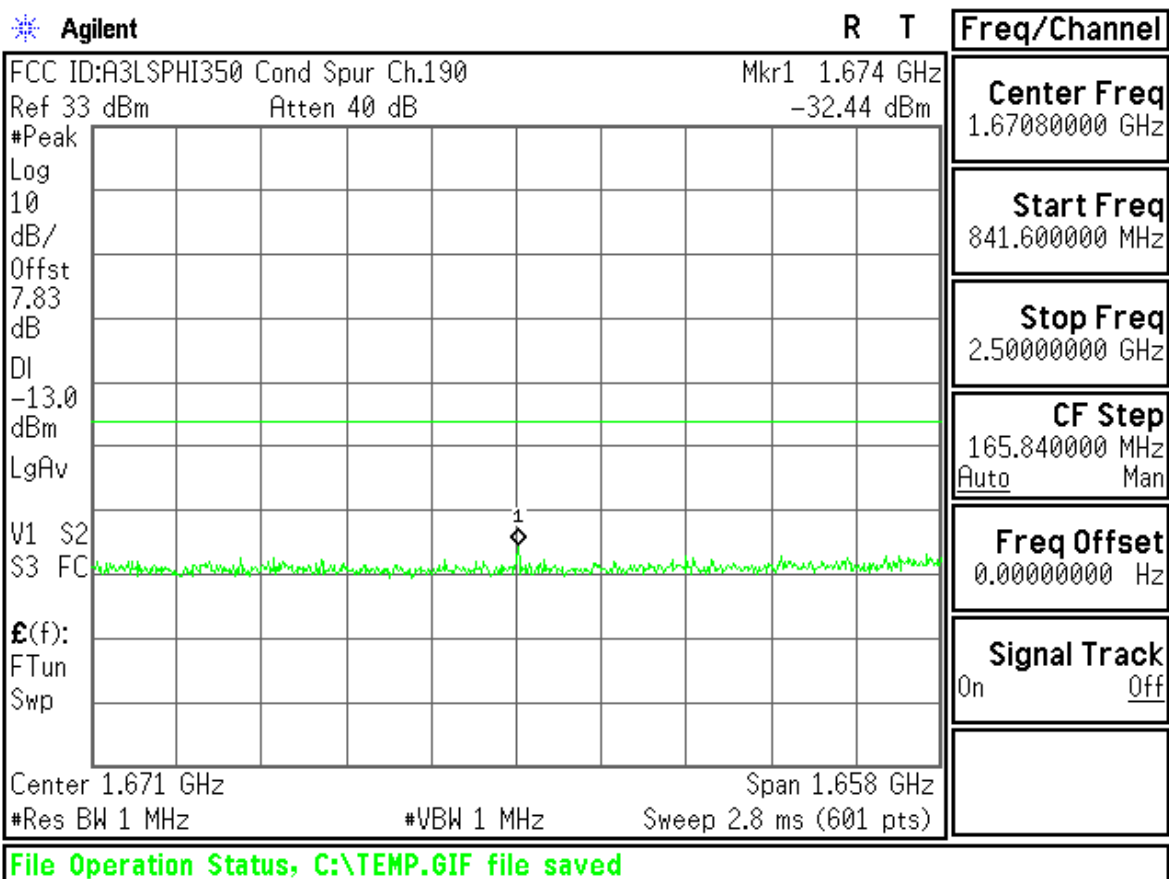


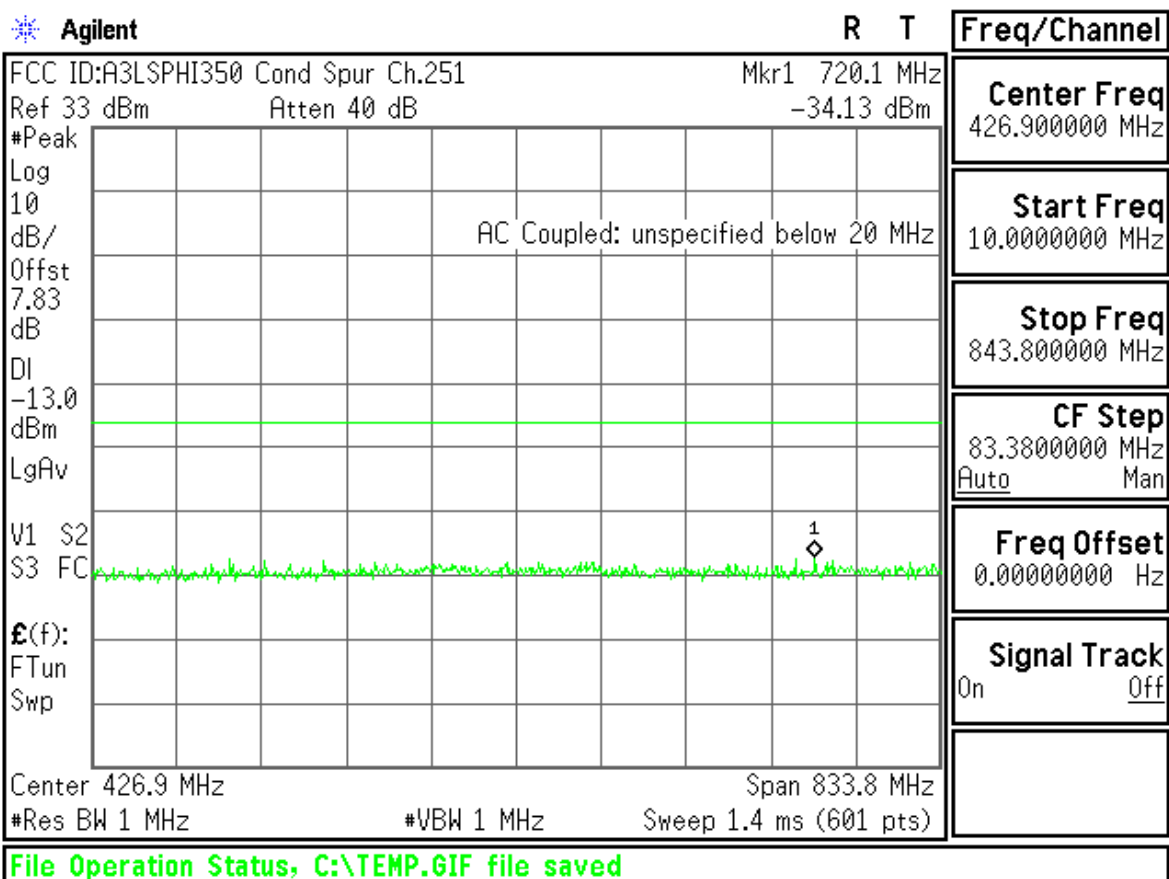
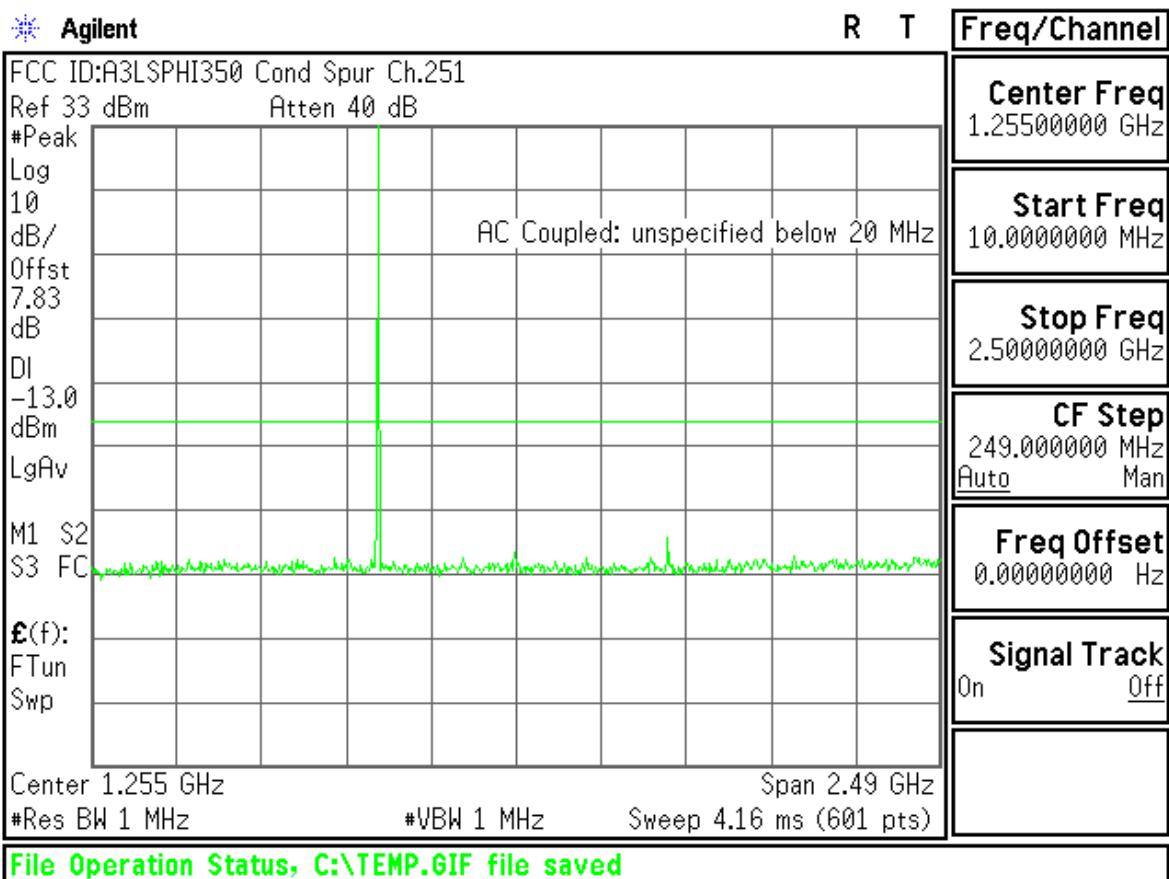


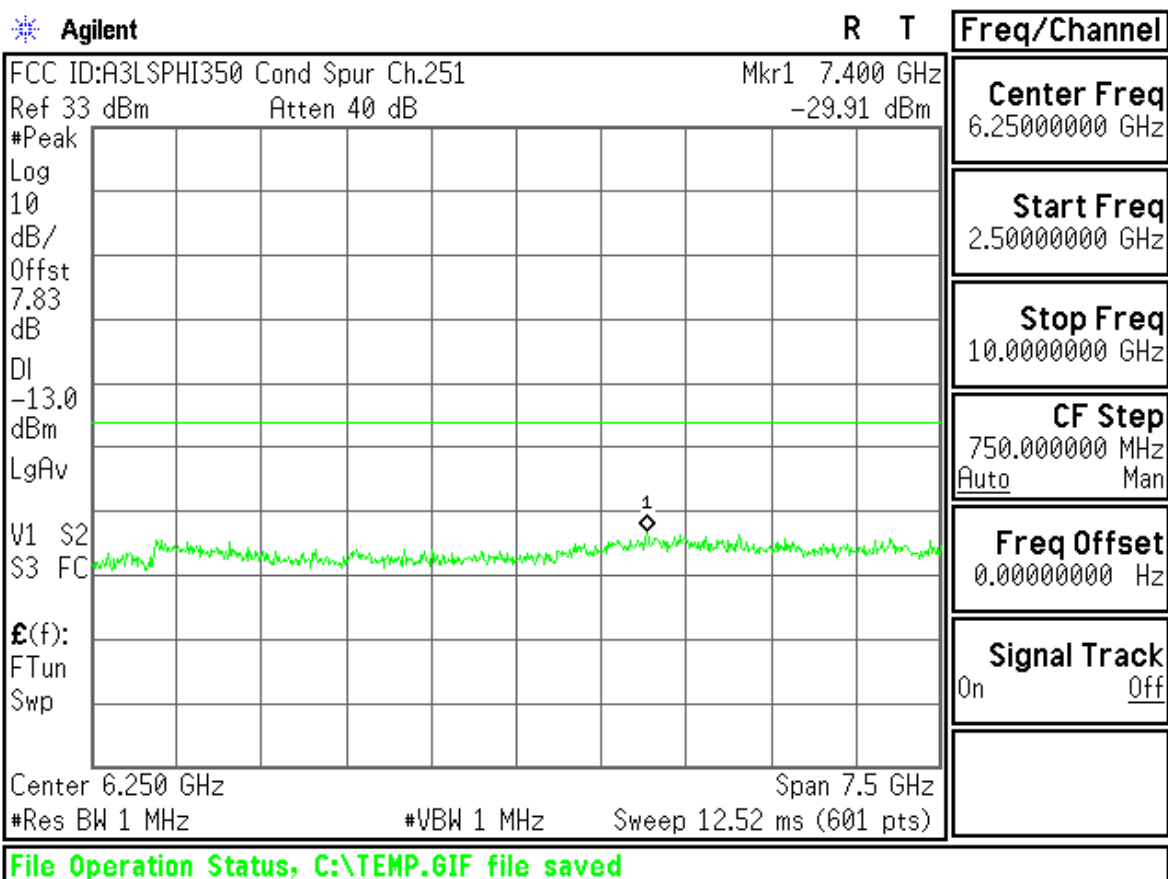
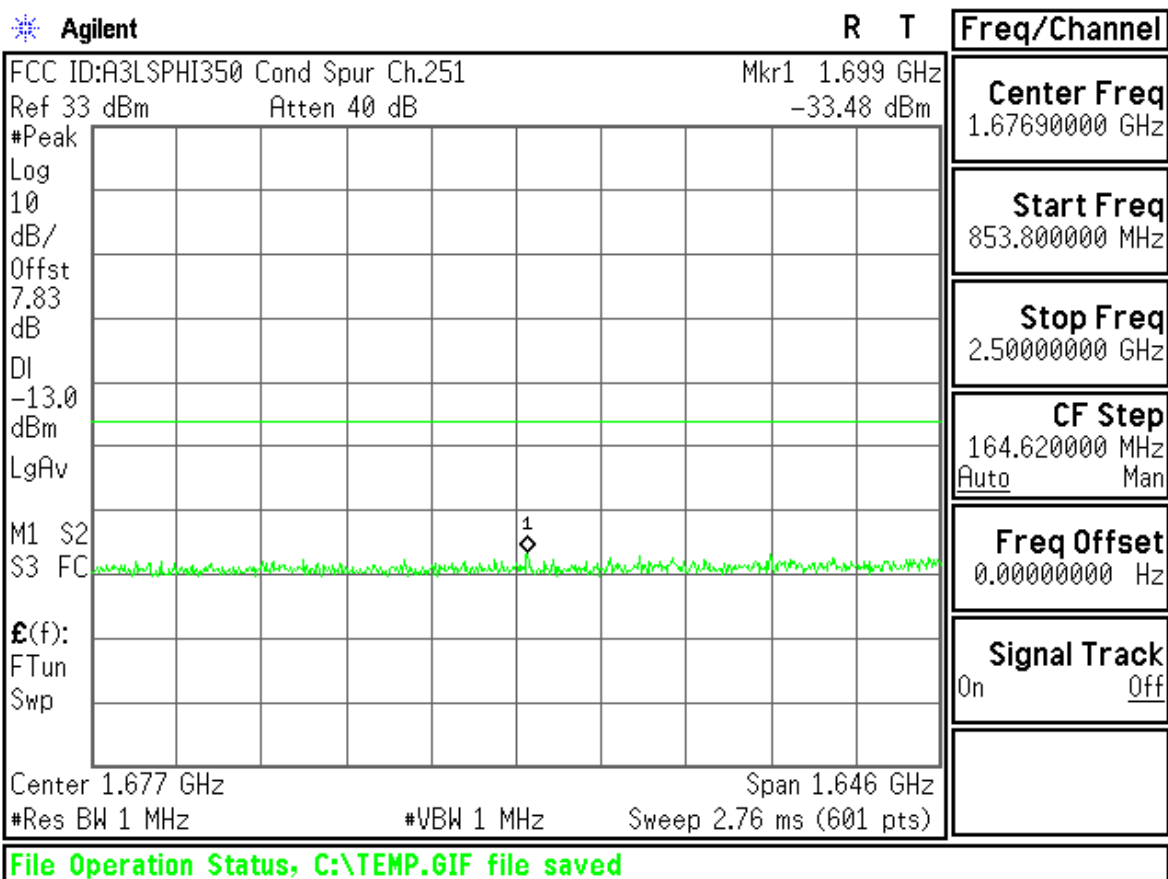


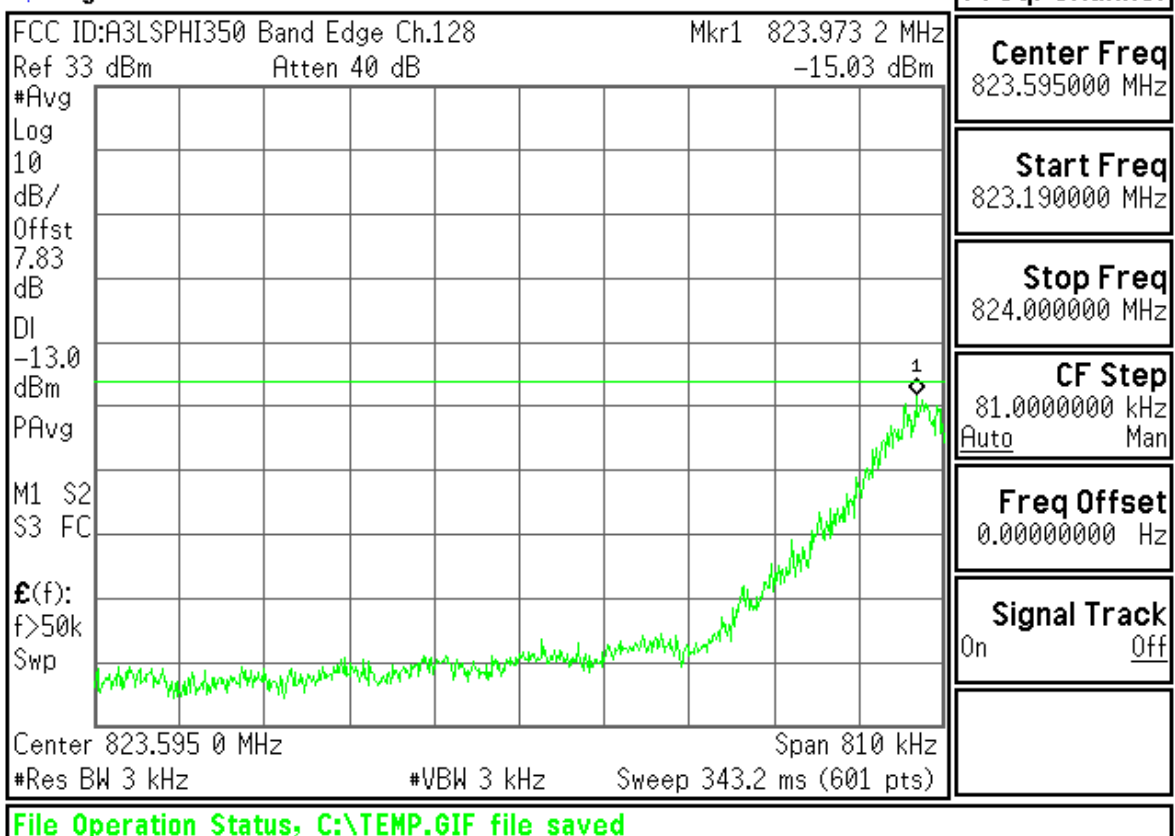
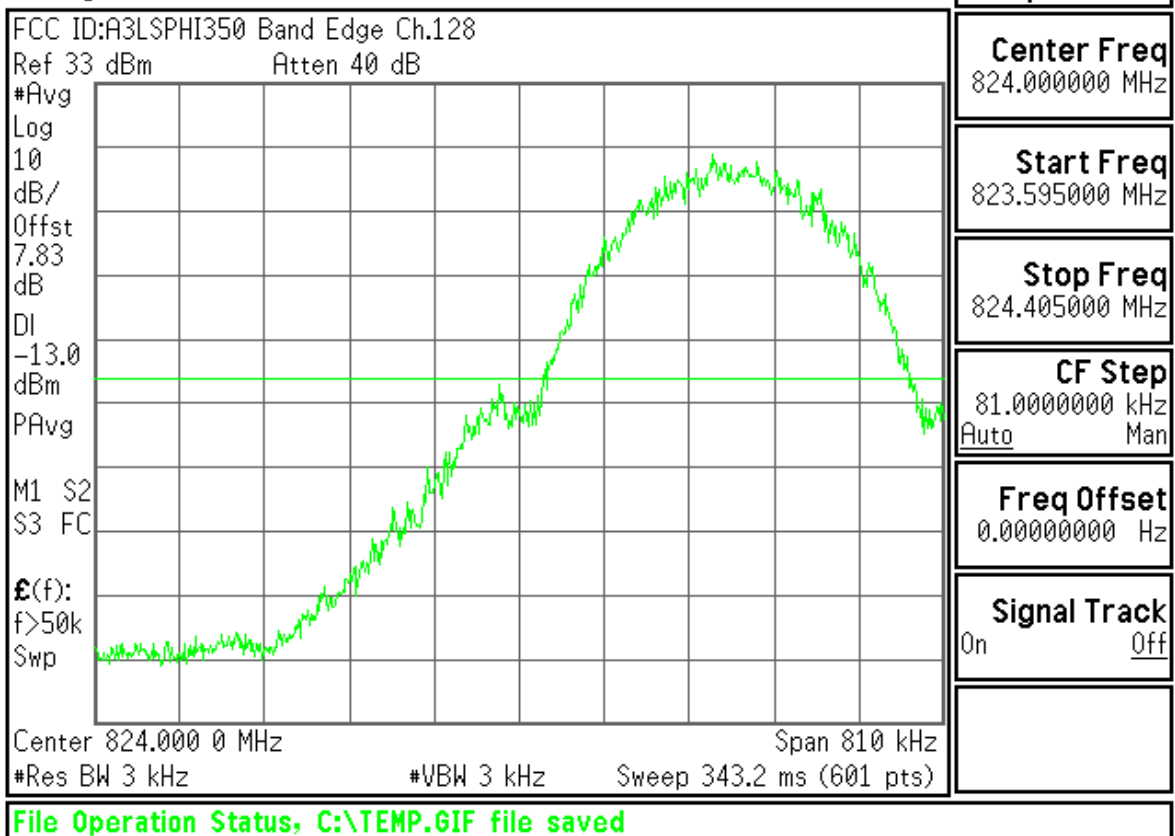












