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IT R&D Center
416 Maetan3-Dong,
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FCC CFR47 PART 22 & 24 SUBPART CERTIFICATION REPORT

Model Tested : GT-B7810
FCC ID (Requested) : A3LG7B7810
Report No : FJ-136-R1
Job No : FJ-136
Date issued : June 8, 2012

- 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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TABLE OF CONTENT

MEASUREMENT REPORT	Page
1. FCC CERTIFICATION INFORMATION	3
1.1. §2.1033 General Information	3
2. INTRODUCTION	4
2.1. General	4
3. MEASURING INSTRUMENT CALIBRATION	5
4. TEST EQUIPMENT LIST	6
5. DESCRIPTION OF TESTS	7
5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power	7
5.2. Radiated Spurious & Harmonic Emission	8
5.3. Peak-Average Ratio	9
5.4. Occupied Bandwidth	10
5.5. Spurious and Harmonic Emission at Antenna Terminal	10
5.5.1. Occupied Bandwidth Emission Limits	10
5.5.2. Conducted Spurious Emission	12
5.6. Frequency Stability / Temperature Variation	13
6. TEST DATA	14
6.1. Effective Radiated Power (E.R.P.)	14
6.2. Equivalent Isotropic Radiated Power (E.I.R.P.)	15
6.3. GSM850 Radiated Spurious & Harmonic measurement	16
6.4. GSM1900 Radiated Spurious & Harmonic measurement	17
6.5. GSM850 Radiated Spurious & Harmonic Conversion Table	18
6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table	19
6.7. Frequency Stability	20
6.7.1. GSM850 Frequency Stability Table	20
6.7.2. GSM850 Frequency Stability Graph	21
6.7.3. GSM1900 Frequency Stability Table	23
6.7.4. GSM1900 Frequency Stability Graph	24
7. CONCLUSION	26
8. TEST PLOTS	27



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 : A3LGTB7810
- Model : GT-B7810
- Quantity : Quantity production is planned
- Emission Designators : 246KGXW(GSM850)
246KGXW(GSM1900)
- 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 : 0.239 W ERP GSM850 (23.79 dBm)
1.545 W EIRP GSM1900 (31.89 dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 GSM/GPRS Phone with Bluetooth, EDGE Rx
only and WLAN
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : May 10-11, 2012
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FJ-136-R1

2. INTRODUCTION

2.1. General

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



Figure1. Map of the Suwon City area.

Measurement Procedure

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

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



Figure2. Photograph of 3m Fully-Anechoic Chamber

3. MEASURING INSTRUMENT CALIBRATION

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

4. TEST EQUIPMENT LIST

Name Of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/010	2012-10-25
	E4440A(3Hz~26.5GHz)	MY46187454	2013-03-14
	E4440A(3Hz~26.5GHz)	MY41000236	2013-04-26
Signal Generator	SMR20	835197/030	2012-12-01
Network Analyzer	8753E	JP38160590	2012-06-21
Pre-Amplifier	8449B	3008A00691	2012-12-09
Communication test set	8960	MY47510060	2013-03-05
	8960	GB42360886	2012-09-02
Controller	CO2000	CO2000/424	Not Required
Turn Unit	CT0800	CT0800/057	Not Required
Rotating Device	DE3600-RH-PR	DE3600-RH-PR/050	Not Required
Antenna Master	MA4000	MA4000/204	Not Required
Horn Antenna	HF906	100134	2013-09-05
	BBHA9120	9120D-636	2012-07-14
Dipole Antenna	UHA 9105	9105-2412	2013-09-09
	UHA 9105	9105-2413	2012-07-15
Receive Antenna	HL040	353255/019	2013-09-05
Power Supply	E3640A	MY40003594	2012-06-21
	E3640A	MY40003595	2013-05-16
	E3632A	MY40022438	2013-03-02
Divider	11636B	51946	2012-07-04
	11636B	51942	2012-07-05
	11636B	56918	2012-09-28
High Pass Filter	WHK/3.0/18G-10SS	492	2013-04-09
	WHK/3.5/18G-10SS	4	2013-04-09
Environmental Chamber	SH-241	92000549	2012-11-14
	SH-241	92000548	2012-11-14
Shielded Fully Anechoic Chamber	CHAMBER	ANT0001	Not Required