FCC ID:A3LSPHI350 Band Edge Ch.251

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

7.83

dB

DI

-13.0

dBm

PAvg

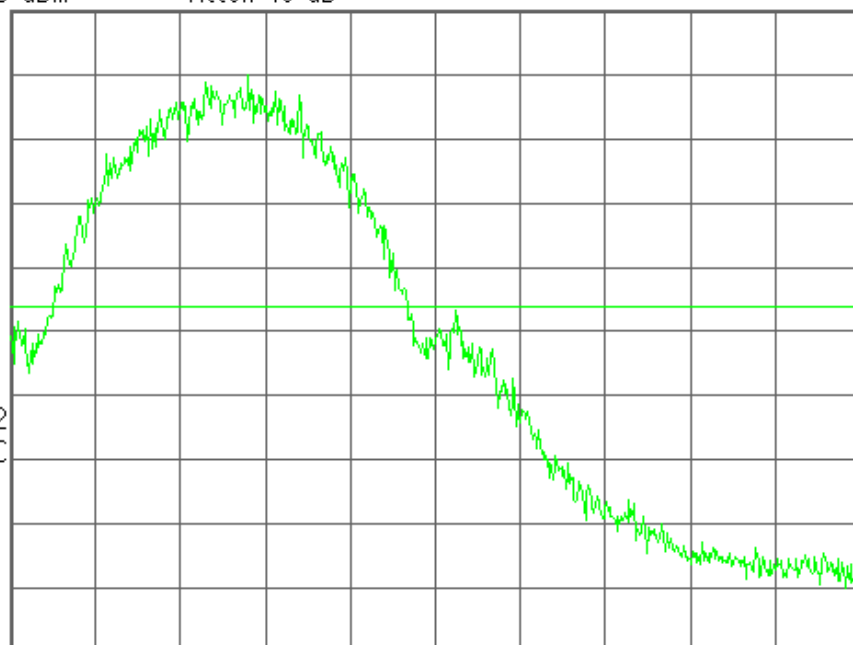
M1 S2

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

FCC ID:A3LSPHI350 Band Edge Ch.251

Mkr1 849.009 4 MHz

Ref 33 dBm

Atten 40 dB

-15.53 dBm

#Avg

Log

10

dB/

Offst

7.83

dB

DI

-13.0

dBm

PAvg

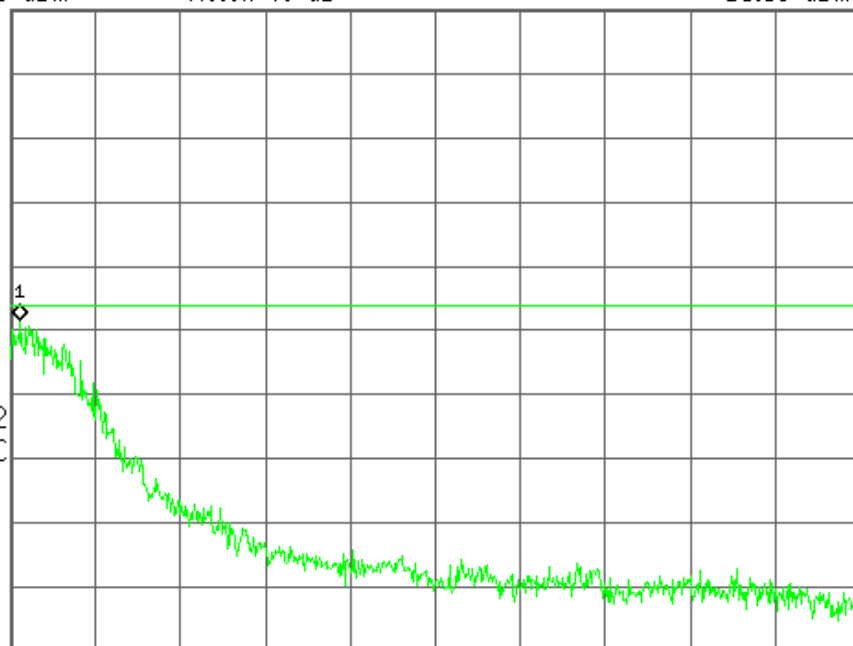
M1 S2

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

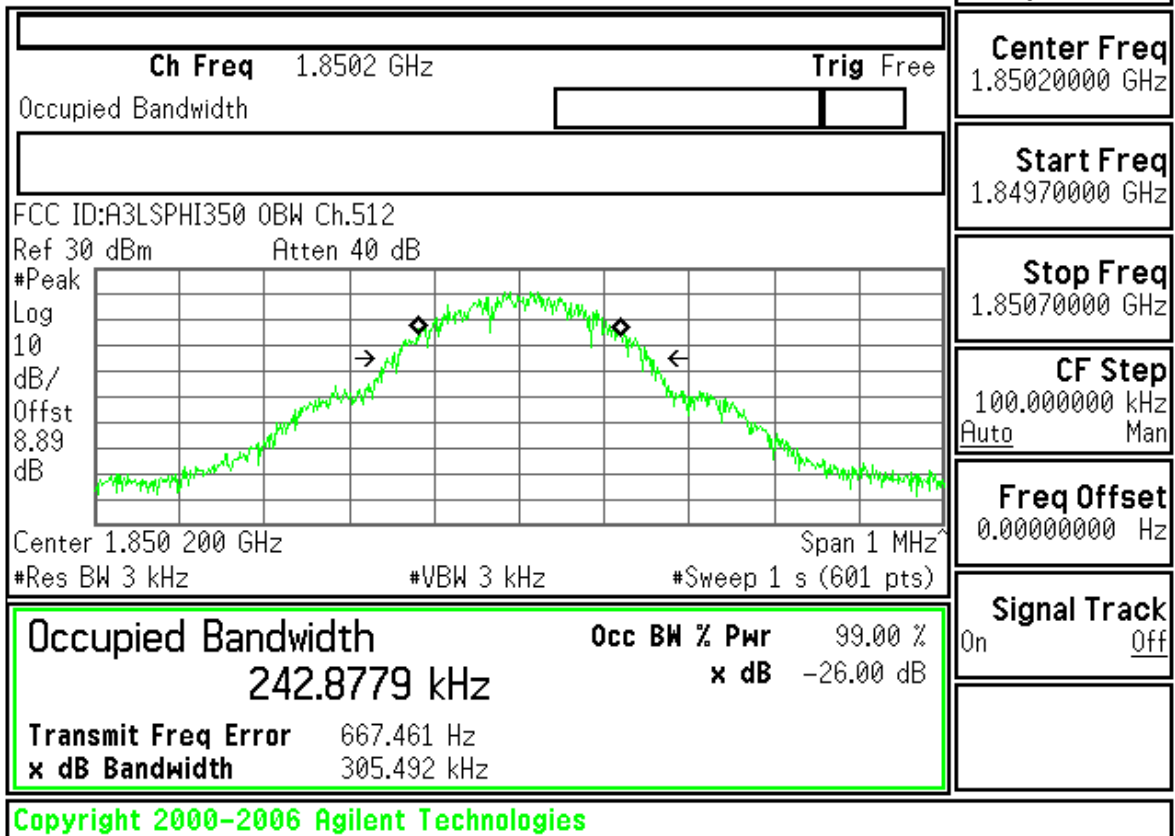
Signal Track
On Off

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

GSM1900

Agilent

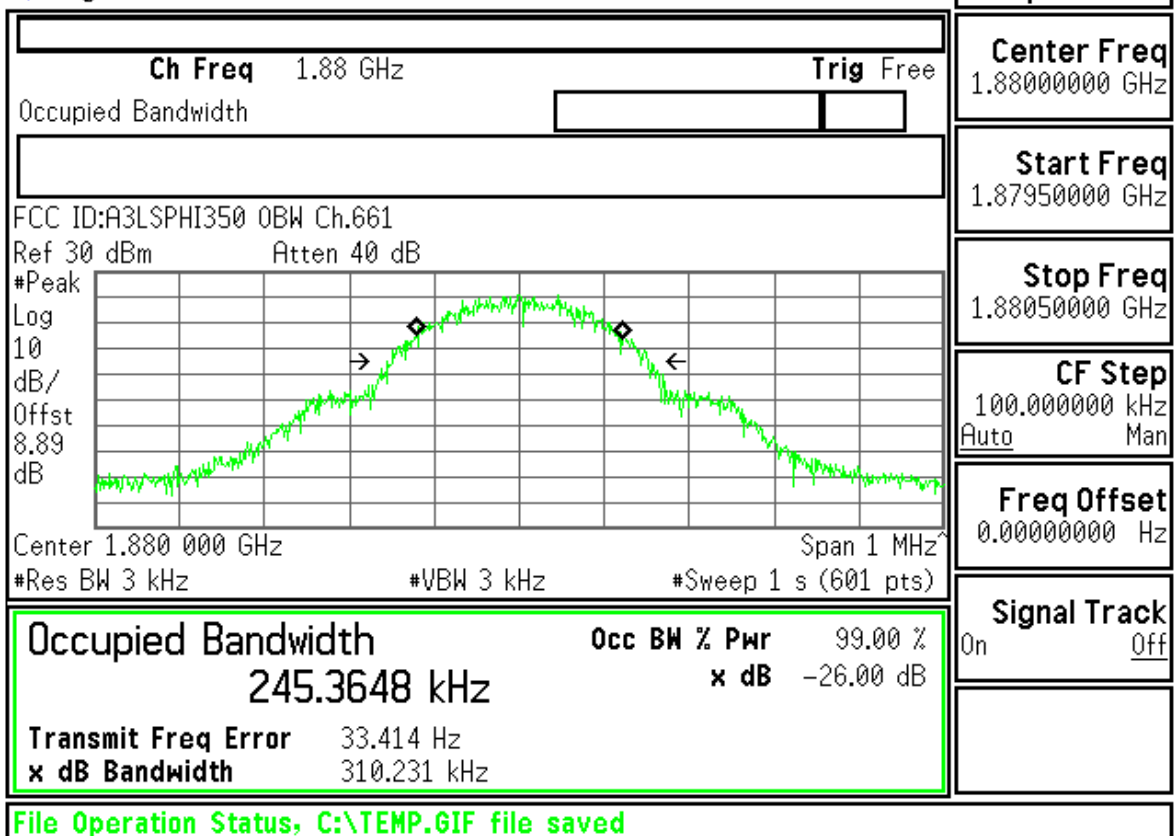
R T



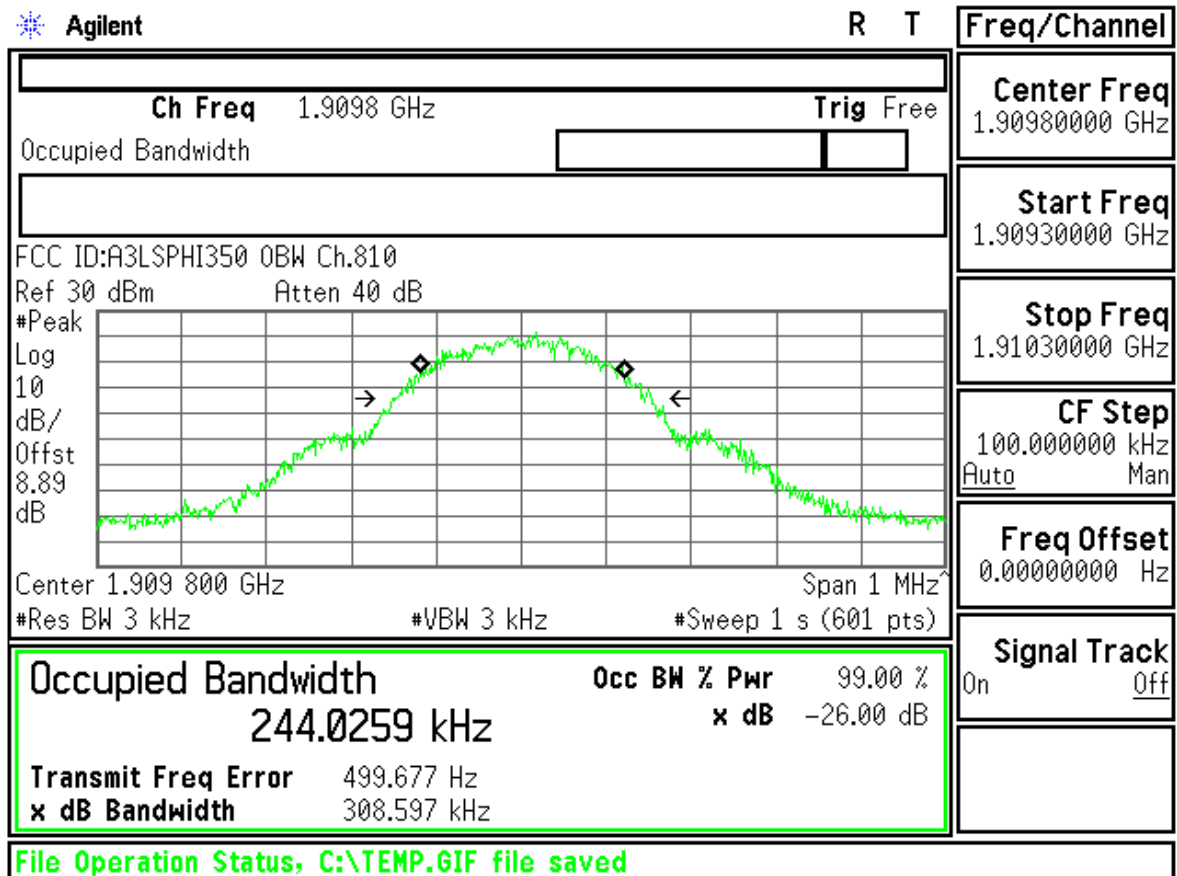
Freq/Channel
Center Freq 1.85020000 GHz
Start Freq 1.84970000 GHz
Stop Freq 1.85070000 GHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Agilent

R T



Freq/Channel
Center Freq 1.88000000 GHz
Start Freq 1.87950000 GHz
Stop Freq 1.88050000 GHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off



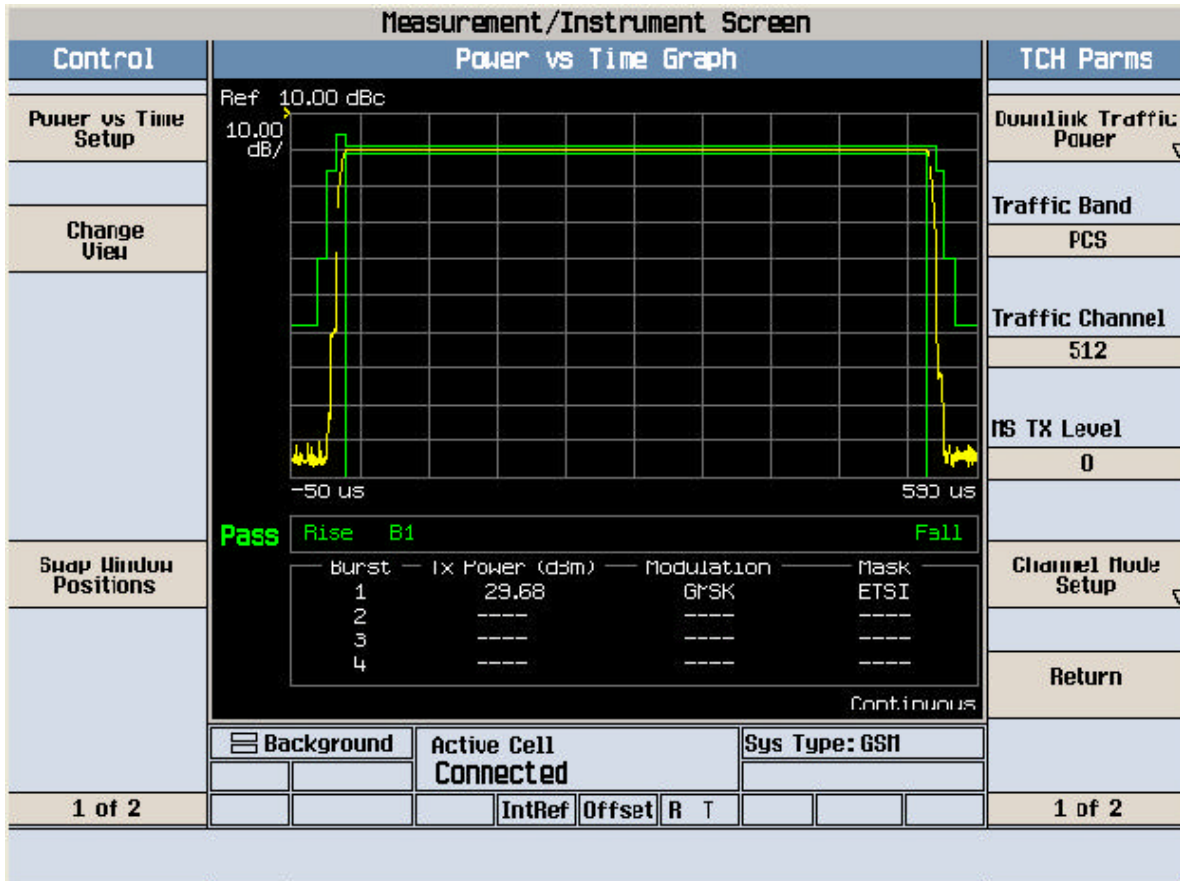
FCC ID : A3LSPHI350 Transmit Power 512CH

Measurement/Instrument Screen																																
Control		Transmit Power								TCH Parms																						
Transmit Power Setup ▾		<table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td></tr><tr><td>Burst Power</td><td>29.67</td><td>----</td><td>----</td><td>----</td></tr><tr><td>Estimated Carrier Power</td><td>29.67</td><td>----</td><td>----</td><td>----</td></tr></table>									Burst 1	Burst 2	Burst 3	Burst 4	Burst Power	29.67	----	----	----	Estimated Carrier Power	29.67	----	----	----	Downlink Traffic Power ▾							
											Burst 1	Burst 2	Burst 3	Burst 4																		
										Burst Power	29.67	----	----	----																		
		Estimated Carrier Power	29.67	----	----	----																										
		Traffic Band																														
PCS																																
Single								Traffic Channel																								
								512																								
Setup Window Positions		Phase & Frequency Error								MS TX Level																						
		<table><tr><td></td><td>Peak Phase °</td><td>RMS Phase °</td><td>Frequency Hz</td></tr><tr><td>Minimum</td><td>2.94</td><td>1.12</td><td>-55.34</td></tr><tr><td>Maximum</td><td>5.82</td><td>1.71</td><td>-29.86</td></tr><tr><td>Average</td><td>4.07</td><td>1.42</td><td>-41.38</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td>Pass</td><td>Pass</td></tr></table>									Peak Phase °	RMS Phase °	Frequency Hz	Minimum	2.94	1.12	-55.34	Maximum	5.82	1.71	-29.86	Average	4.07	1.42	-41.38	Pass/Fail	Pass	Pass	Pass	Channel Mode Setup ▾		
											Peak Phase °	RMS Phase °	Frequency Hz																			
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Pass/Fail	Pass	Pass	Pass																													
Return																																
1 of 2		Background		Active Cell Connected				Sys Type: GSM			1 of 2																					
				IntRef Offset R T																												

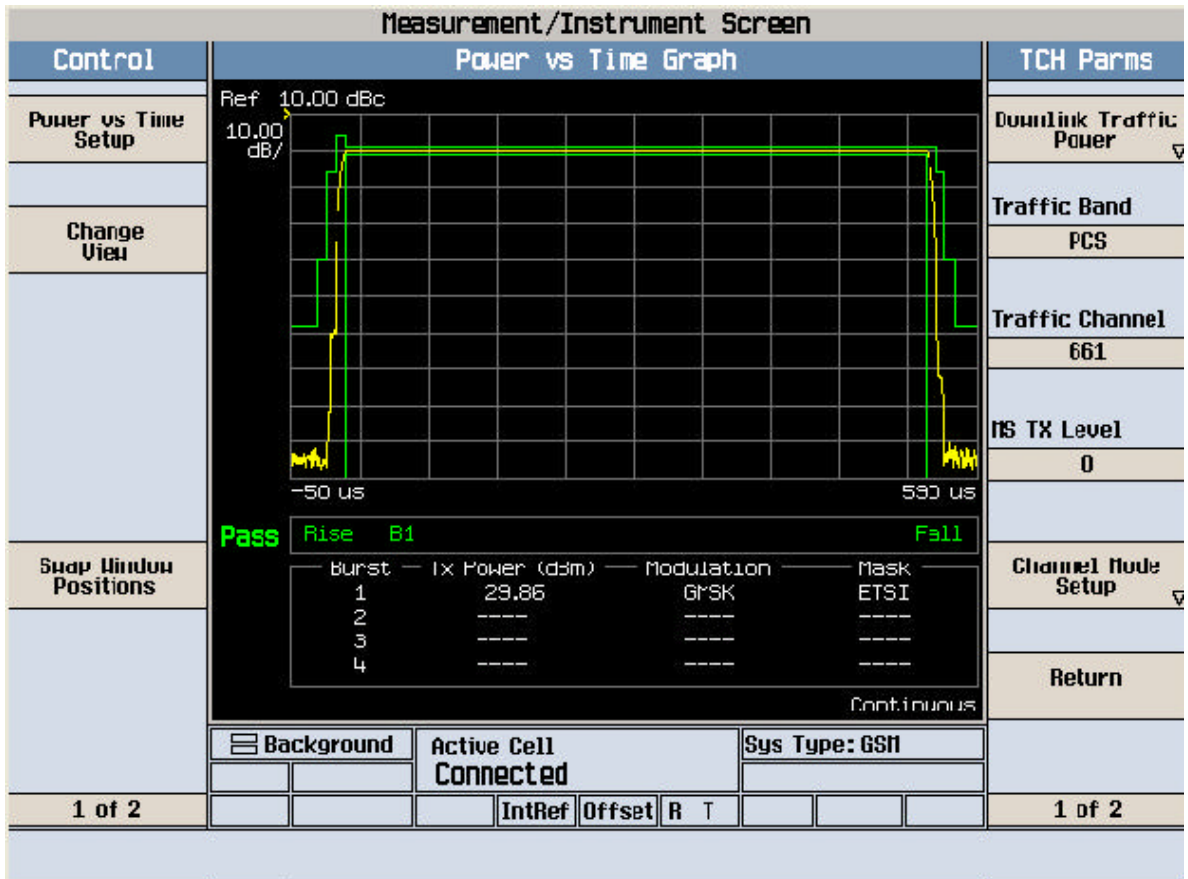
Measurement/Instrument Screen																														
Control		Transmit Power						TCH Parms																						
Transmit Power Setup ▾		<table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> </tr> </thead> <tbody> <tr> <td>Burst Power</td> <td>29.86</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>Estimated Carrier Power</td> <td>29.86</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>							Burst 1	Burst 2	Burst 3	Burst 4	Burst Power	29.86	----	----	----	Estimated Carrier Power	29.86	----	----	----	Downlink Traffic Power ▾							
									Burst 1	Burst 2	Burst 3	Burst 4																		
								Burst Power	29.86	----	----	----																		
								Estimated Carrier Power	29.86	----	----	----																		
Traffic Band																														
PCS																														
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>2.80</td> <td>1.07</td> <td>-48.82</td> </tr> <tr> <td>Maximum</td> <td>5.80</td> <td>1.81</td> <td>-26.64</td> </tr> <tr> <td>Average</td> <td>3.74</td> <td>1.34</td> <td>-39.38</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	2.80	1.07	-48.82	Maximum	5.80	1.81	-26.64	Average	3.74	1.34	-39.38	Pass/Fail	Pass	Pass	Pass	Traffic Channel		
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Average	3.74	1.34	-39.38																											
Pass/Fail	Pass	Pass	Pass																											
661																														
1 of 2		50 / 50 Single Background Active Cell Connected Sys Type: GSM						MS TX Level																						
								0																						
								Channel Mode Setup ▾																						
								Return																						
								1 of 2																						

Measurement/Instrument Screen																														
Control		Transmit Power						TCH Parms																						
Transmit Power Setup ▾		<table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> </tr> </thead> <tbody> <tr> <td>Burst Power</td> <td>29.85</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>Estimated Carrier Power</td> <td>29.85</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>							Burst 1	Burst 2	Burst 3	Burst 4	Burst Power	29.85	----	----	----	Estimated Carrier Power	29.85	----	----	----	Downlink Traffic Power ▾							
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								Burst Power	29.85	----	----	----																		
								Estimated Carrier Power	29.85	----	----	----																		
Traffic Band																														
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>2.70</td> <td>1.02</td> <td>-40.85</td> </tr> <tr> <td>Maximum</td> <td>4.59</td> <td>1.66</td> <td>-15.92</td> </tr> <tr> <td>Average</td> <td>3.49</td> <td>1.26</td> <td>-30.76</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	2.70	1.02	-40.85	Maximum	4.59	1.66	-15.92	Average	3.49	1.26	-30.76	Pass/Fail	Pass	Pass	Pass	Traffic Channel		
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810																														
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								0																						
								Channel Mode Setup ▾																						
								Return																						
								1 of 2																						

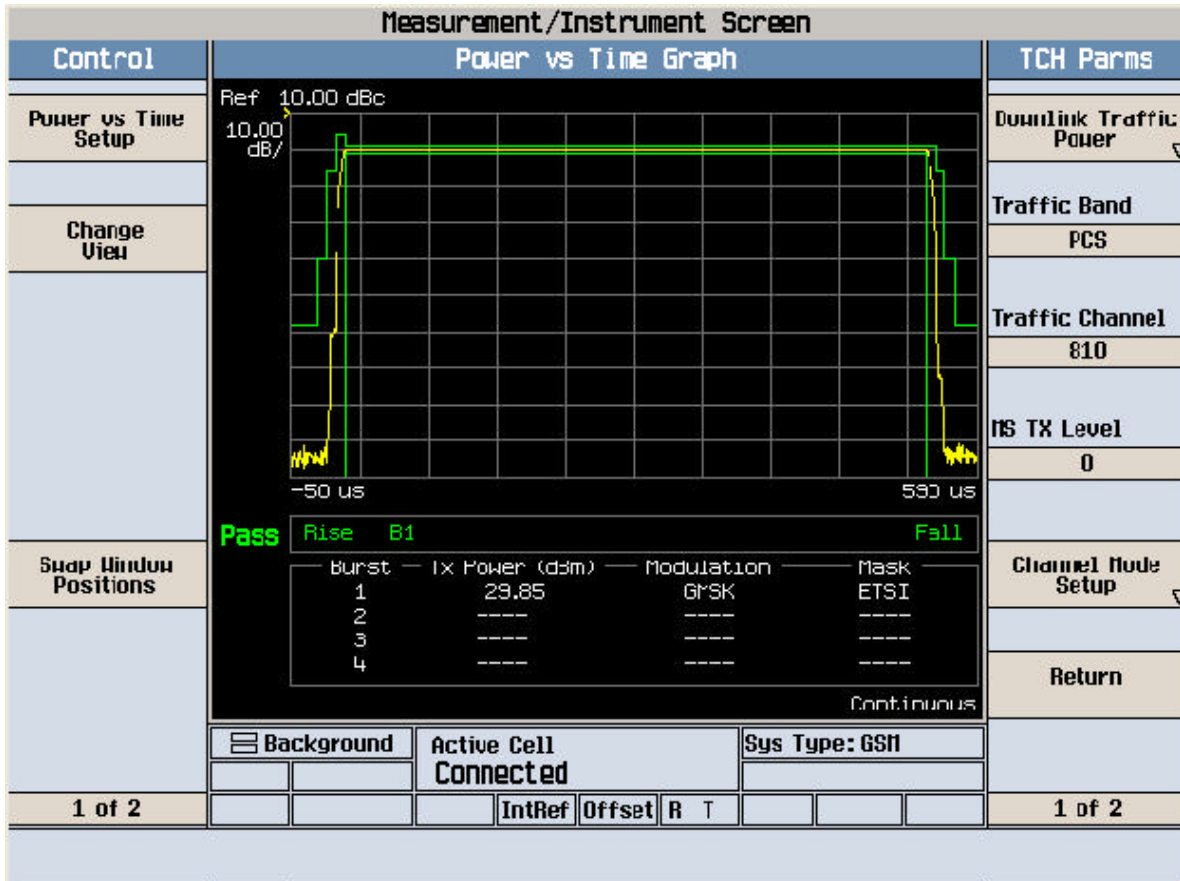
FCC ID : A3LSPHI350 GMSK Power vs Time 512CH



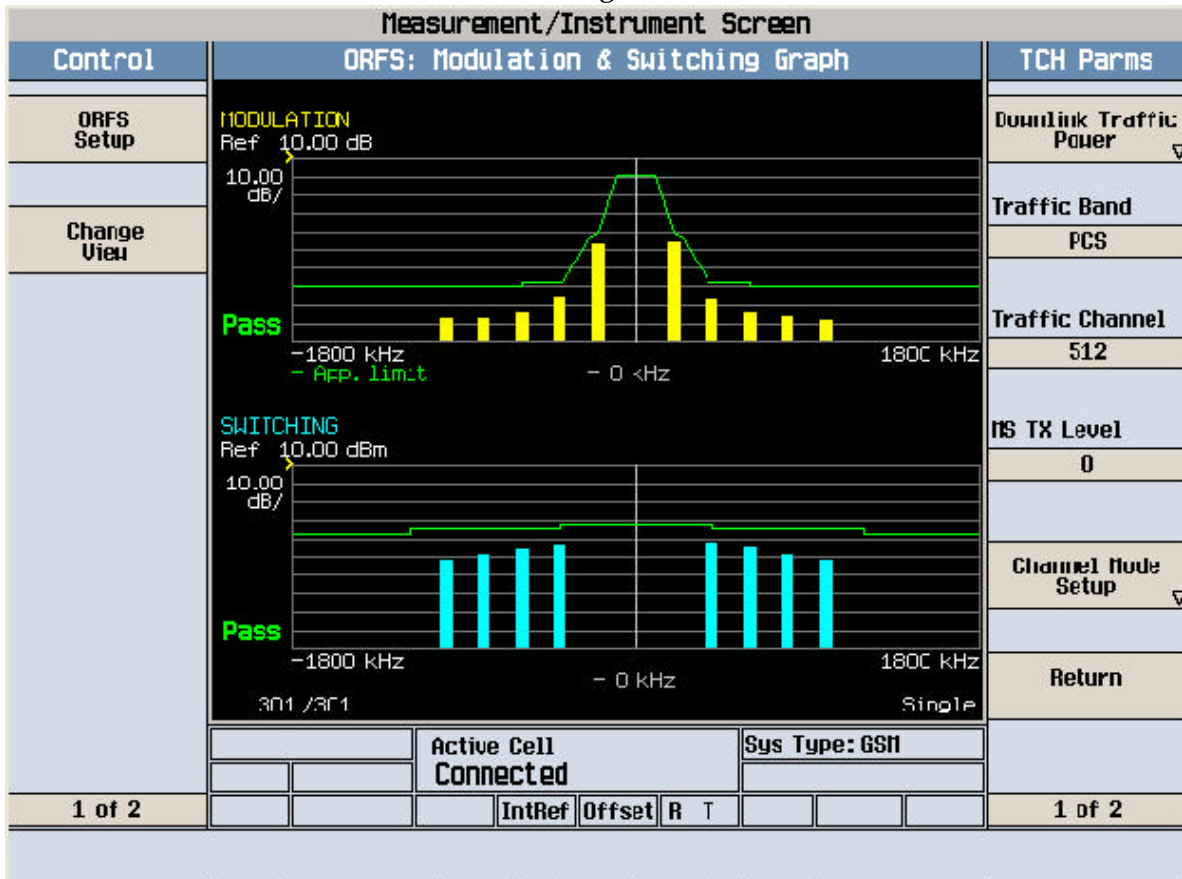
FCC ID : A3LSPHI350 GMSK Power vs Time 661CH



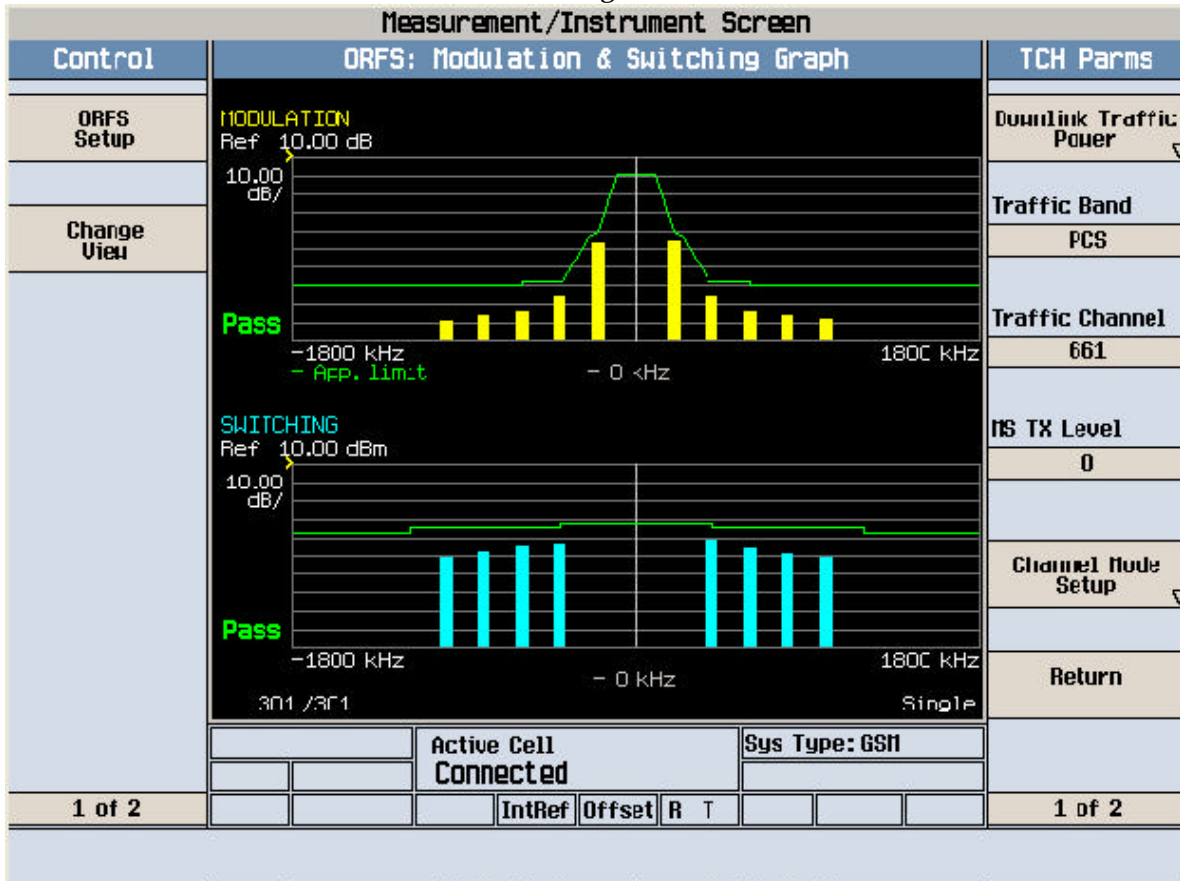
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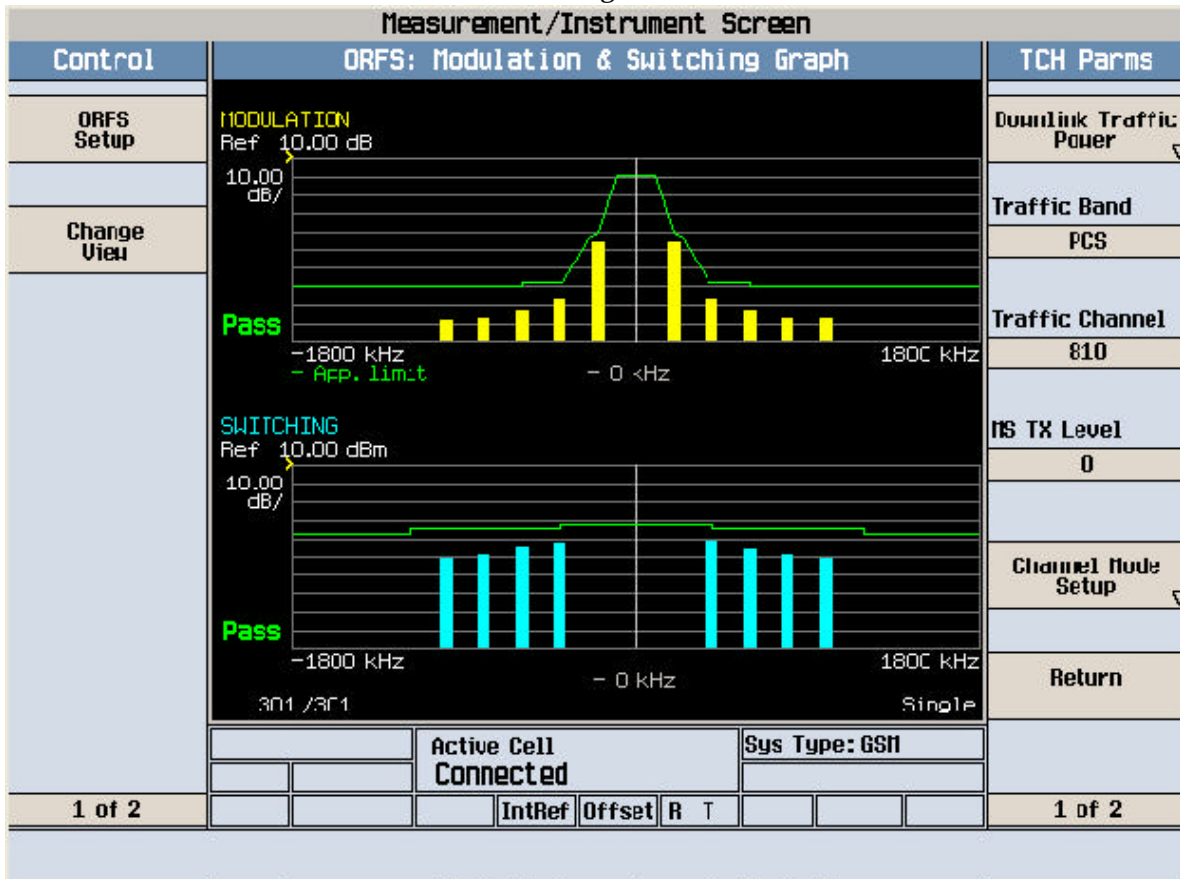
FCC ID : A3LSPHI350 Modulation & Switching 512CH