5. DESCRIPTION OF TESTS

5.1. Effective Radiated Power / Equivalent Isotropic Radiated Power

Test Set-up for the ERP/EIRP TEST

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

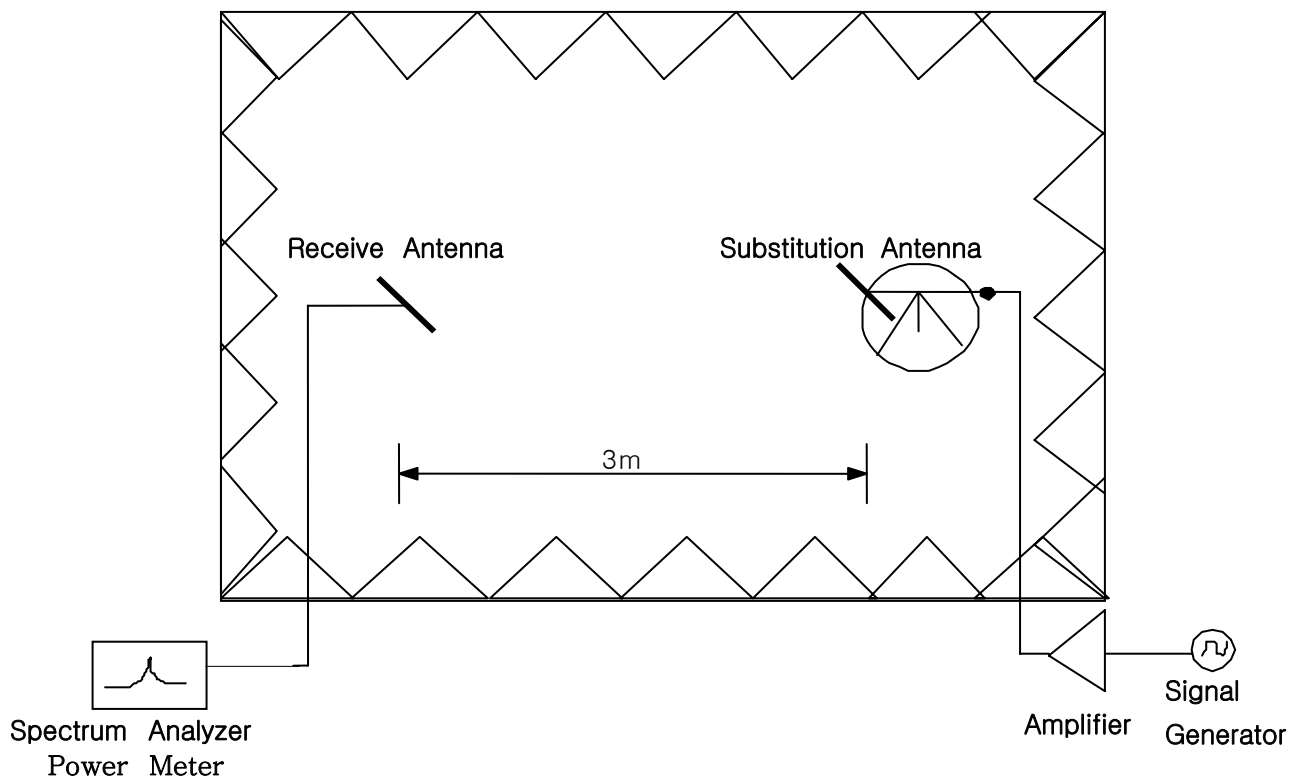


Figure 3. Diagram of ERP/EIRP test Set-up

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

5.2. Radiated Spurious & Harmonic Emission

Test Set-up for the Radiated Emission TEST

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

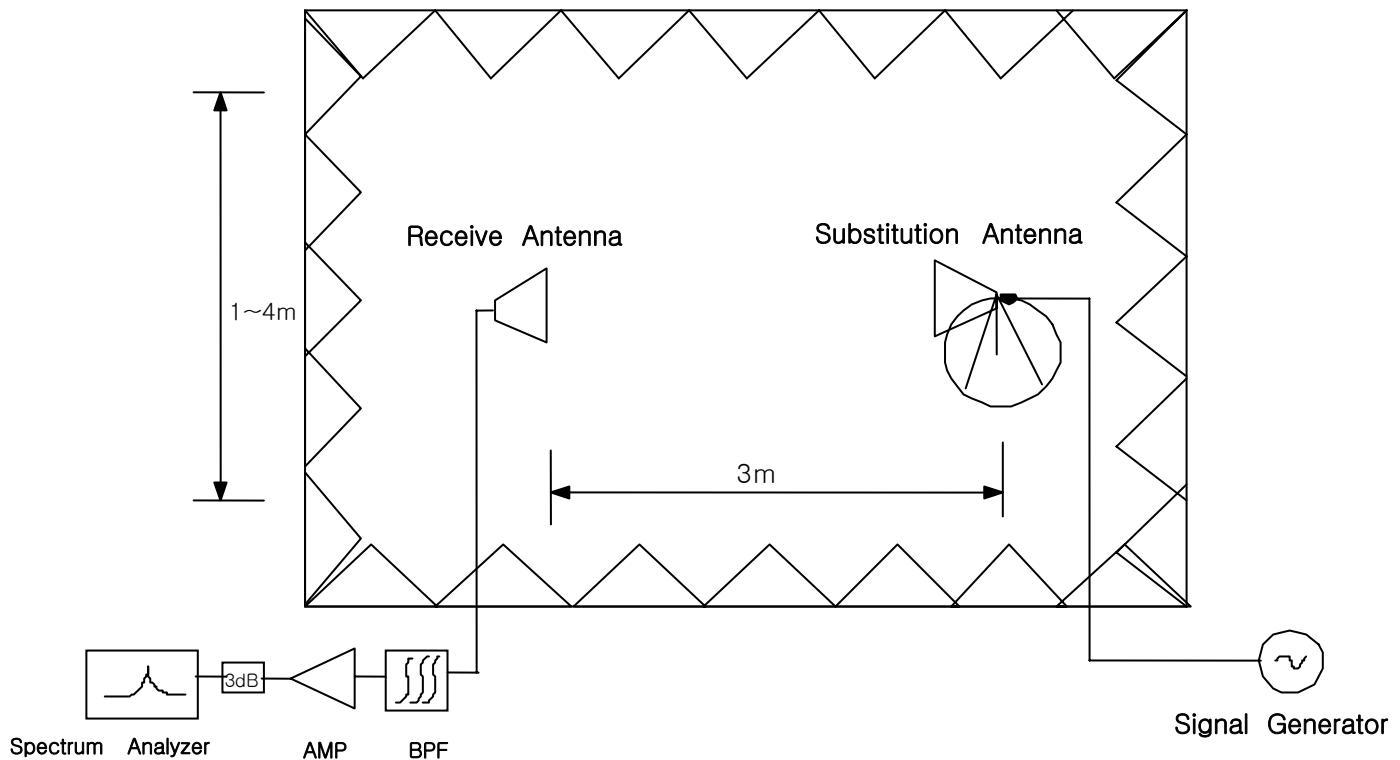


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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

SAMPLE CALCULATION

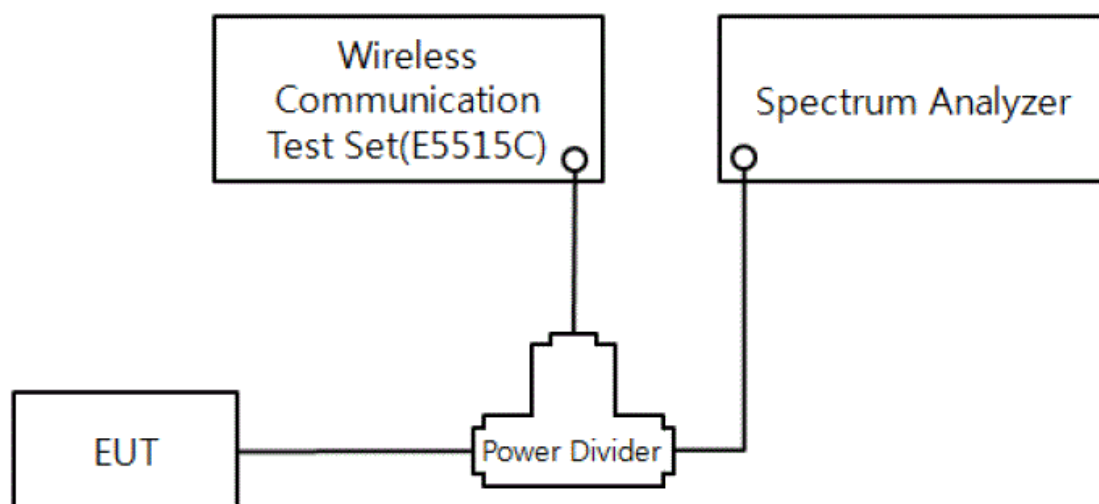
Example: Channel 661 , Second Harmonic(3760.00MHz)

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

5.3. Peak-Average Ratio

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

Test set-up



(Configuration of conducted Emission measurement)

5.4. Occupied Bandwidth

Test Procedure

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

5.5. Spurious and Harmonic Emission at Antenna Terminal

5.5.1. Occupied Bandwidth Emission Limits

Part 24

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

Part 22

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

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

Table 1. Broadband PCS Service Frequency Blocks

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

Table 2. Cellular Service Frequency Blocks

5.5.2. Conducted Spurious Emission

Minimum standard:

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

$$43 + 10\log (0.239 \text{ W}) = 36.78 \text{ dB}$$

$$23.79 \text{ dBm} - 36.78 \text{ dB} = -13 \text{ dBm}$$

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

Example)

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

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

Test Procedure:

The EUT was setup to maximum output power at its lowest channel. The Resolution BW of the analyzer is set to 1% of the emission bandwidth to show compliance with the -13dBm limit, in the 1MHz bands immediately outside and adjacent to the edge of the frequency block. The measurements are repeated for the EUT's highest channel. For the Out-of-Band measurements a 1MHz RBW was used to scan GSM850 Mode from 10MHz to 10GHz and GSM1900 Mode from 10MHz to 20GHz. A display line was placed at -13dBm to show compliance. The high, lowest and a middle channel were tested for out of band measurements.

Plots are shown herein.

5.6. Frequency Stability / Temperature Variation

The frequency stability of the transmitter is measured by:

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

Specification- The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ± 0.00025 (± 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 +50°C allowing at least two hours at each temperature for stabilization. In all measurements the frequency is measured within three minutes after re-applying power to the transmitter.
7. The artificial load is mounted external to the temperature chamber.