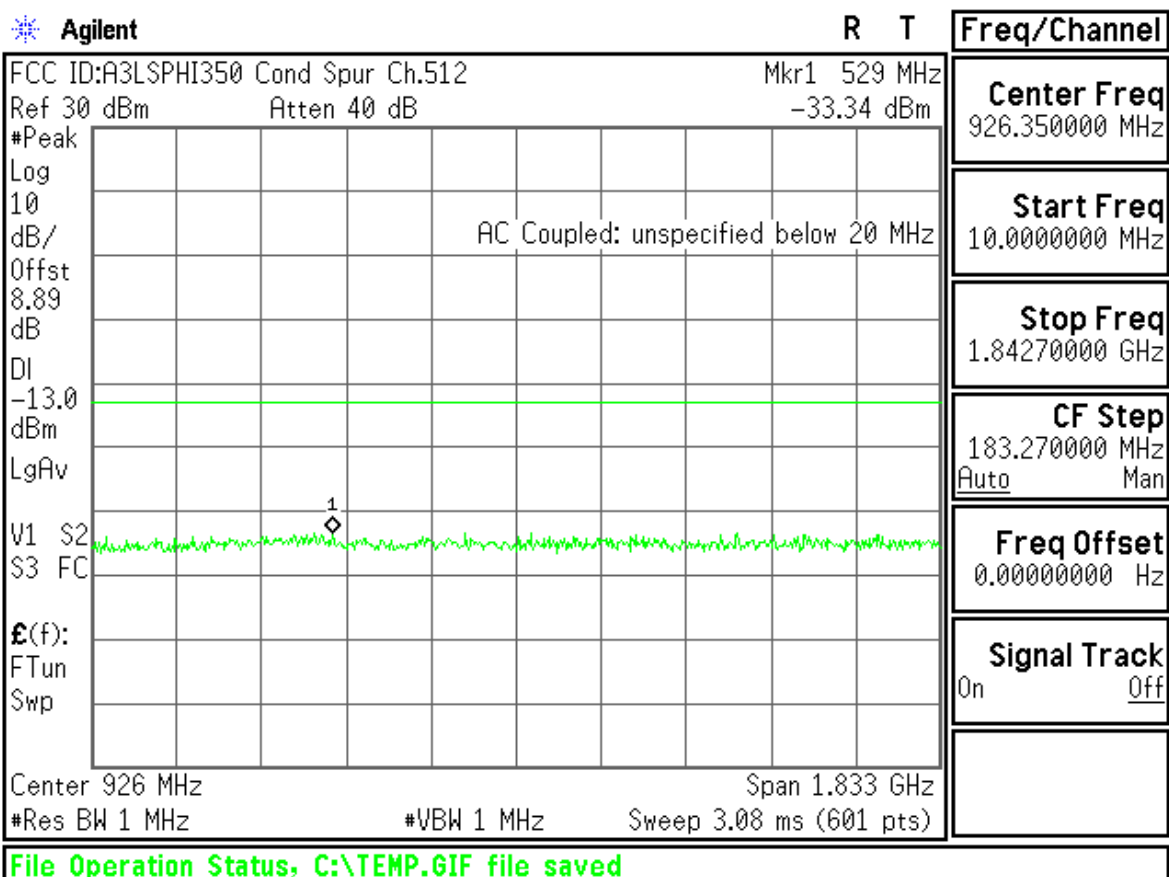
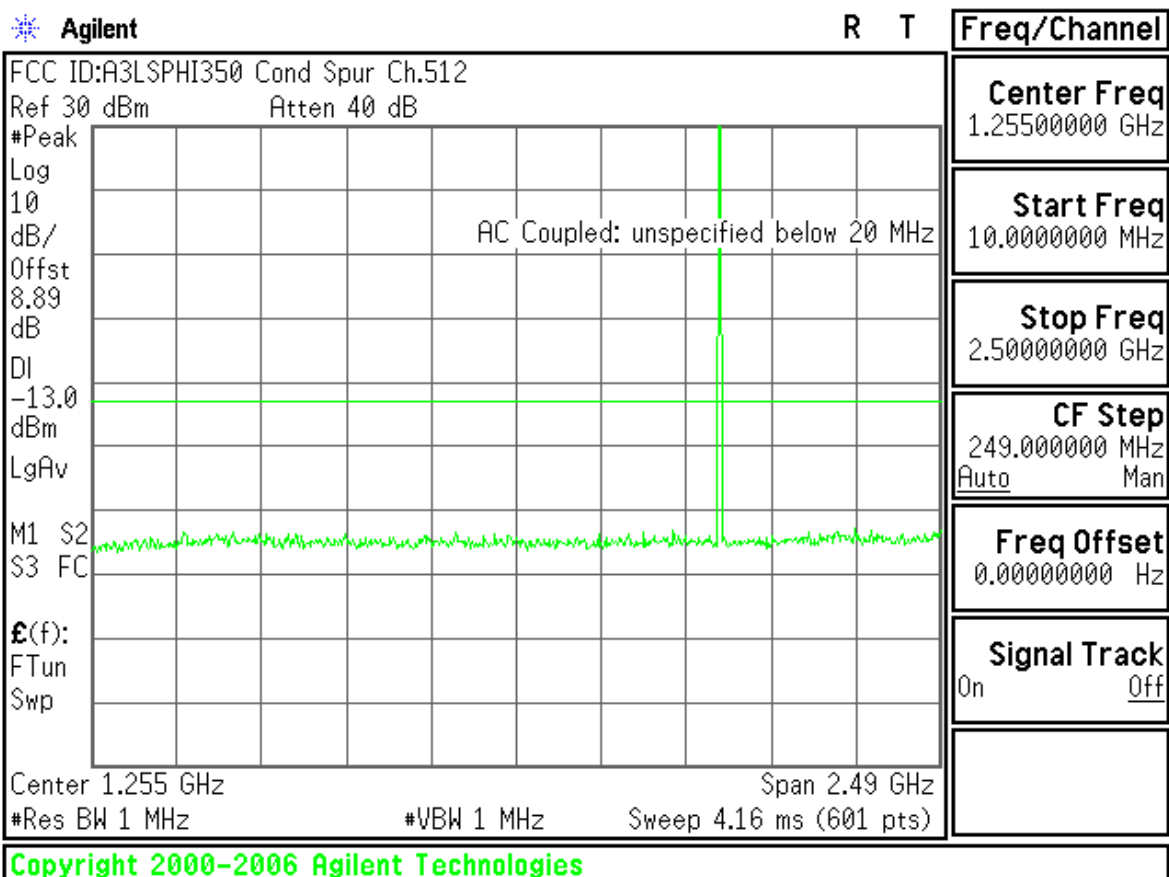


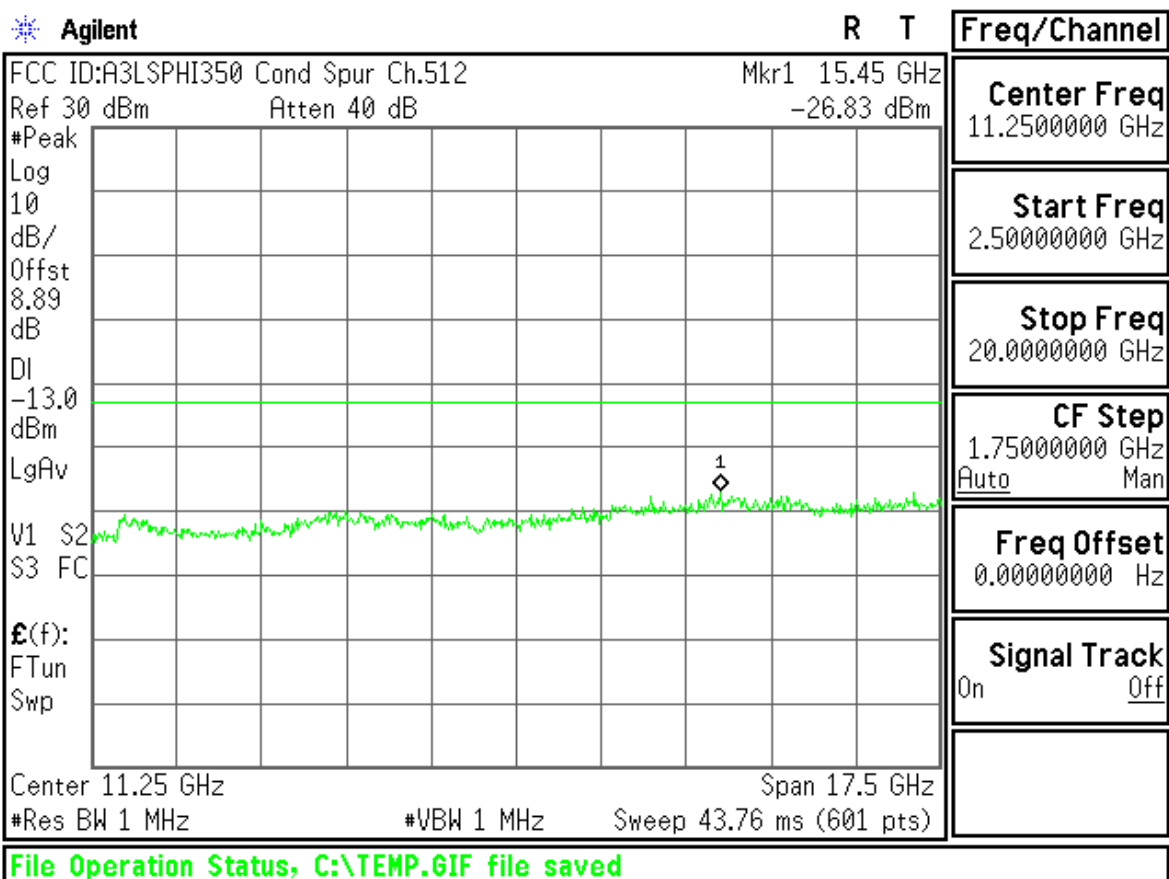
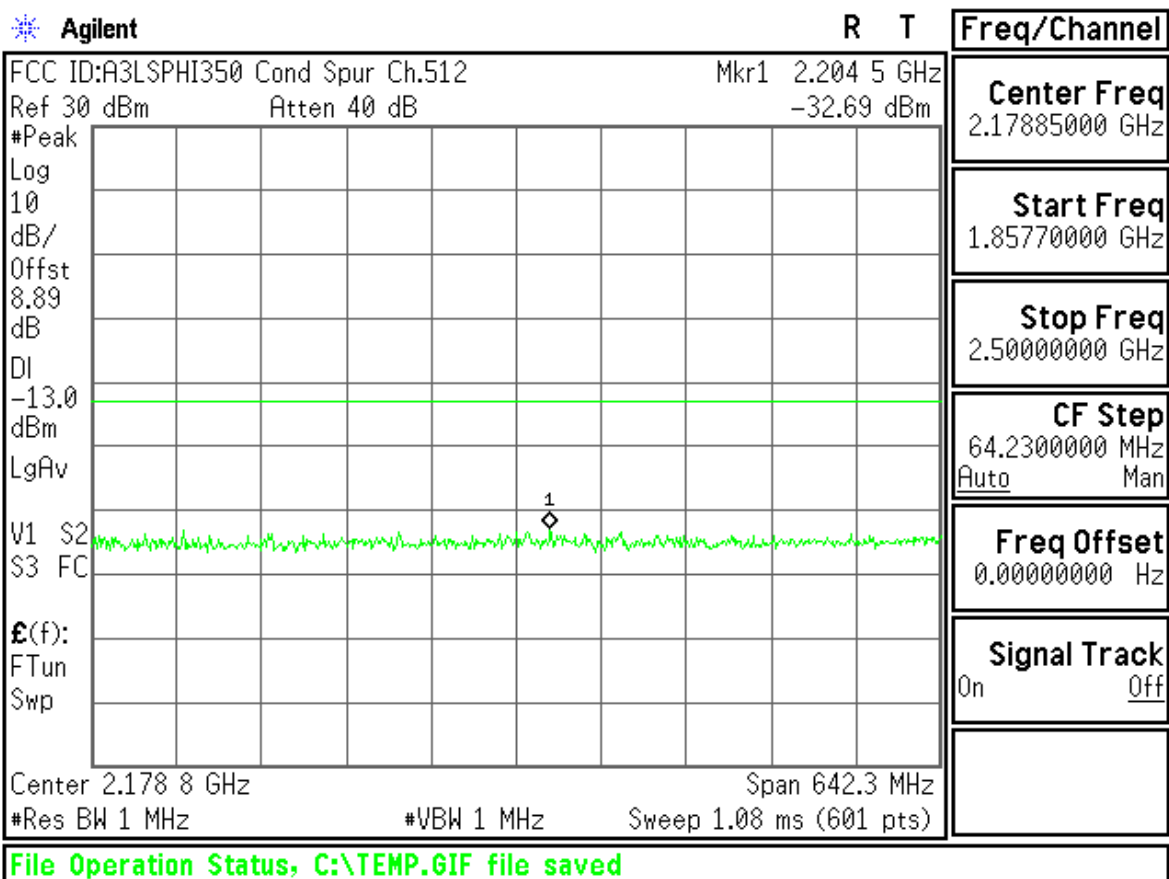
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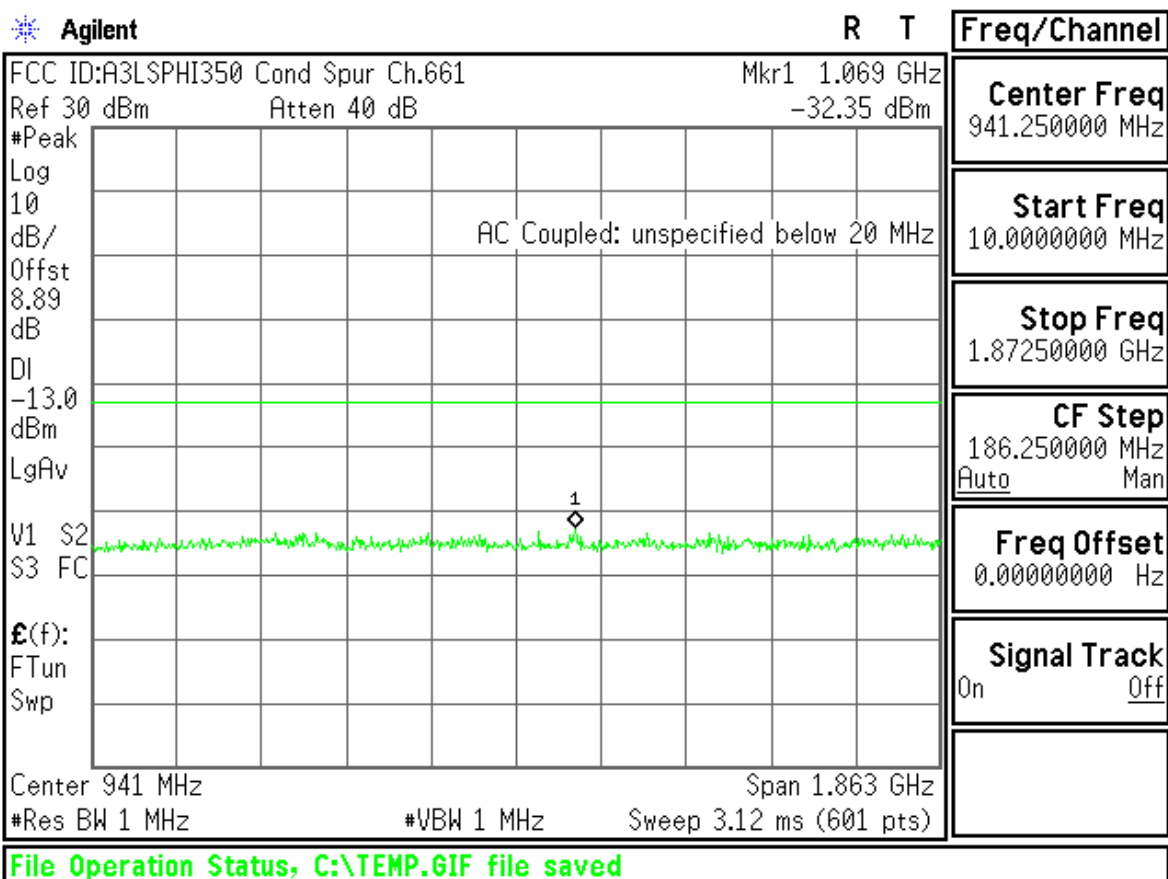
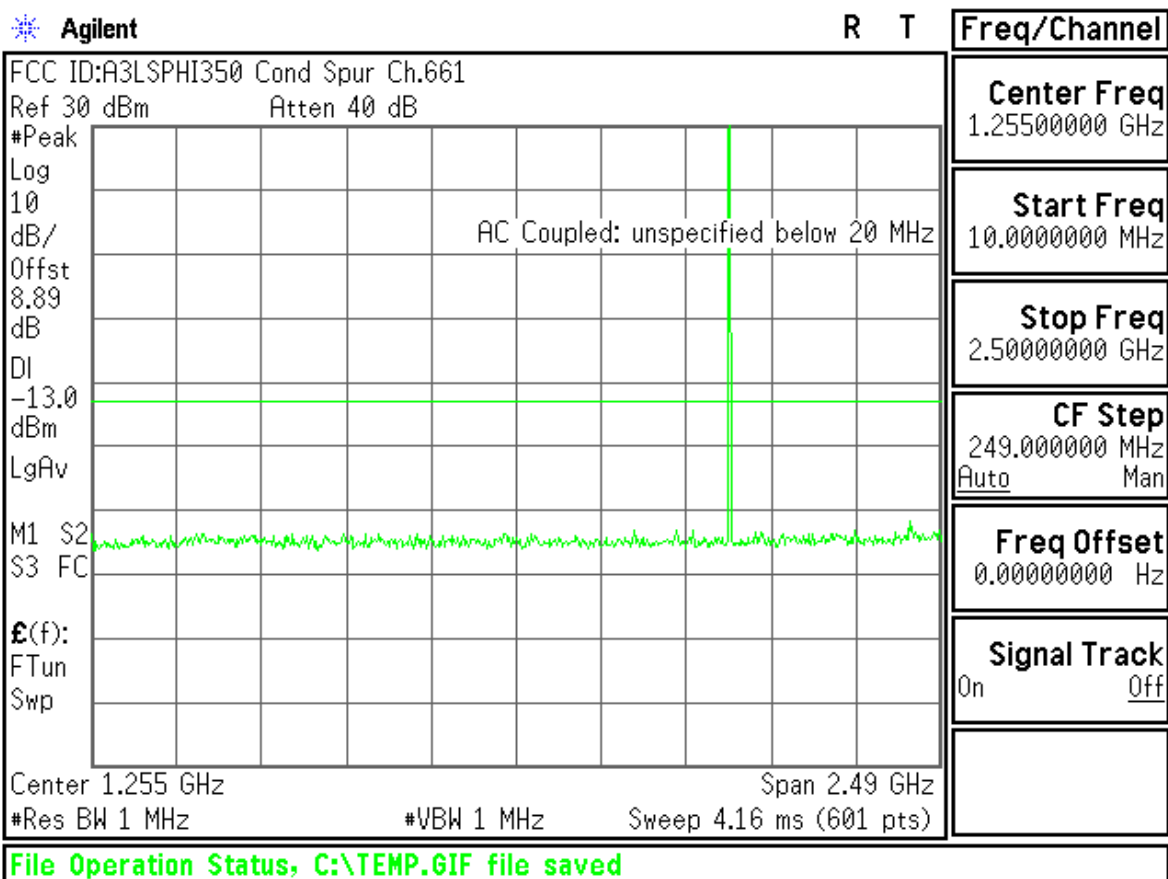


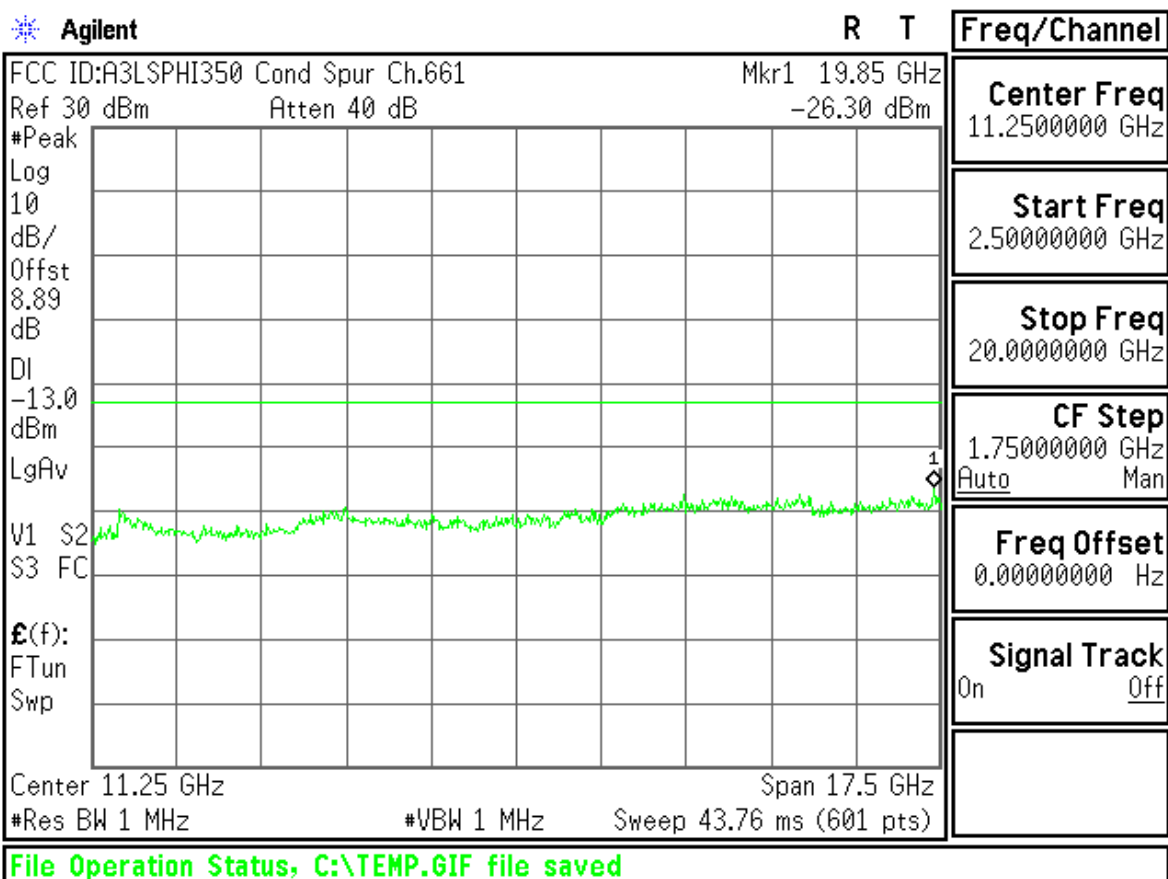
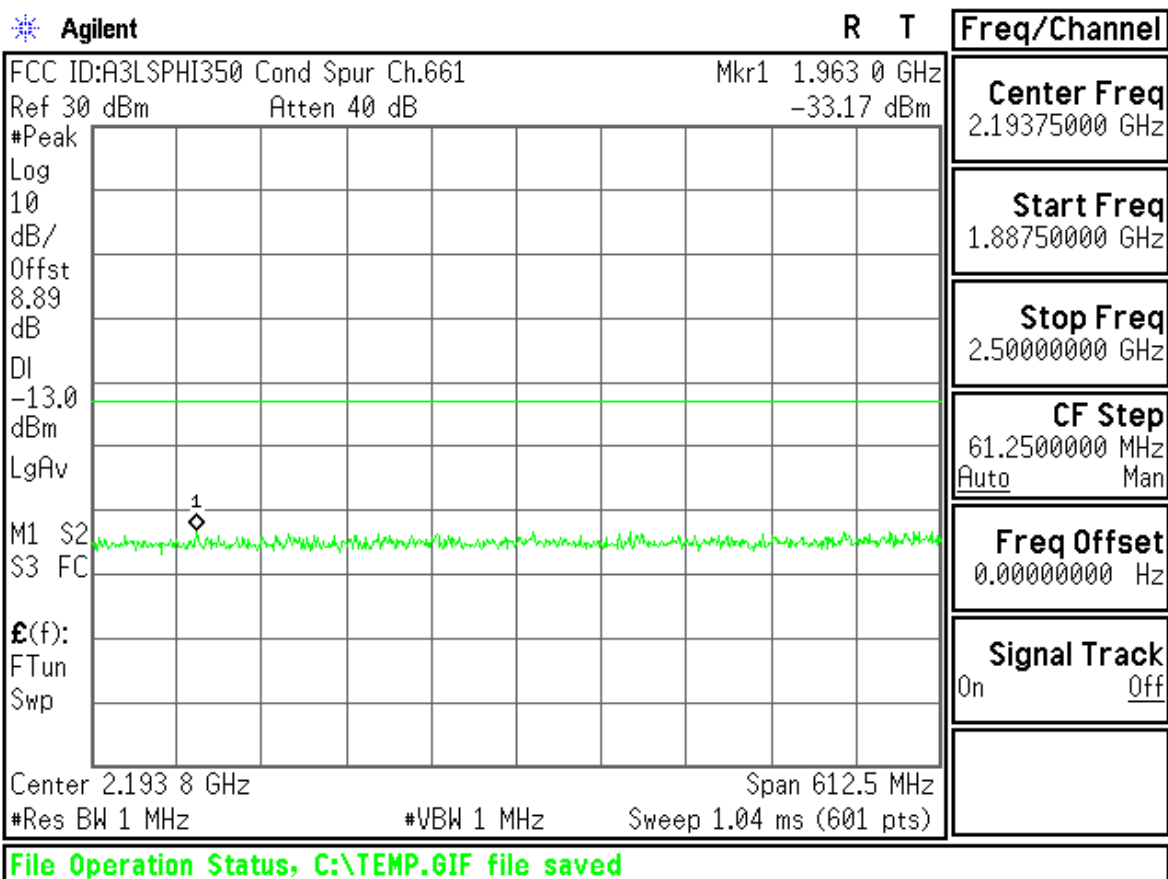
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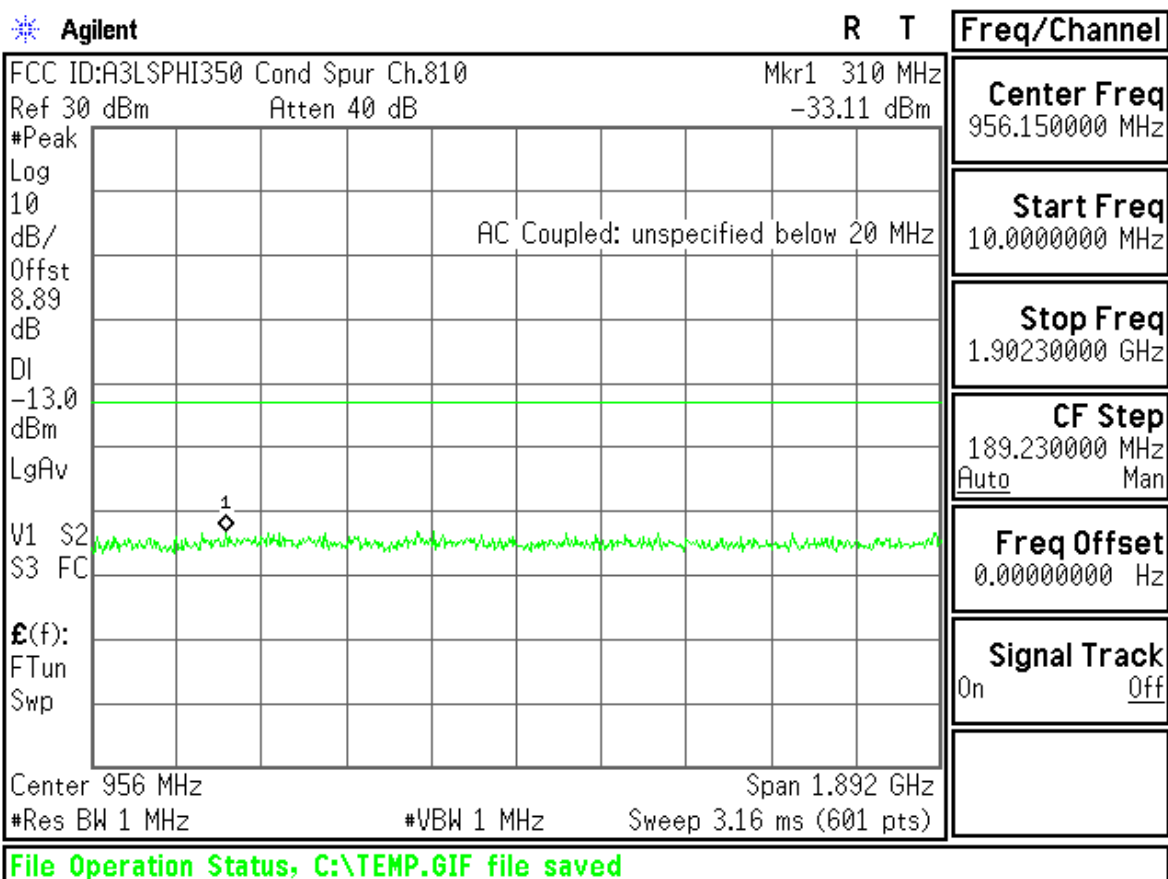
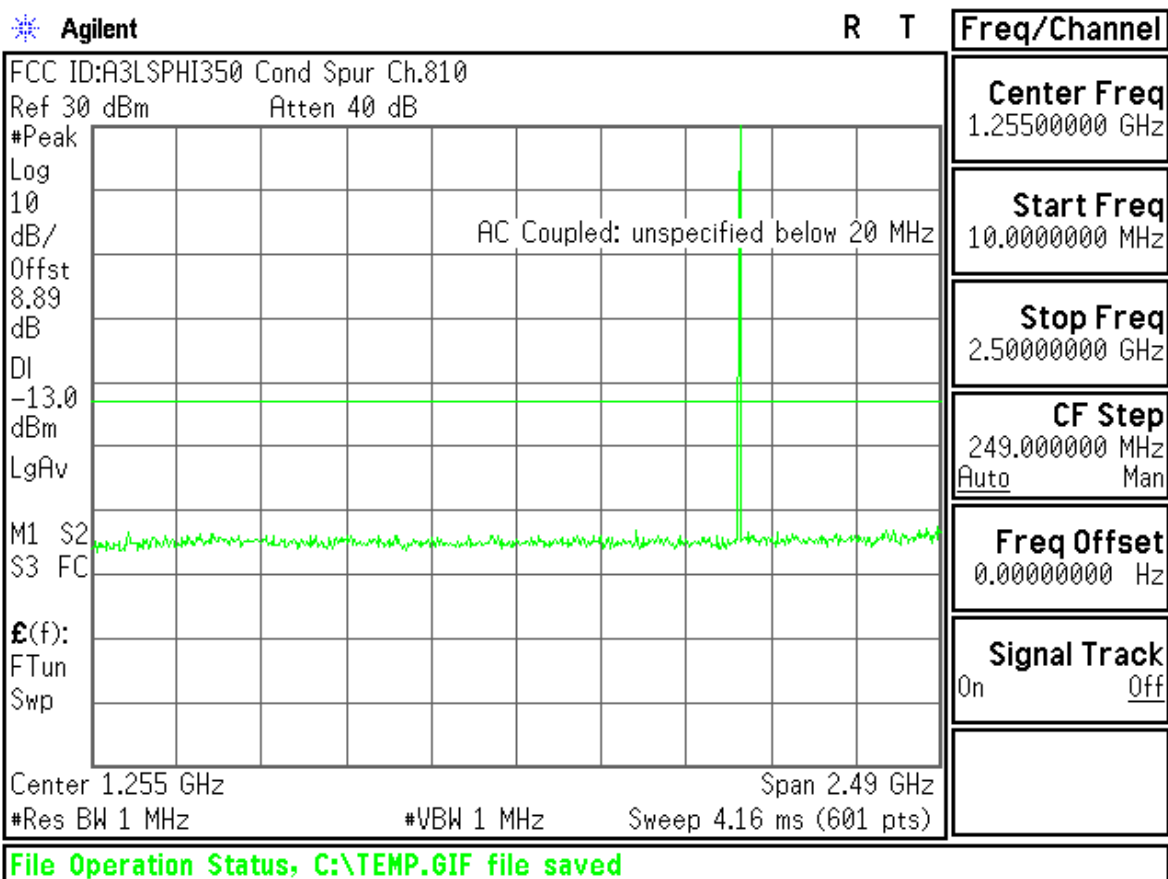


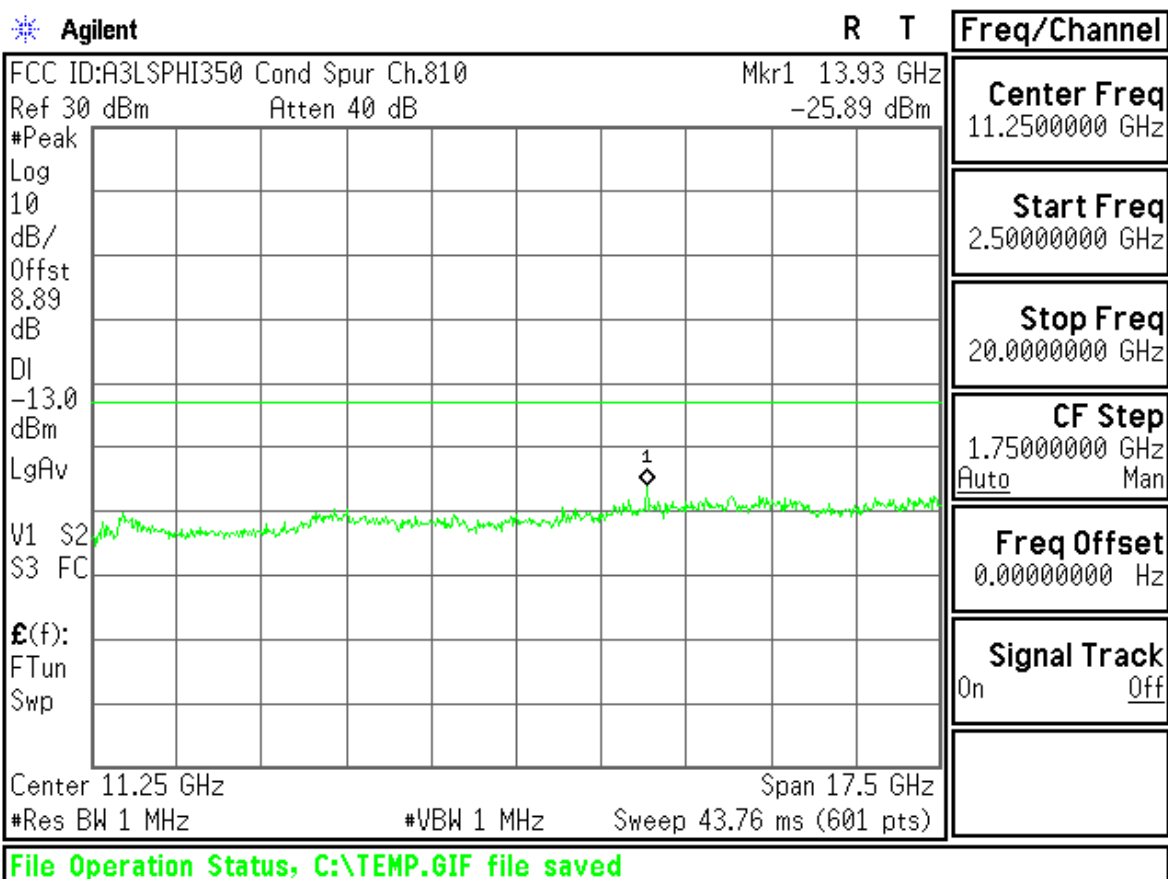
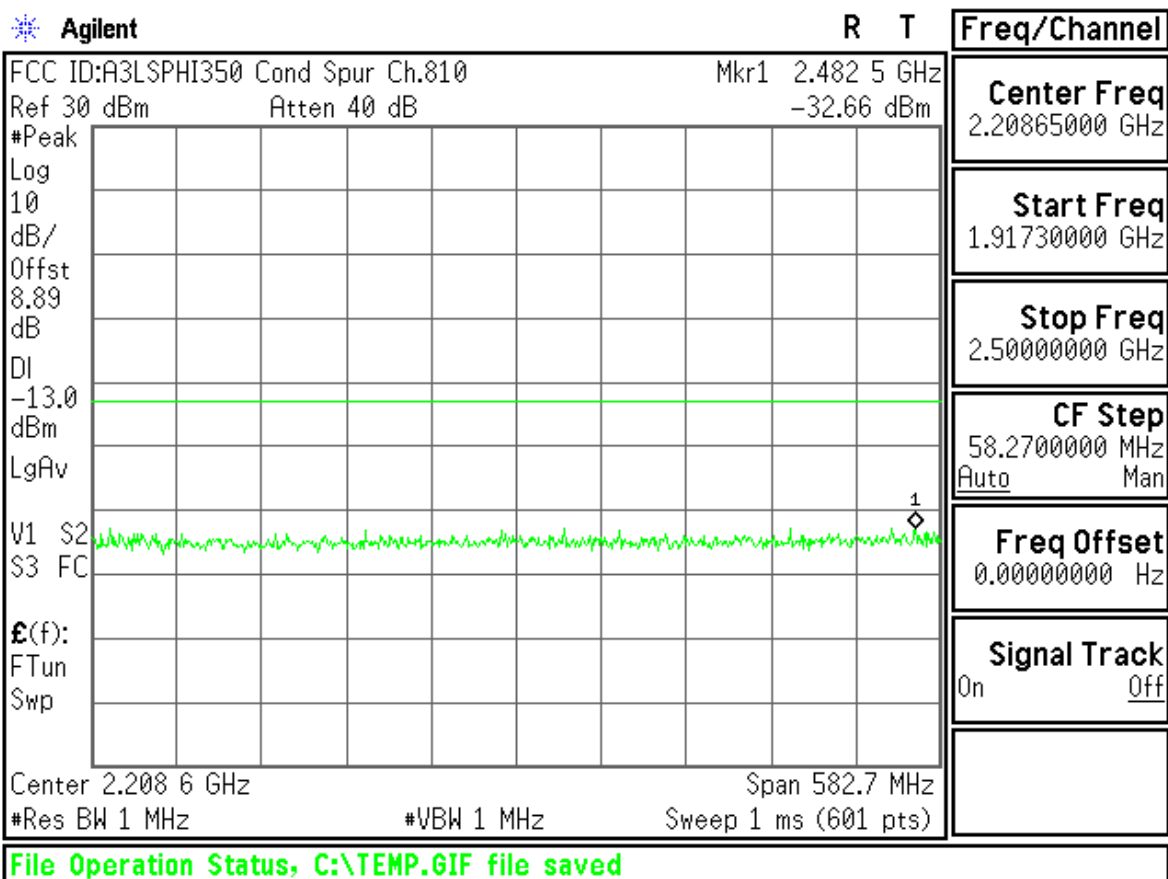