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

6. TEST DATA

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

Supply Voltage : 3.7VDC

Modulation : GSM850

■ Result

Frequency (MHz)	Tested level [dBm]	Substitute Level [dBm]	Antenna Gain [dBd]	Polarization [H/V]	ERP [dBm]	ERP [W]	Battery
824.20	-13.87	23.70	-1.95	H	21.75	0.150	Standard
836.60	-13.89	24.20	-1.72	H	22.48	0.177	Standard
848.80	-14.85	25.37	-1.58	H	23.79	0.239	Standard

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

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

Radiated measurements at 3 meters by Substitution Method

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

Supply Voltage : 3.7VDC

Modulation : PCS 1900

■ Result

Frequency (MHz)	Tested level [dBm]	Substitute Level [dBm]	Antenna Gain [dBi]	Polarization [H/V]	EIRP [dBm]	EIRP [W]	Battery
1850.20	-19.04	20.28	10.16	H	30.44	1.107	Standard
1880.00	-17.59	21.73	10.16	V	31.89	1.545	Standard
1909.80	-19.64	19.85	10.16	H	30.01	1.002	Standard

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

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

Radiated measurements at 3 meters by Substitution Method

6.3. GSM850 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 23.79 dBm = 0.239 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 36.78 \text{ dBc}$

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
128	2	1648.40	-50.25	H	61.45
	3	2472.60	-65.95	H	71.91
	4	3296.80	-65.14	V	67.23
	5	4121.00	-	-	-
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-49.93	H	60.88
	3	2509.80	-65.39	V	71.90
	4	3346.40	-64.42	V	66.60
	5	4183.00	-	-	-
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-53.61	V	64.09
	3	2546.40	-62.64	V	68.72
	4	3395.20	-66.56	V	68.60
	5	4244.00	-	-	-
	6	5092.80	-	-	-
	7	5941.60	-	-	-

NOTE :

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

Radiated Spurious Emission measurements at 3 meters by Substitution Method

6.4. GSM1900 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 31.89 dBm = 1.545 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 44.89$ dBc

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-49.60	H	54.51
	3	5550.60	-55.74	H	57.23
	4	7400.80	-53.18	H	49.36
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-53.50	H	58.50
	3	5640.00	-57.37	V	58.84
	4	7520.00	-56.60	V	53.43
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-57.12	H	62.06
	3	5729.40	-57.52	H	58.21
	4	7639.20	-57.28	V	54.25
	5	9549.00	-	-	-
	6	11458.80	-	-	-
	7	13368.60	-	-	-

NOTE :

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

Radiated Spurious Emission measurements at 3 meters by Substitution Method

6.5. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : May 11, 2012

Test Engineer : HK LEE

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

CH	Har	Frequency (MHz)	① Tx C/L dB	②Tx Horn Gain dBi	③Tx Level dBm	④ ESI Level : H dBm	④ ESI Level : V dBm	⑤Tested EUT Level : H dBm	⑤Tested EUT Level : V dBm	⑥ Result EUT : H (dBc)	⑥ Result EUT : V (dBc)
128	2	1648.40	-8.77	9.40	-13.60	-27.73	-27.03	-50.25	-50.80	61.45	62.70
	3	2472.60	-11.12	10.60	-12.50	-32.97	-32.23	-65.95	-65.32	71.91	72.02
	4	3296.80	-12.19	12.00	-12.80	-36.08	-36.84	-64.40	-65.14	67.25	67.23
	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	-49.93	-50.68	60.88	62.40
	3	2509.80	-11.24	10.60	-12.40	-33.18	-32.42	-66.15	-65.39	71.90	71.90
	4	3346.40	-12.13	12.00	-12.90	-36.09	-36.75	-63.83	-64.42	66.67	66.60
	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	-55.01	-53.61	64.68	64.09
	3	2546.40	-11.22	10.60	-12.40	-32.63	-32.85	-62.48	-62.64	68.78	68.72
	4	3395.20	-12.28	12.00	-12.70	-36.60	-36.89	-66.93	-66.56	69.26	68.60
	5	4244.00	-14.15	12.60	-11.50	-39.36	-39.77	-	-	-	-
	6	5092.80	-16.16	12.70	-9.50	-42.73	-42.38	-	-	-	-
	7	5941.60	-17.34	13.10	-8.80	-45.37	-45.34	-	-	-	-

6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : May 11, 2012

Test Engineer : HK LEE

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

CH	Har	Frequency (MHz)	① Tx C/L dB	②Tx Horn Gain dBi	③Tx Level dBm	④ ESI Level : H dBm	④ ESI Level : V dBm	⑤Tested EUT Level : H dBm	⑤Tested EUT Level : V dBm	⑥ Result EUT : H (dBc)	⑥ Result EUT : V (dBc)
512	2	3700.40	-12.85	12.60	-12.80	-39.98	-39.03	-49.60	-49.91	54.51	55.77
	3	5550.60	-16.92	12.50	-8.60	-43.40	-42.99	-55.74	-57.19	57.23	59.09
	4	7400.80	-20.20	11.50	-4.30	-48.71	-48.56	-53.18	-54.19	49.36	50.52
	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	-53.50	-53.27	58.50	59.00
	3	5640.00	-17.07	12.50	-8.40	-43.74	-43.42	-57.94	-57.37	59.09	58.84
	4	7520.00	-20.60	11.50	-3.90	-48.76	-48.06	-57.63	-56.60	53.76	53.43
	5	9400.00	-23.50	11.90	-1.40	-52.65	-551.24	-	-	-	-
	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	-57.12	-56.76	62.06	62.10
	3	5729.40	-17.16	12.50	-8.30	-44.20	-43.35	-57.52	-58.75	58.21	60.29
	4	7639.20	-20.88	11.50	-3.60	-48.25	-47.92	-57.83	-57.28	54.47	54.25
	5	9549.00	-24.09	11.90	-0.80	-52.88	-51.48	-	-	-	-
	6	11458.80	-26.05	11.50	1.60	-57.49	-54.67	-	-	-	-
	7	13368.60	-28.74	14.42	1.30	-63.03	-59.49	-	-	-	-

6.7. Frequency Stability

6.7.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

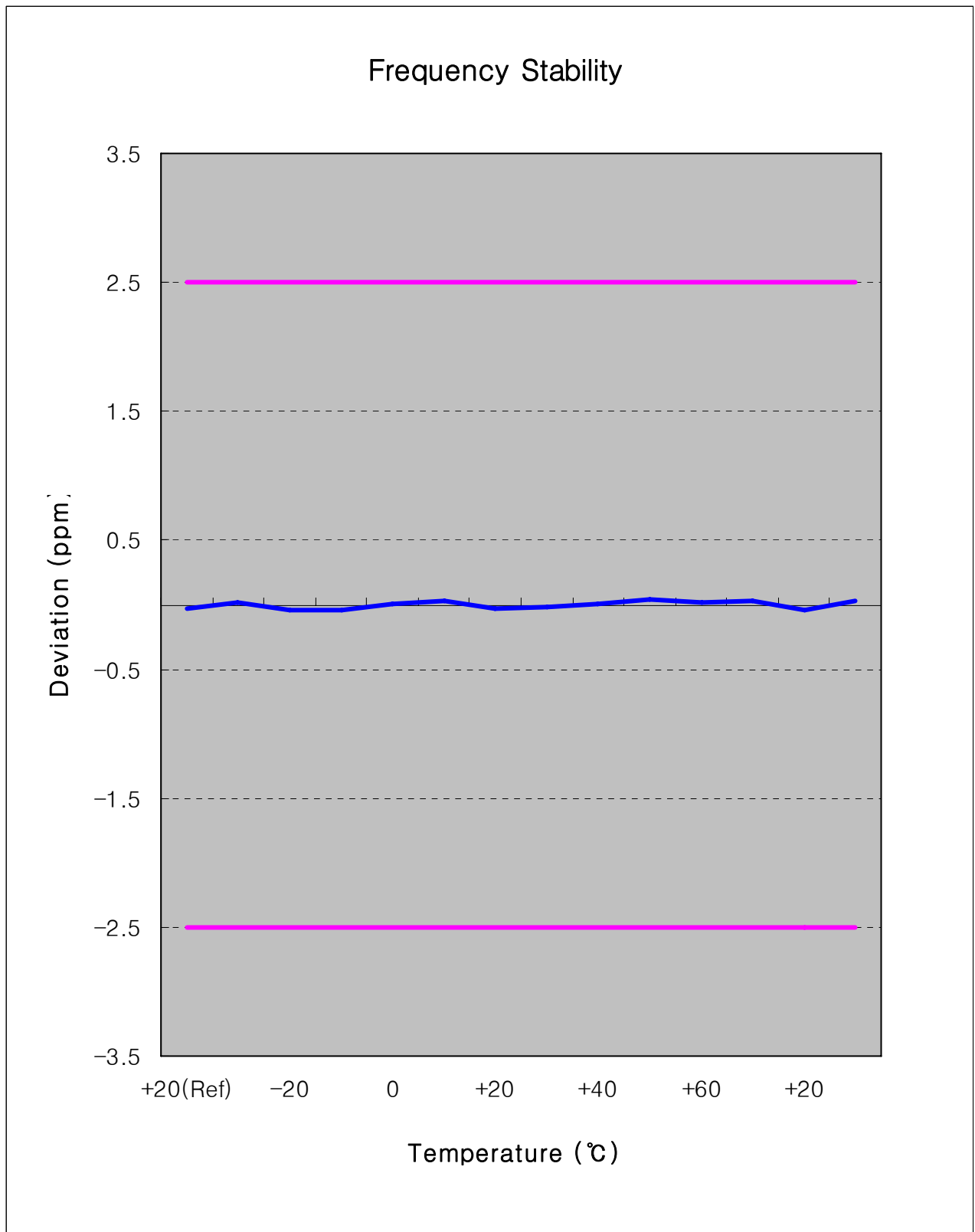
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-45.00	836,599,955	-0.000005	-0.054
100%		-30	-35.20	836,599,965	-0.000004	-0.042
100%		-20	23.30	836,600,023	0.000003	0.028
100%		-10	20.00	836,600,020	0.000002	0.024
100%		0	39.90	836,600,040	0.000005	0.048
100%		+10	-3.00	836,599,997	0.000000	-0.004
100%		+20	-45.00	836,599,955	-0.000005	-0.054
100%		+30	8.90	836,600,009	0.000001	0.011
100%		+40	-0.30	836,600,000	0.000000	0.000
100%		+50	39.70	836,600,040	0.000005	0.047
100%		+60	9.00	836,600,009	0.000001	0.011
115%	4.26	+20	-12.30	836,599,988	-0.000001	-0.015
Batt.Endpoint	3.35	+20	-24.30	836,599,976	-0.000003	-0.029

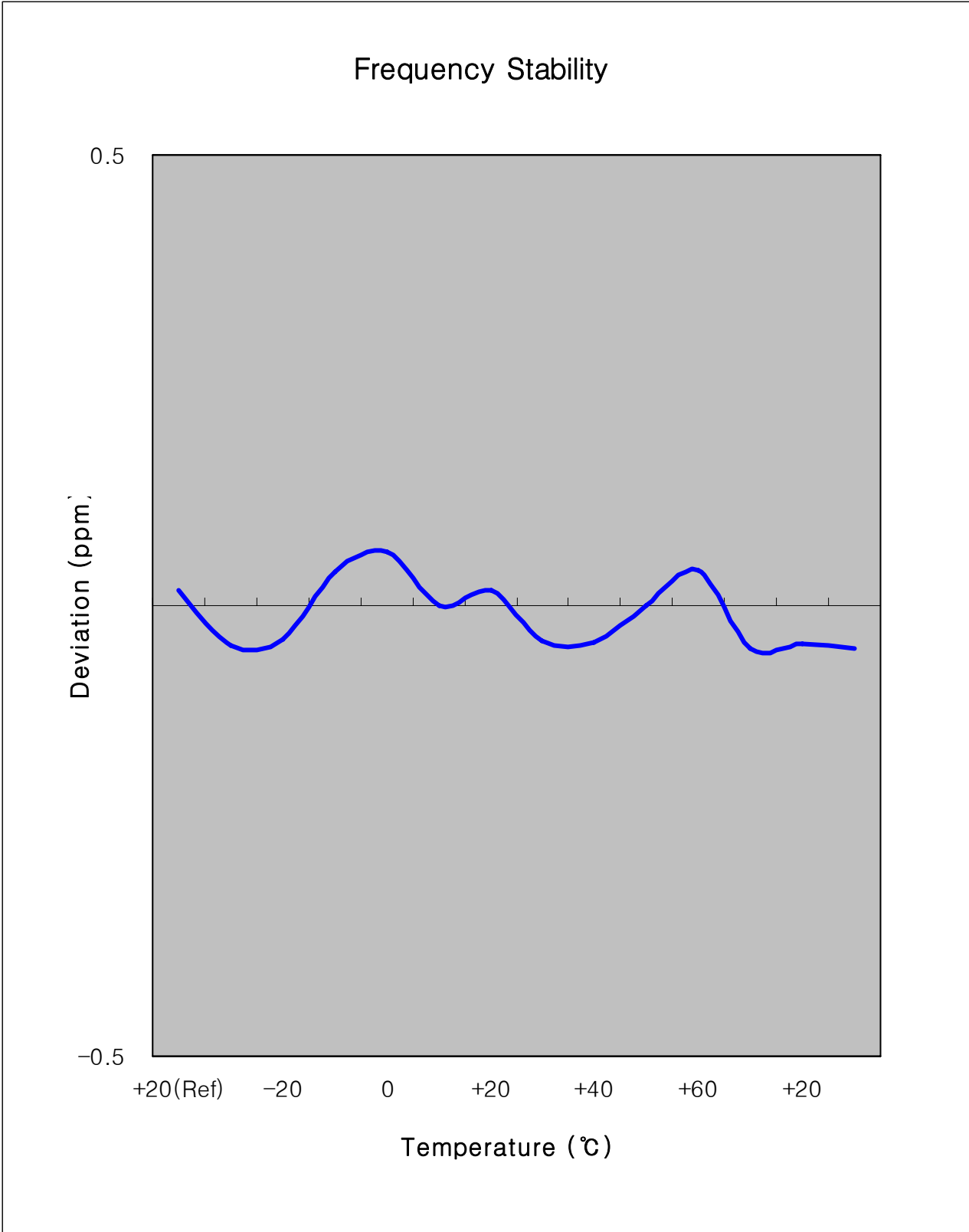
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.2. GSM850 Frequency Stability Graph