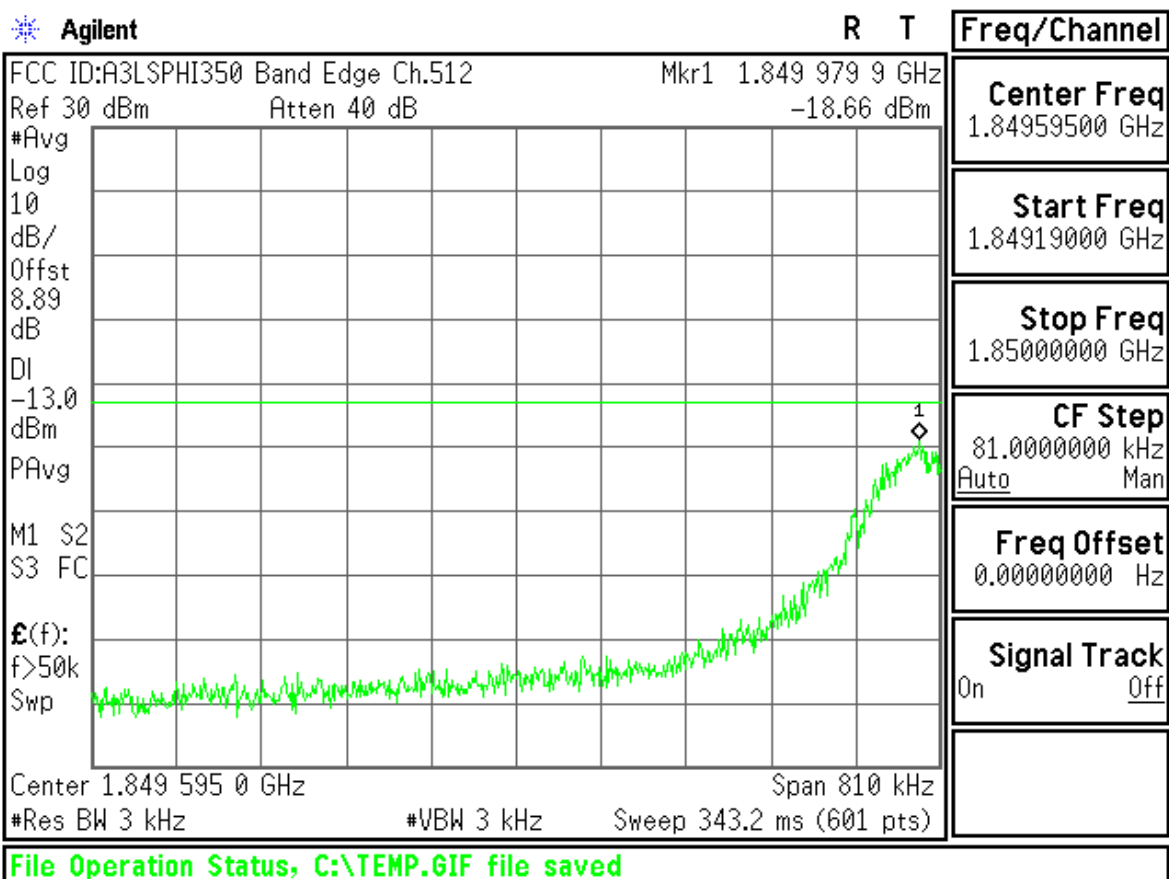
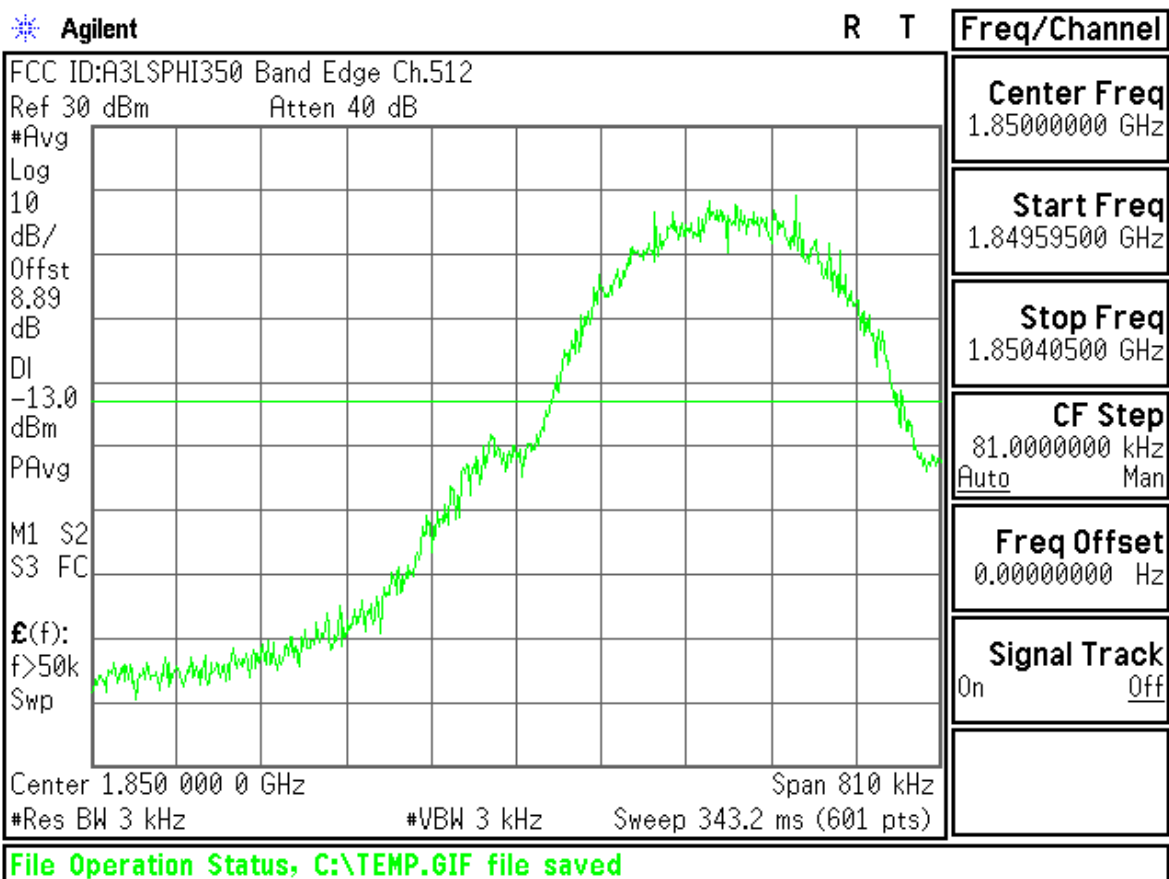












FCC ID:A3LSPHI350 Band Edge Ch.810

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

PAvg

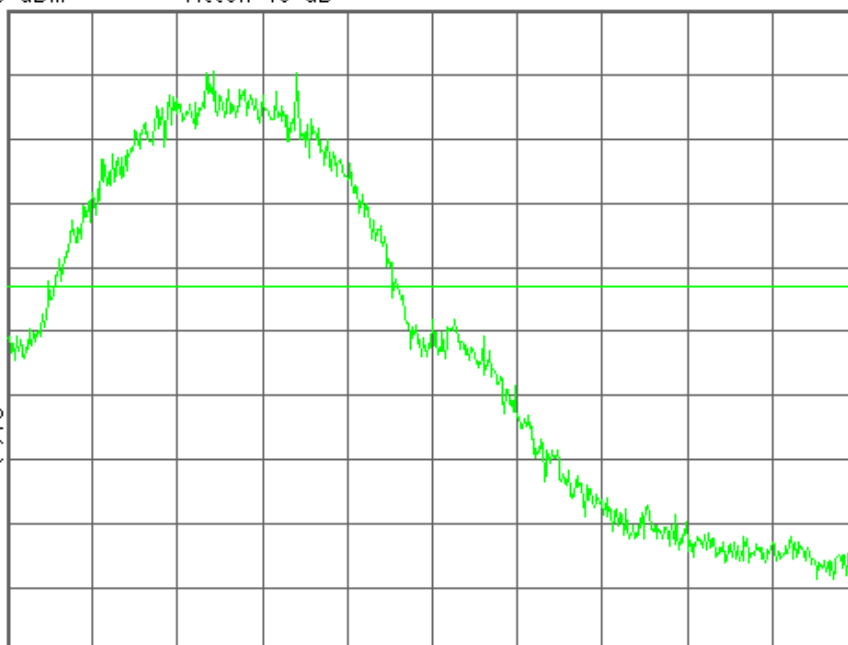
M1 S2

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

FCC ID:A3LSPHI350 Band Edge Ch.810

Mkr1 1.910 020 4 GHz

Ref 30 dBm

Atten 40 dB

-16.58 dBm

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

PAvg

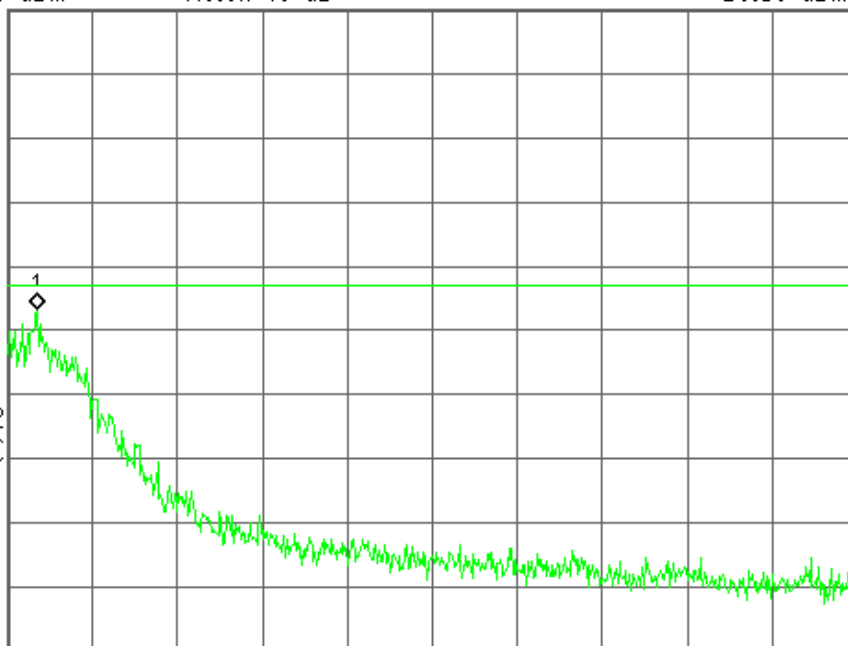
M1 S2

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

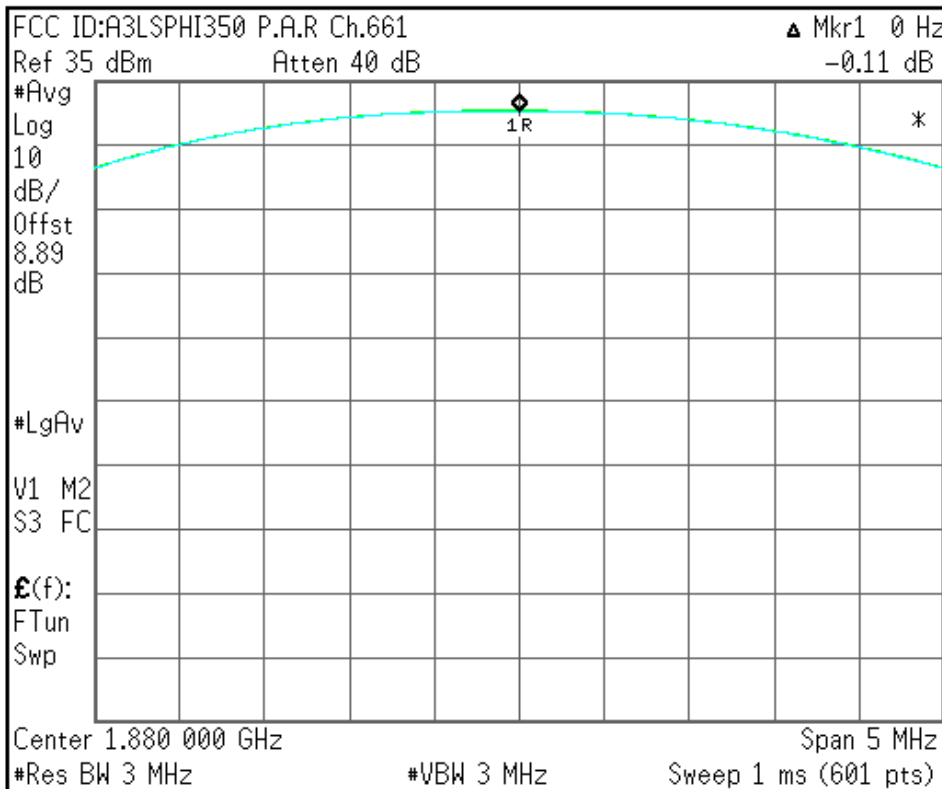
Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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



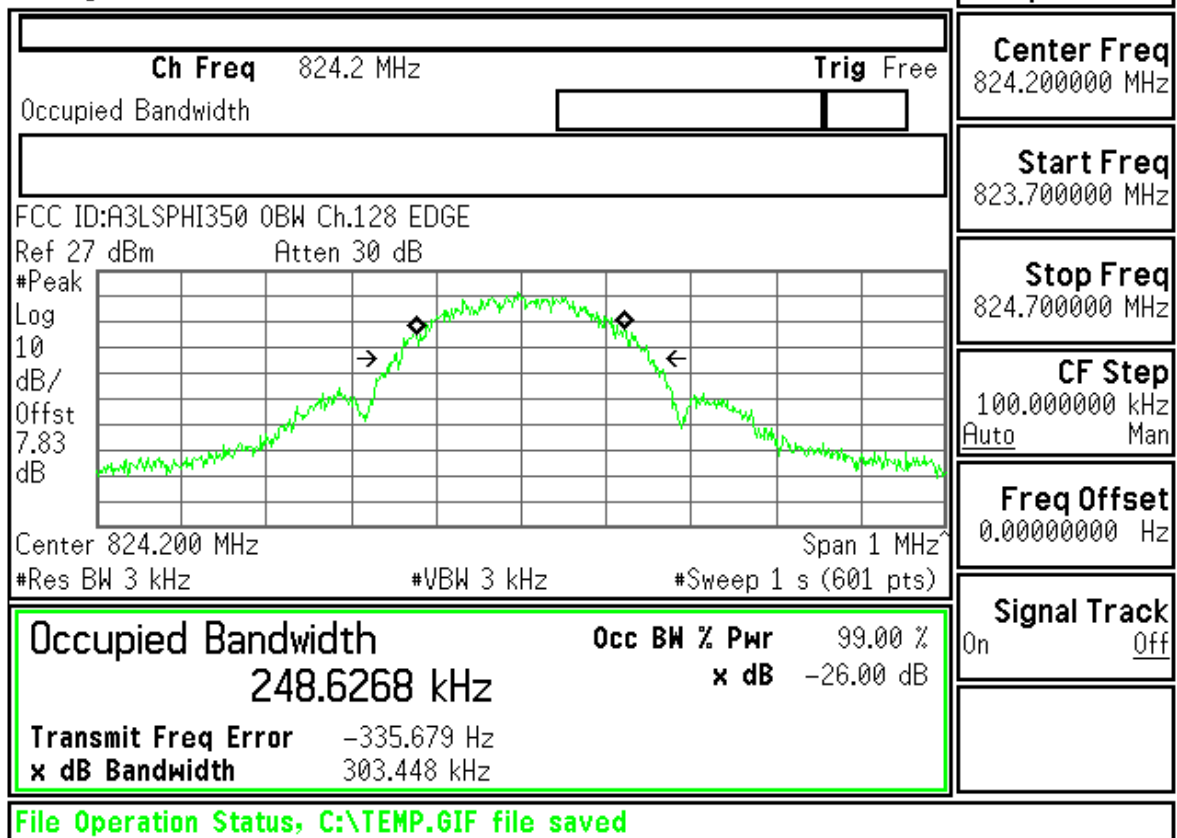
Freq/Channel
Center Freq 1.88000000 GHz
Start Freq 1.87750000 GHz
Stop Freq 1.88250000 GHz
CF Step 500.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