Zoom IN



6.7.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

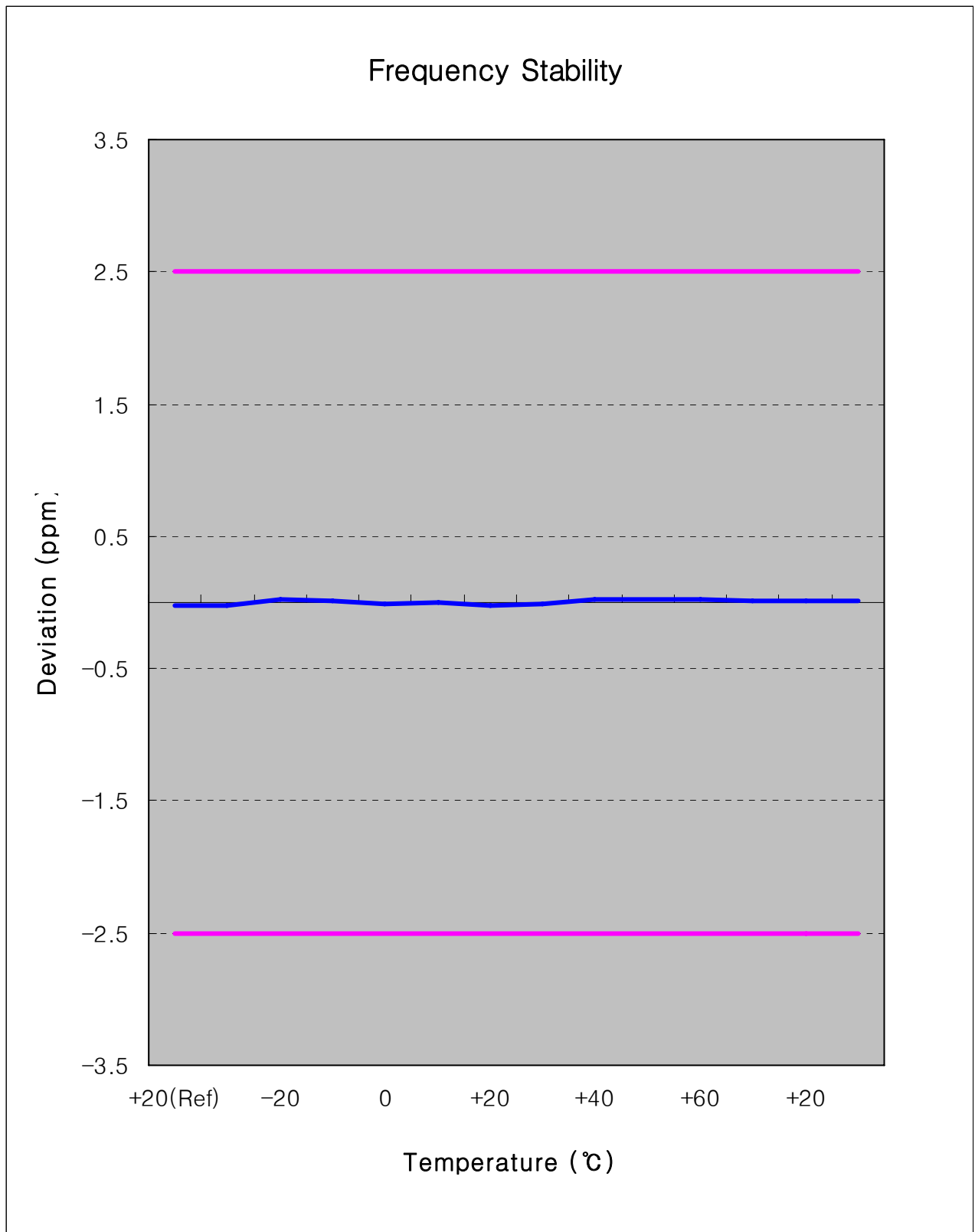
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-13.50	1,879,999,987	-0.000001	-0.007
100%		-30	-32.00	1,879,999,968	-0.000002	-0.017
100%		-20	23.70	1,880,000,024	0.000001	0.013
100%		-10	-27.50	1,879,999,973	-0.000001	-0.015
100%		0	-24.30	1,879,999,976	-0.000001	-0.013
100%		+10	-0.40	1,880,000,000	0.000000	0.000
100%		+20	-13.50	1,879,999,987	-0.000001	-0.007
100%		+30	-6.50	1,879,999,994	0.000000	-0.003
100%		+40	12.60	1,880,000,013	0.000001	0.007
100%		+50	44.90	1,880,000,045	0.000002	0.024
100%		+60	-30.70	1,879,999,969	-0.000002	-0.016
115%	4.26	+20	-20.30	1,879,999,980	-0.000001	-0.011
Batt.Endpoint	3.35	+20	-1.30	1,879,999,999	0.000000	-0.001

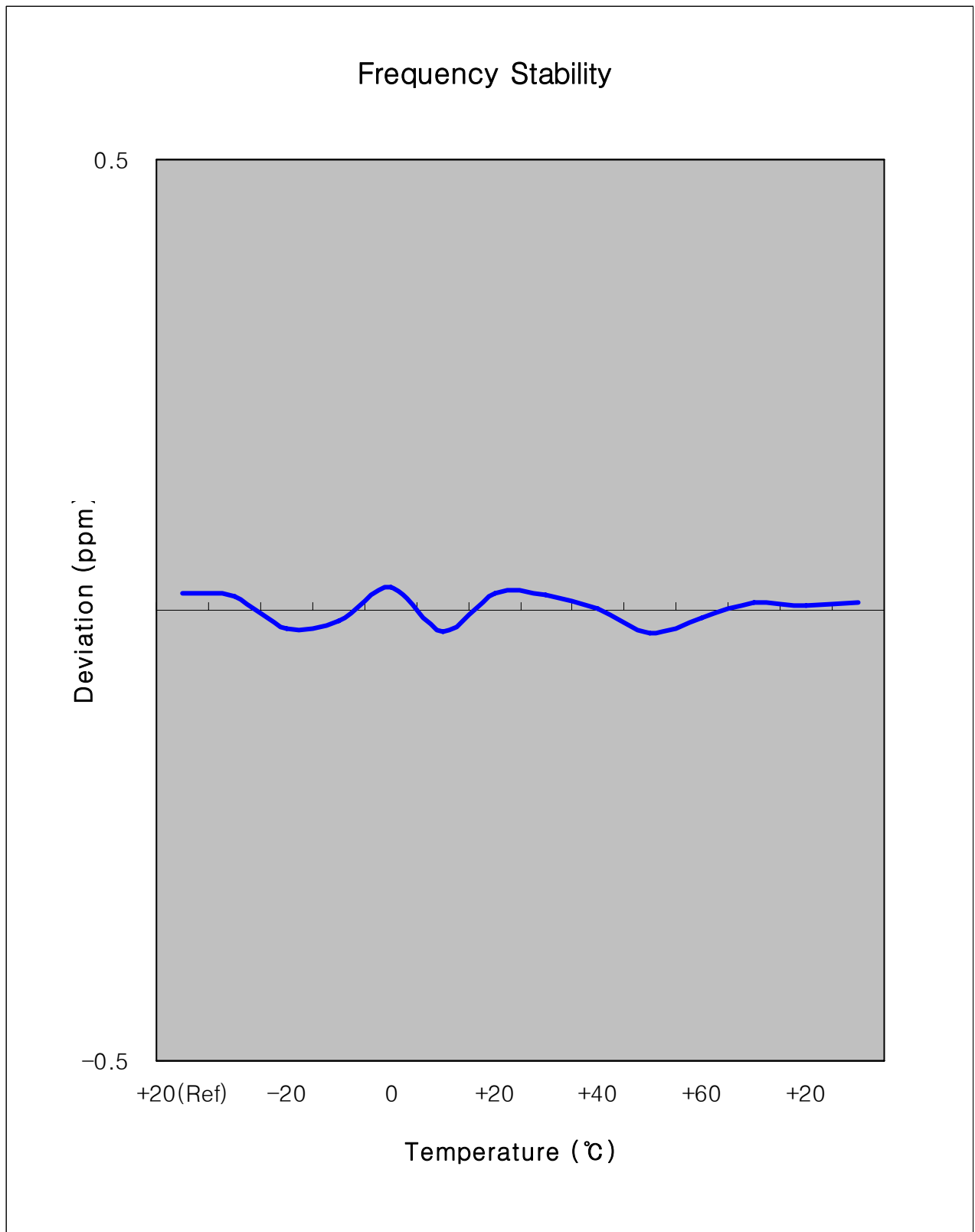
Note : The temperature is varied from -30 °C to +50 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

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

FCC ID : A3LGTB7810 complies with all the requirements of Parts 2,22,24 of the FCC Rules.

8. TEST PLOTS

※ For above 5GHz, we measure Ref. offset every 1GHz. And we tested the plots with worst offset of all offset.

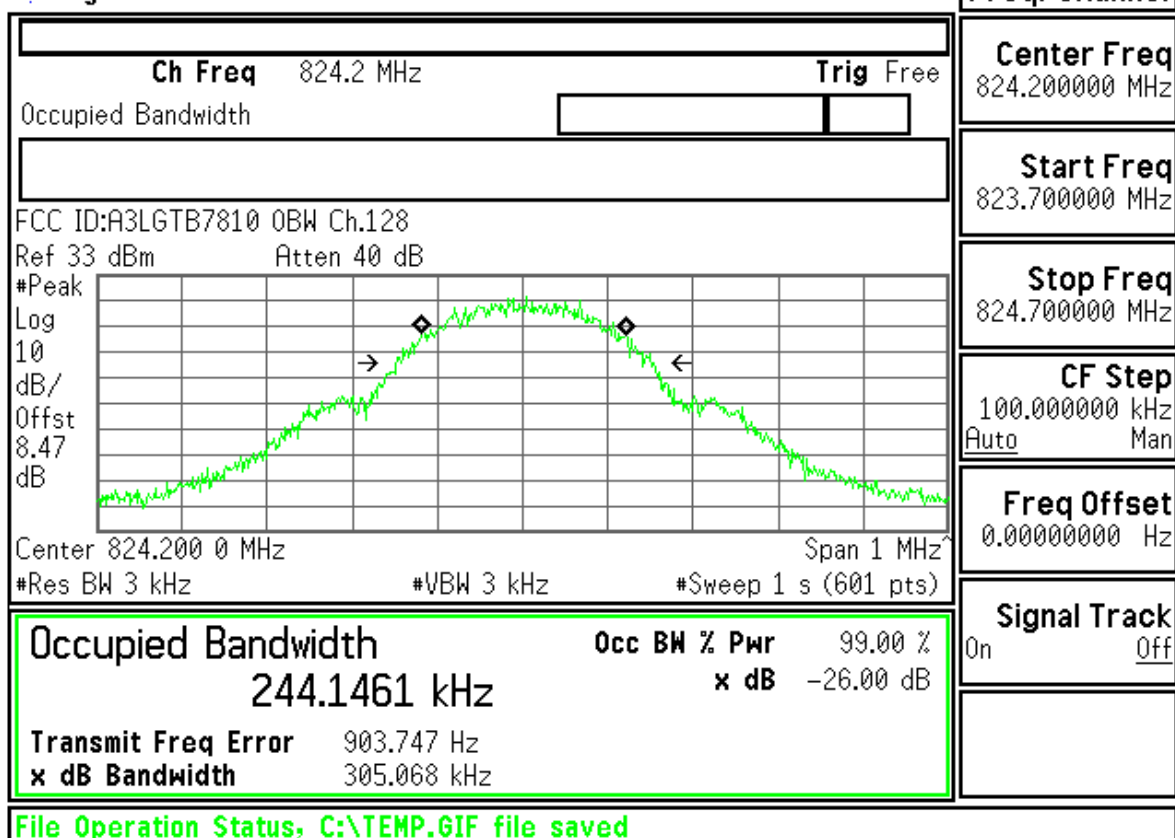
1. $\text{Spectrum Offset(dB)} = \text{Cable loss(dB)} + \text{Power divider(dB)}$
2. Ref Offset at 1880 MHz = 9.56dBm