EDGE850

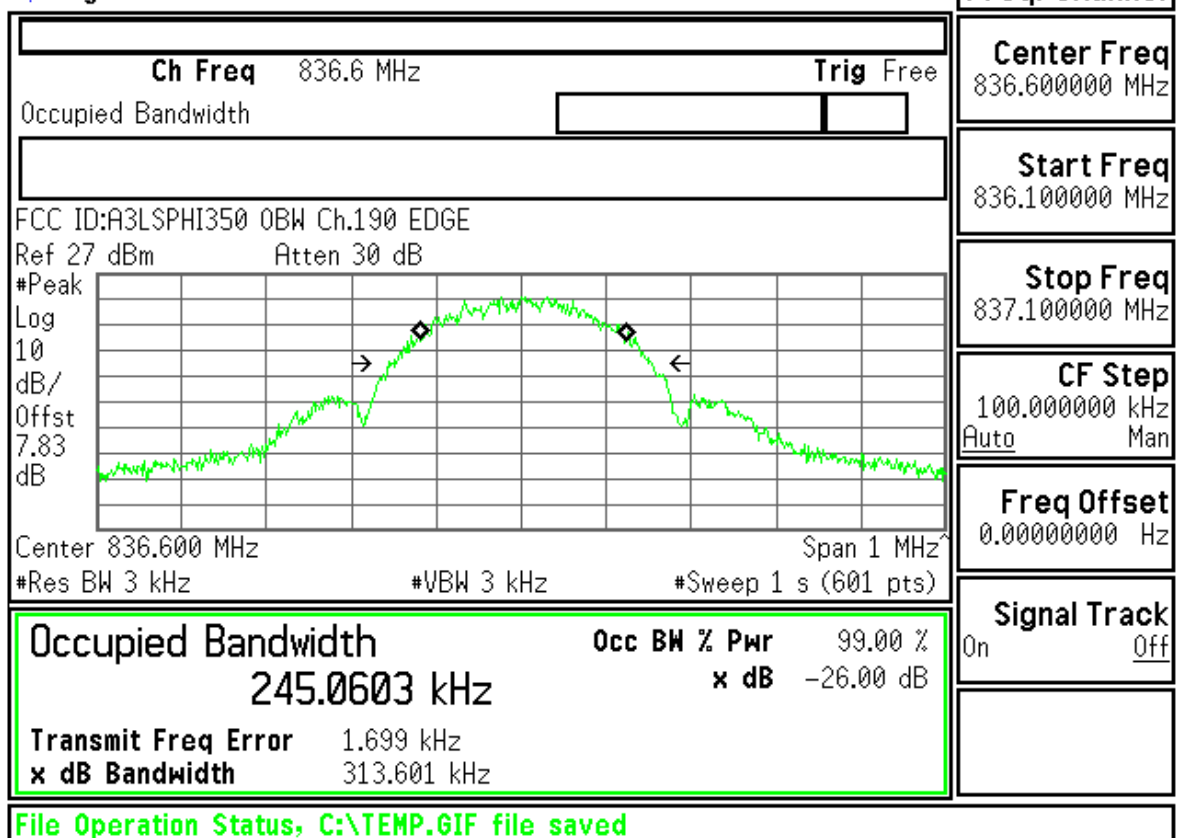
Agilent

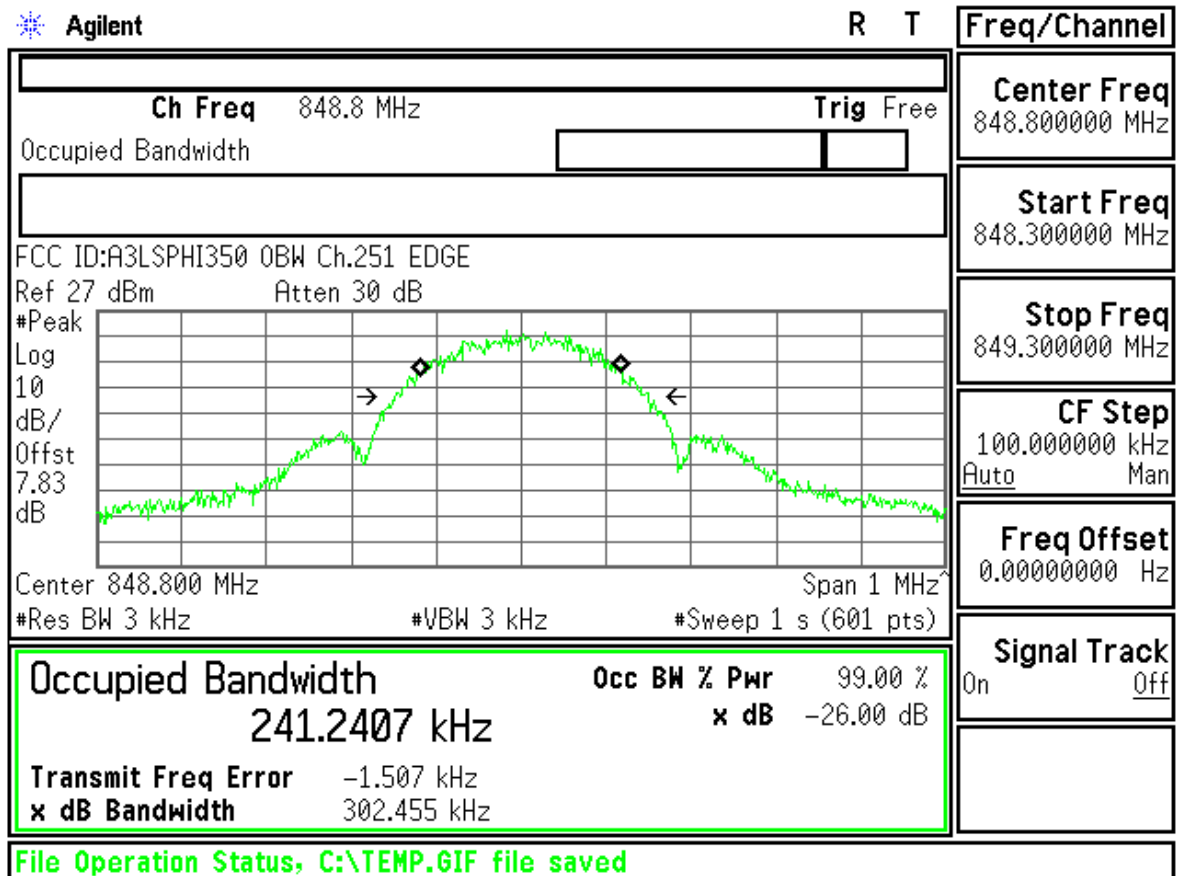
R T



Agilent

R T





FCC ID : A3LSPhi350 Transmit Power 128CH EDGE

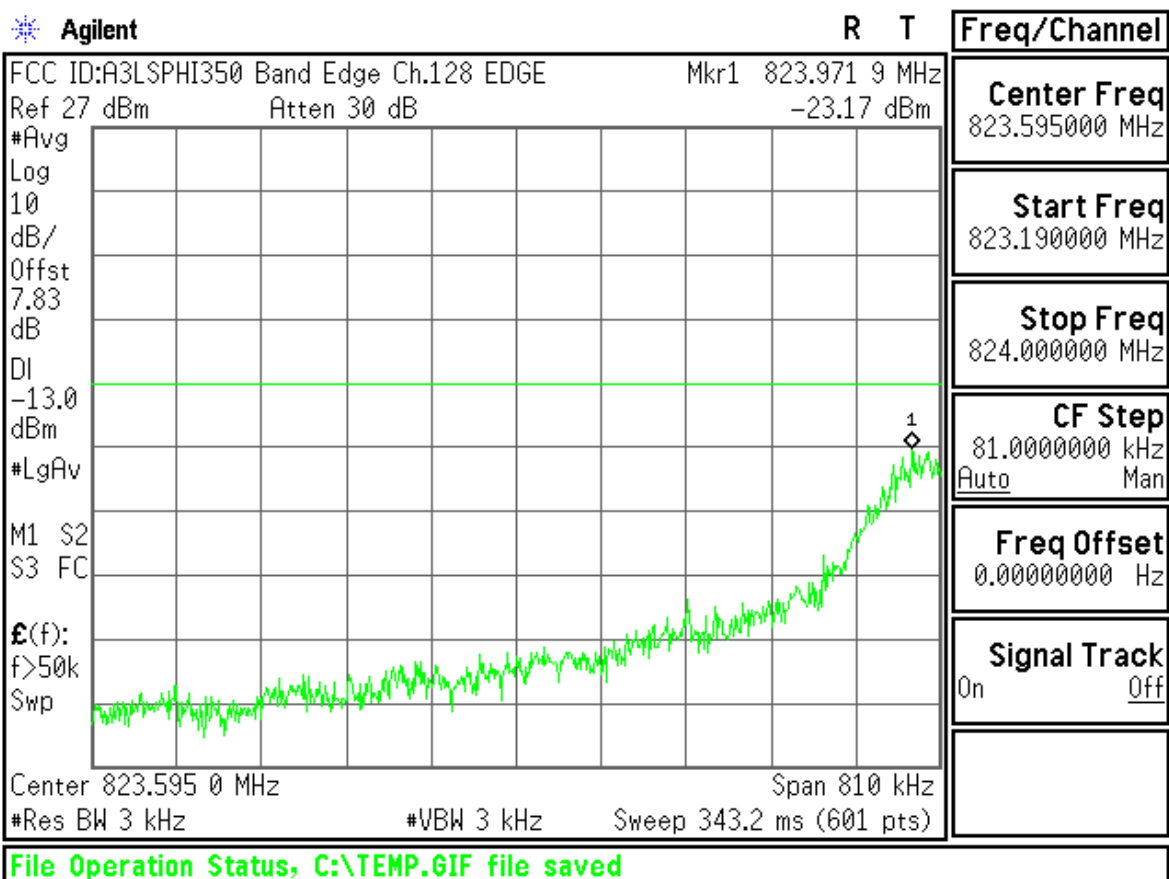
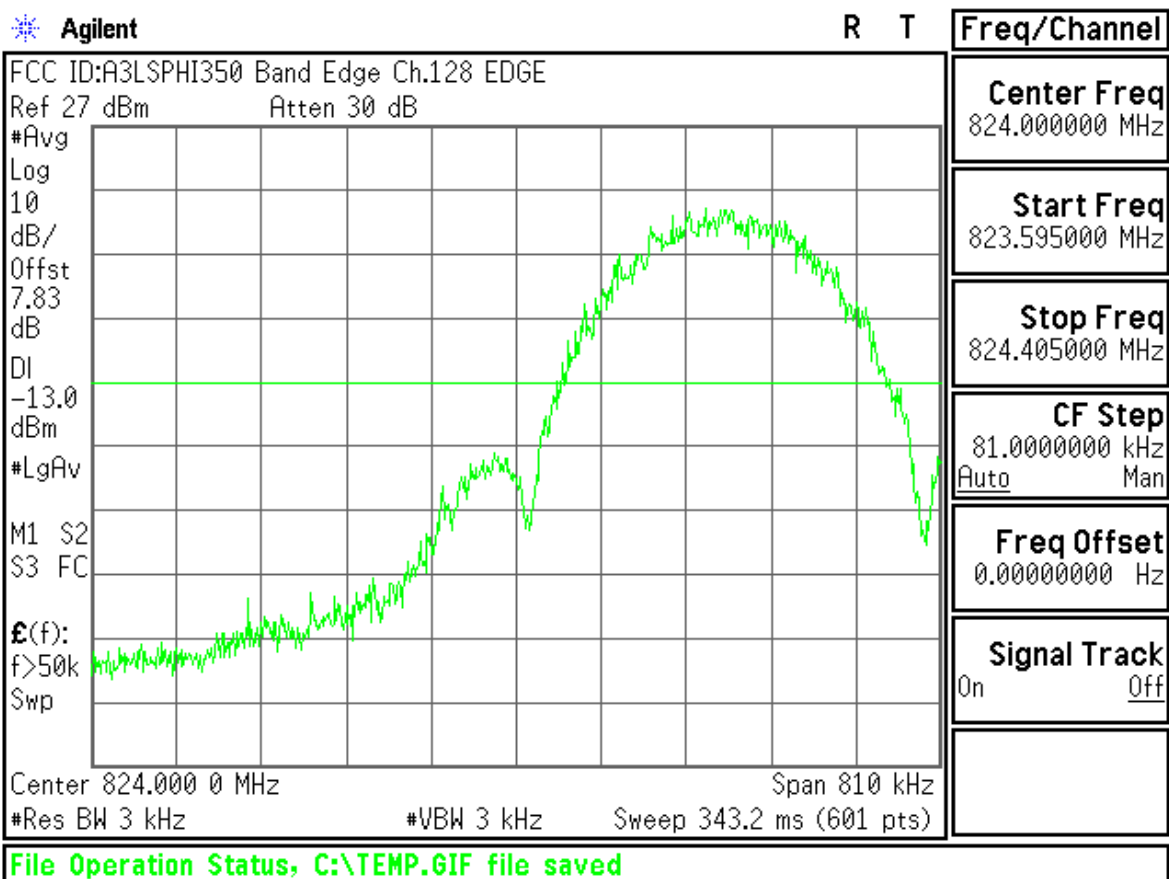
Measurement/Instrument Screen													
Control		EGPRS Transmit Power								PDCH Params			
EGPRS Transmit Power Setup ▾		EPK Burst Power				EPK Est Carrier Power				Downlink Traffic Power ▾			
		Minimum		Maximum		Minimum		Maximum		Traffic Band			
		25.46 dBm		26.89 dBm		26.24 dBm		26.27 dBm		GSN850			
		Average		Std Dev		Average		Std Dev		Traffic Channel			
		26.17 dBm		0.24 dBm		26.25 dBm		0.00 dBm		128			
		200 /200								Single			
										HS TX Level ▾			
										Modulation Coding Scheme ▾			
										Return			
1 of 2				Active Cell Transferring				Sys Type: EGPRS			1 of 2		
						IntRef	Offset	R	T				

FCC ID : A3LSPHI350 Transmit Power 190CH EDGE

Measurement/Instrument Screen													
Control		EGPRS Transmit Power								PDCH Parms			
EGPRS Transmit Power Setup ▾		EPSK Burst Power				EPSK Est Carrier Power				Downlink Traffic Power ▾			
		Minimum		Maximum		Minimum		Maximum		Traffic Band			
		25.44 dBm		26.78 dBm		26.22 dBm		26.25 dBm		GS1850			
		Average		Std Dev		Average		Std Dev		Traffic Channel			
		26.15 dBm		0.22 dBm		26.24 dBm		0.00 dBm		190			
		200 / 200								Single			
				Active Cell Transferring				Sys Type: EGPRS			NS TX Level ▾		
											Modulation Coding Scheme ▾		
											Return		
1 of 2						IntRef		Offset		R T		1 of 2	

FCC ID : A3LSPHI350 Transmit Power 251CH EDGE

Measurement/Instrument Screen																			
Control		EGPRS Transmit Power							PDCH Parms										
EGPRS Transmit Power Setup ▾		EPSK Burst Power				EPSK Est Carrier Power			Downlink Traffic Power ▾										
		Minimum		Maximum		Minimum		Maximum		Traffic Band									
		25.30 dBm		26.88 dBm		26.25 dBm		26.28 dBm		GS1850									
		Average		Std Dev		Average		Std Dev		Traffic Channel									
		26.23 dBm		0.22 dBm		26.26 dBm		0.00 dBm		251									
		200 / 200						Single											
											NS TX Level ▾								
											Modulation Coding Scheme ▾								
											Return								
				Active Cell Transferring				Sys Type: EGPRS											
1 of 2								IntRef		Offset		R T						1 of 2	



FCC ID:A3LSPHI350 Band Edge Ch.251 EDGE

Ref 27 dBm

Atten 30 dB

#Avg

Log

10

dB/

Offst

7.83

dB

DI

-13.0

dBm

#LgAv

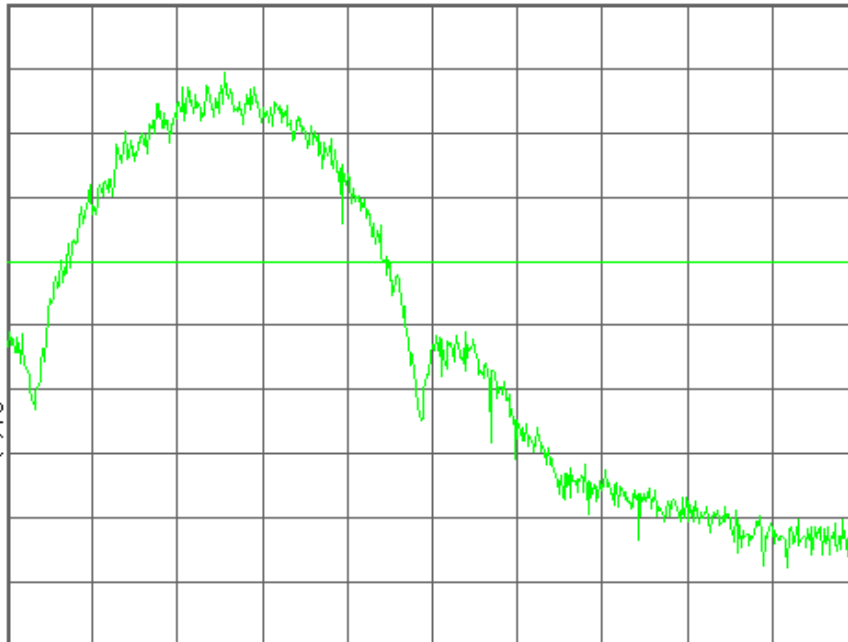
M1 S2

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

FCC ID:A3LSPHI350 Band Edge Ch.251 EDGE

Mkr1 849.022 7 MHz

Ref 27 dBm

Atten 30 dB

-24.12 dBm

#Avg

Log

10

dB/

Offst

7.83

dB

DI

-13.0

dBm

#LgAv

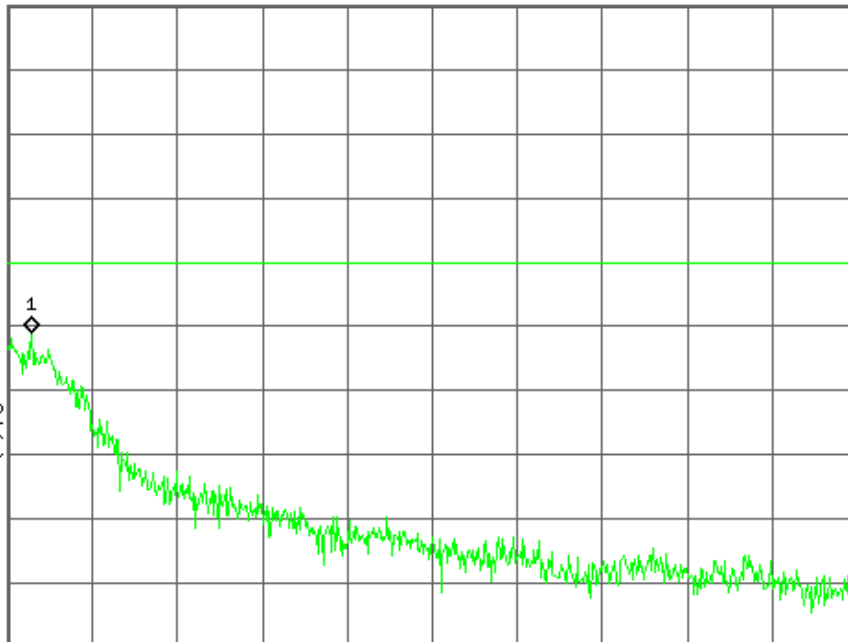
M1 S2

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

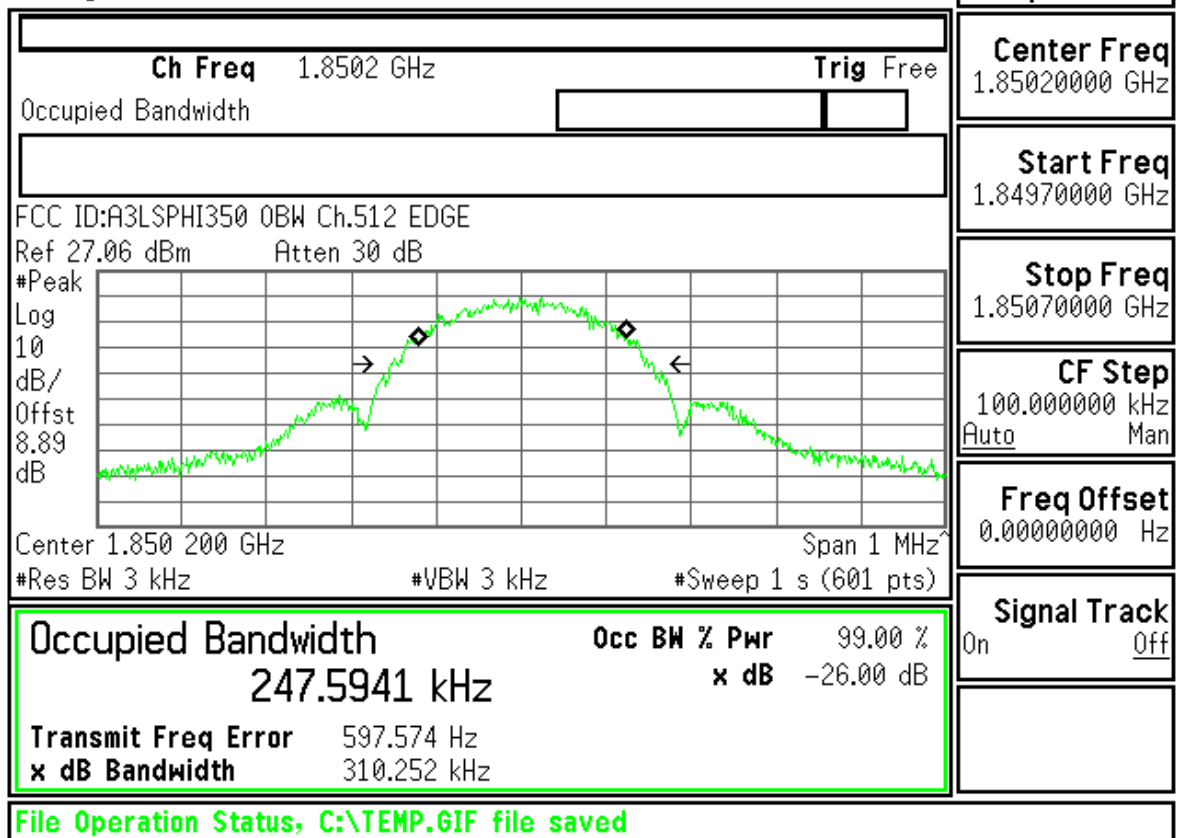
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File Operation Status, C:\TEMP.GIF file saved