Agilent

R T

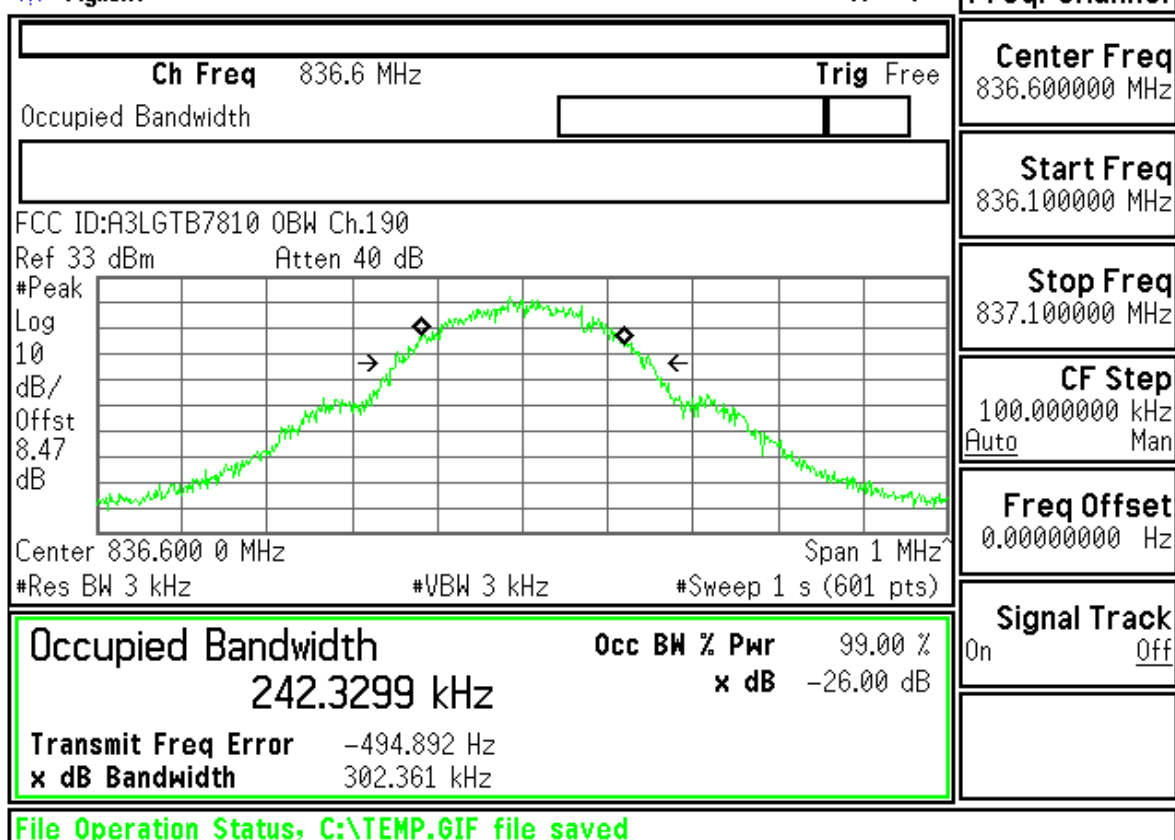
Freq/Channel

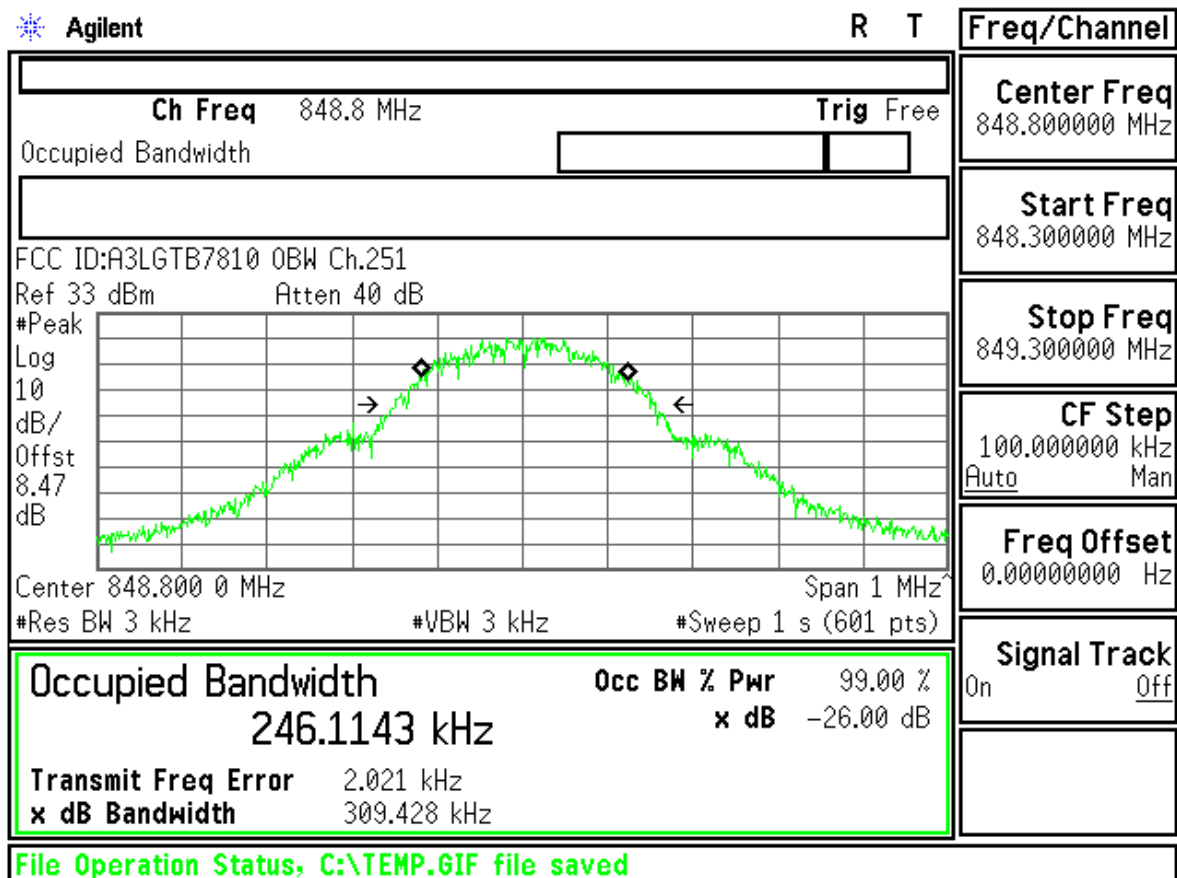
Center Freq
824.200000 MHzStart Freq
823.700000 MHzStop Freq
824.700000 MHzCF Step
100.000000 kHz
Auto ManFreq Offset
0.00000000 HzSignal Track
On Off

Agilent

R T

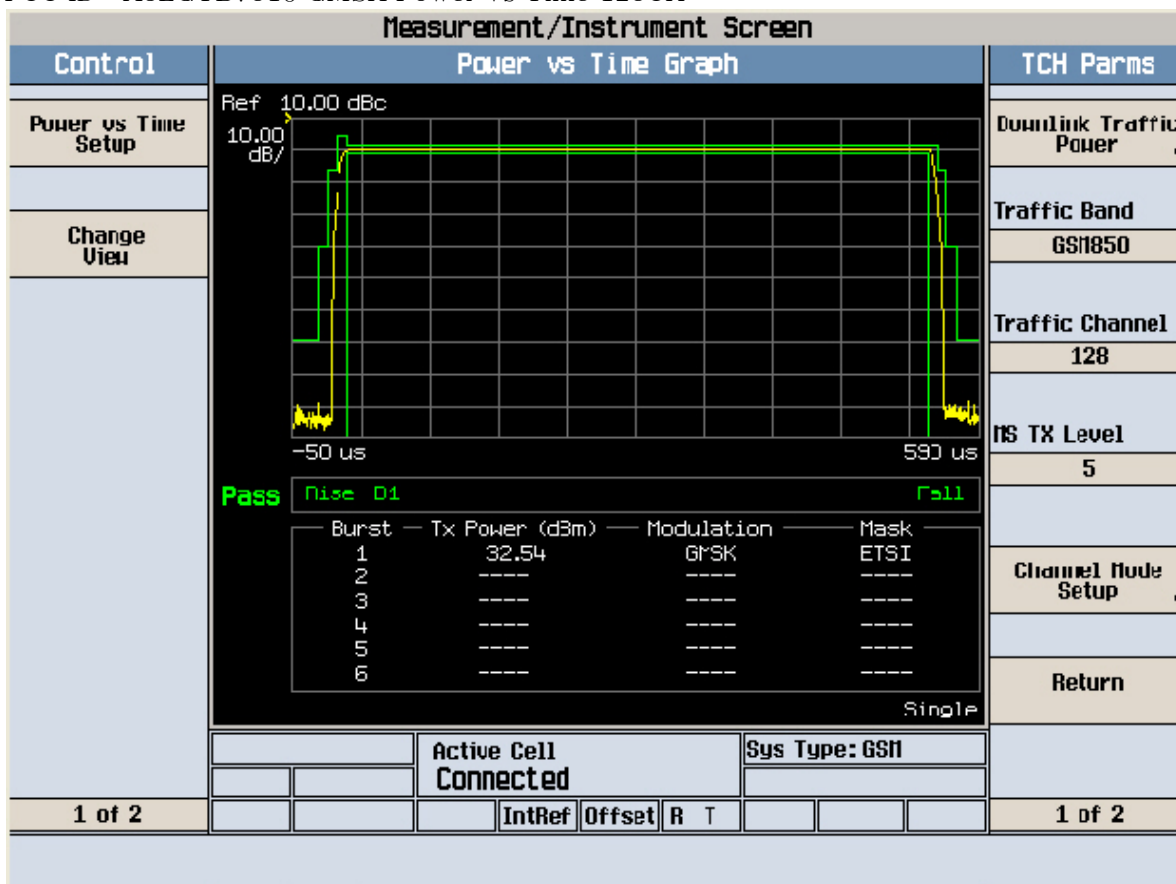
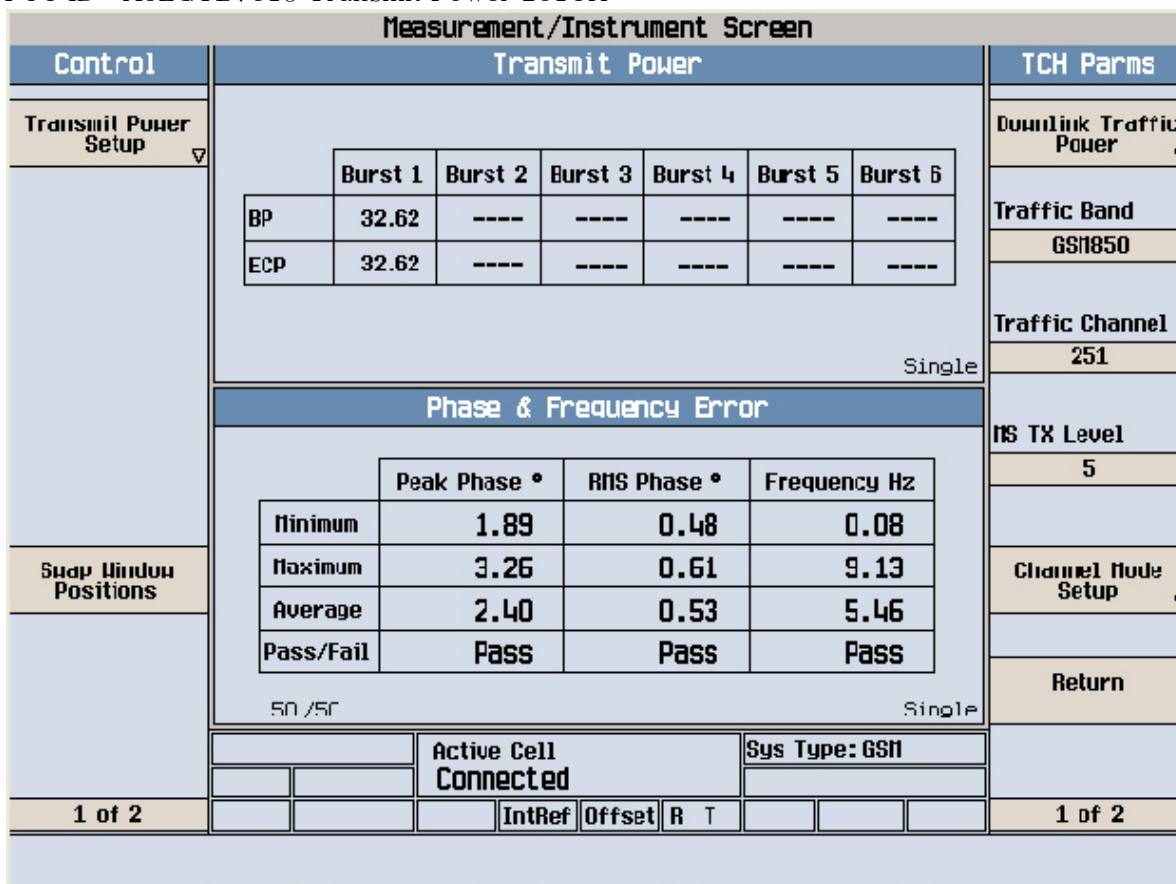
Freq/Channel