EDGE1900

 Agilent

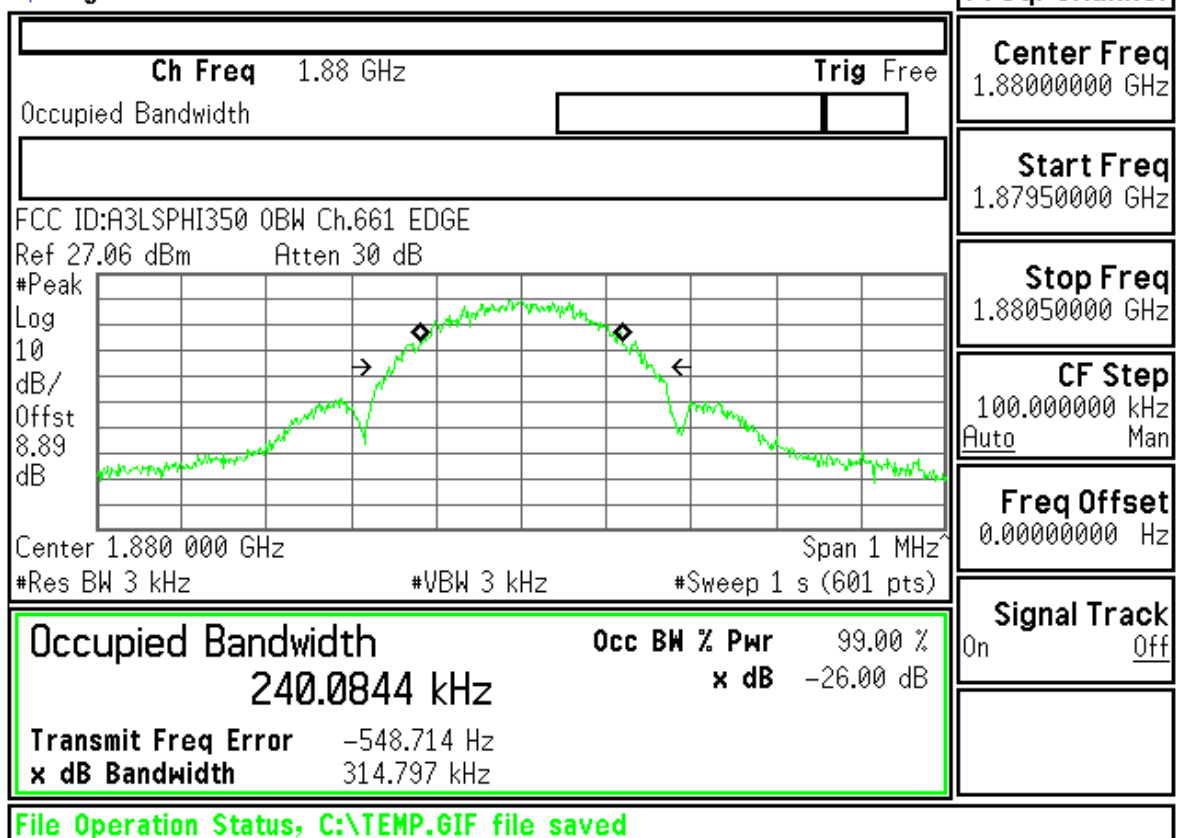
R T



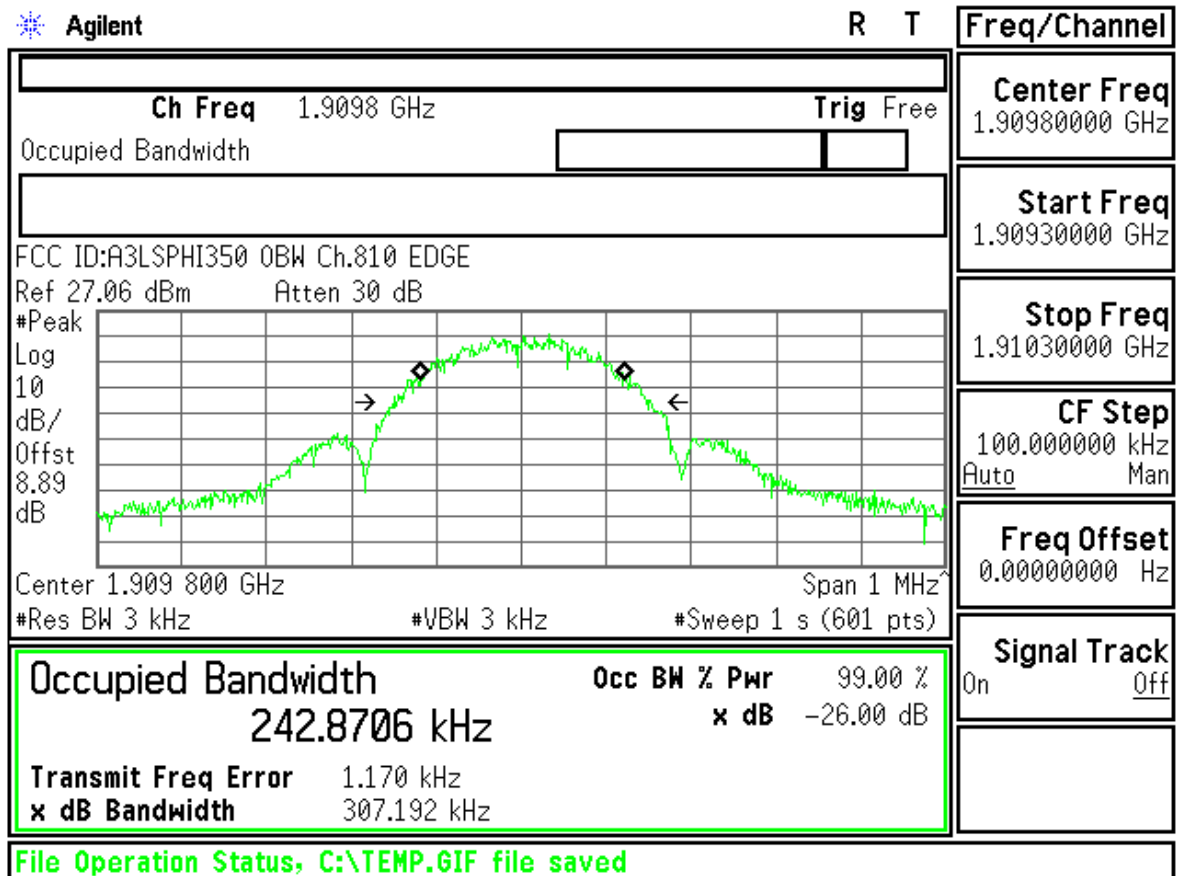
Freq/Channel
Center Freq 1.85020000 GHz
Start Freq 1.84970000 GHz
Stop Freq 1.85070000 GHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

 Agilent

R T



Freq/Channel
Center Freq 1.88000000 GHz
Start Freq 1.87950000 GHz
Stop Freq 1.88050000 GHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off



FCC ID : A3LSPHI350 Transmit Power 512CH EDGE

Measurement/Instrument Screen													
Control		EGPRS Transmit Power								PDCH Params			
EGPRS Transmit Power Setup ▾		EPSSK Burst Power				EPSSK Est Carrier Power				Downlink Traffic Power ▾			
		Minimum		Maximum		Minimum		Maximum		Traffic Band			
		24.14 dBm		25.41 dBm		24.80 dBm		24.83 dBm		PCS			
		Average		Std Dev		Average		Std Dev		Traffic Channel			
		24.77 dBm		0.23 dBm		24.82 dBm		0.01 dBm		512			
		200 /200				Single							
											HS TX Level ▾		
											Modulation Coding Scheme ▾		
											Return		
		Active Cell Transferring				Sys Type: EGPRS							
1 of 2						IntRef		Offset		R T		1 of 2	

FCC ID : A3LSPHI350 Transmit Power 661CH EDGE

Measurement/Instrument Screen												
Control		EGPRS Transmit Power								PDCH Parms		
EGPRS Transmit Power Setup ▾		EPSK Burst Power				EPSK Est Carrier Power				Downlink Traffic Power ▾		
		Minimum		Maximum		Minimum		Maximum		Traffic Band		
		23.94 dBm		25.51 dBm		24.97 dBm		24.99 dBm		PCS		
		Average		Std Dev		Average		Std Dev		Traffic Channel		
		24.91 dBm		0.24 dBm		24.98 dBm		0.01 dBm		661		
		200 / 200								Single		

FCC ID : A3LSPHI350 Transmit Power 810CH EDGE

Measurement/Instrument Screen													
Control		EGPRS Transmit Power								PDCH Parms			
EGPRS Transmit Power Setup ▾		EPSK Burst Power				EPSK Est Carrier Power				Downlink Traffic Power ▾			
		Minimum		Maximum		Minimum		Maximum		Traffic Band			
		24.09 dBm		25.55 dBm		24.99 dBm		25.01 dBm		PCS			
		Average		Std Dev		Average		Std Dev		Traffic Channel			
		24.93 dBm		0.24 dBm		25.00 dBm		0.01 dBm		810			
		200 / 200								Single			
		Active Cell Transferring						Sys Type: EGPRS					
1 of 2						IntRef		Offset		R T		1 of 2	

FCC ID:A3LSPHI350 Band Edge Ch.512 EDGE

Ref 27.06 dBm Atten 30 dB

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

#LgAv

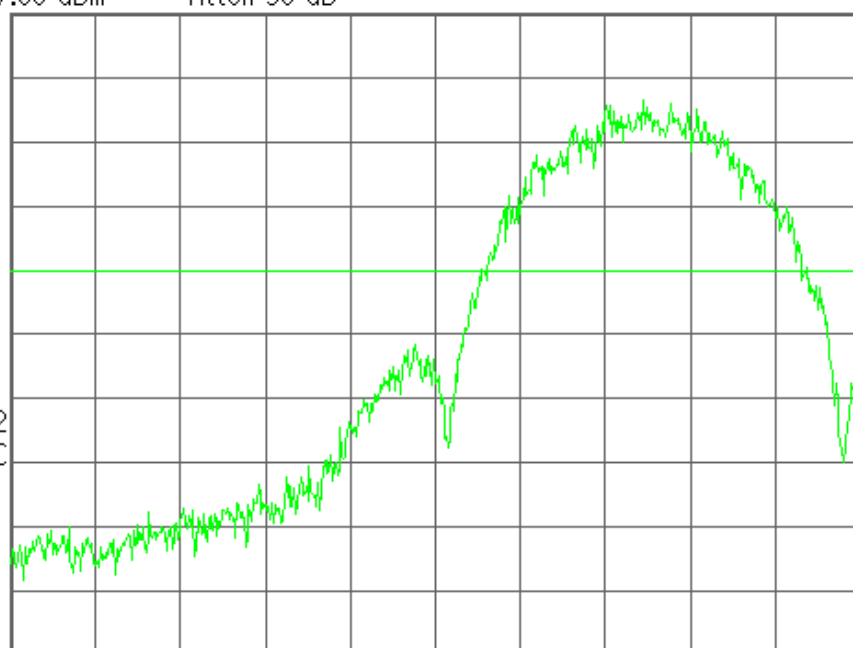
M1 S2

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

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FCC ID:A3LSPHI350 Band Edge Ch.512 EDGE

Mkr1 1.849 975 9 GHz

Ref 27.06 dBm Atten 30 dB

-24.90 dBm

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

#LgAv

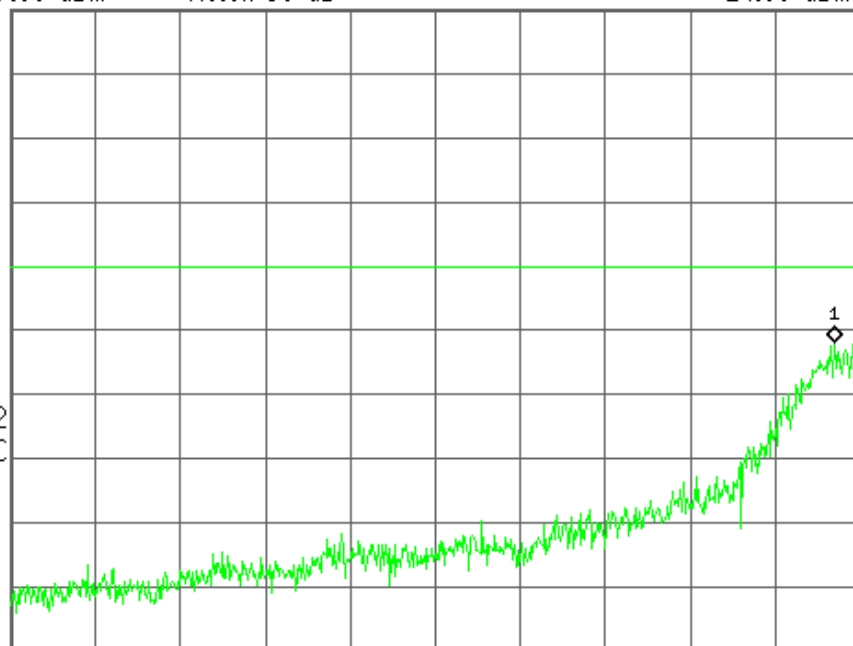
M1 S2

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)

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

FCC ID:A3LSPHI350 Band Edge Ch.810 EDGE

Ref 27.06 dBm Atten 30 dB

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

#LgAv

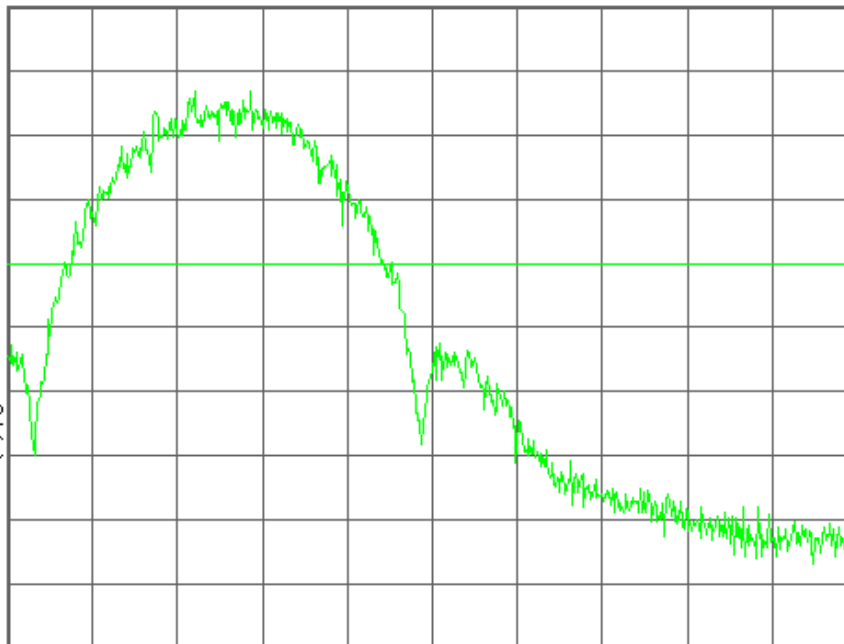
M1 S2

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

FCC ID:A3LSPHI350 Band Edge Ch.810 EDGE

Mkr1 1.910 034 3 GHz

Ref 27.06 dBm Atten 30 dB

-26.08 dBm

#Avg

Log

10

dB/

Offst

8.89

dB

DI

-13.0

dBm

#LgAv

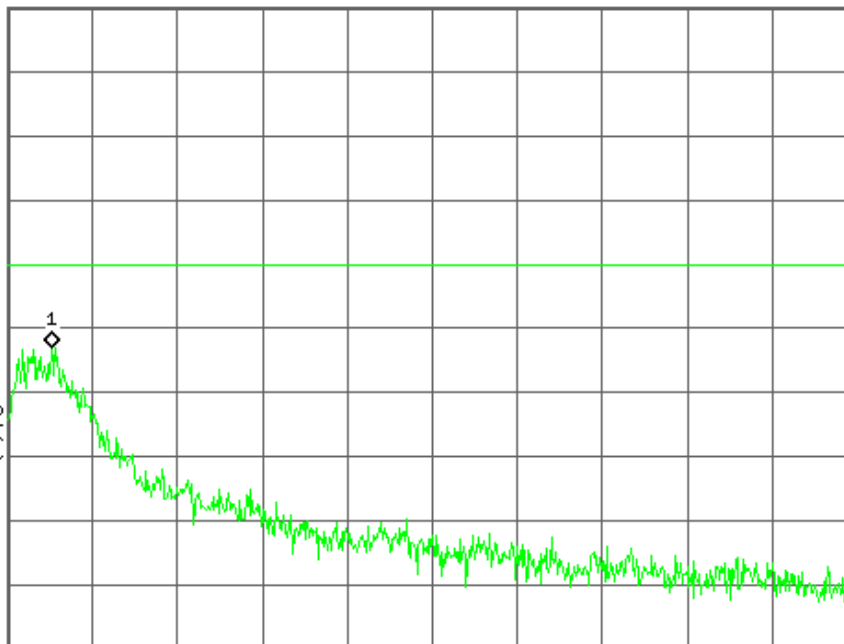
M1 S2

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