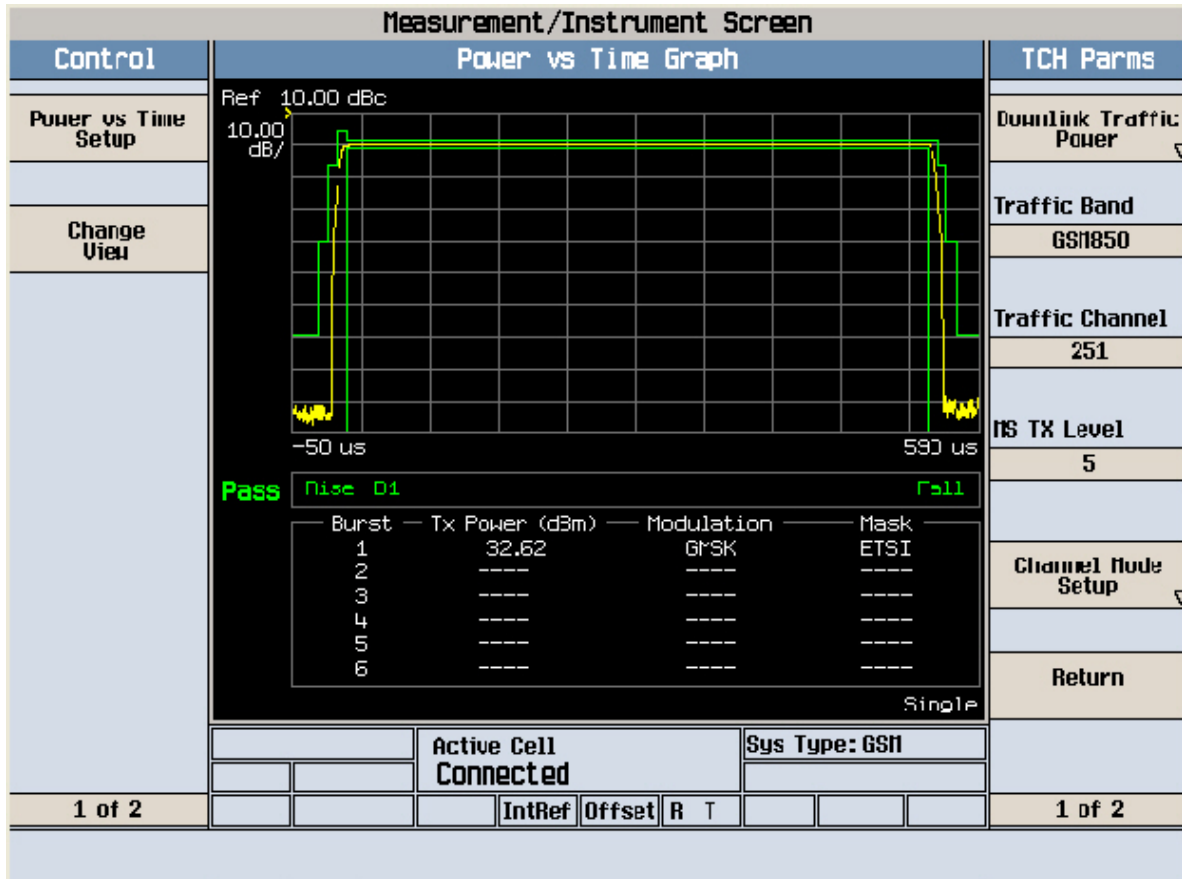
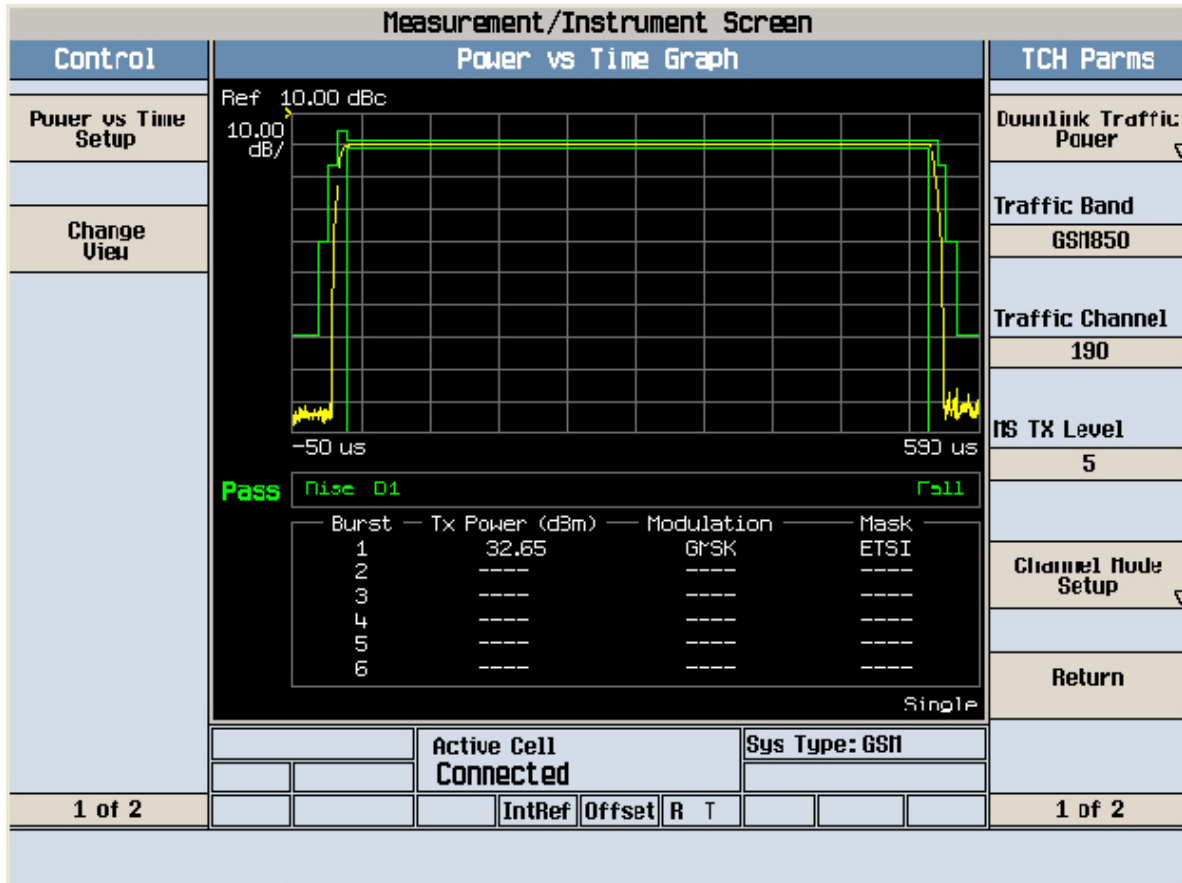
Center Freq
836.600000 MHzStart Freq
836.100000 MHzStop Freq
837.100000 MHzCF Step
100.000000 kHz
Auto ManFreq Offset
0.00000000 HzSignal Track
On Off

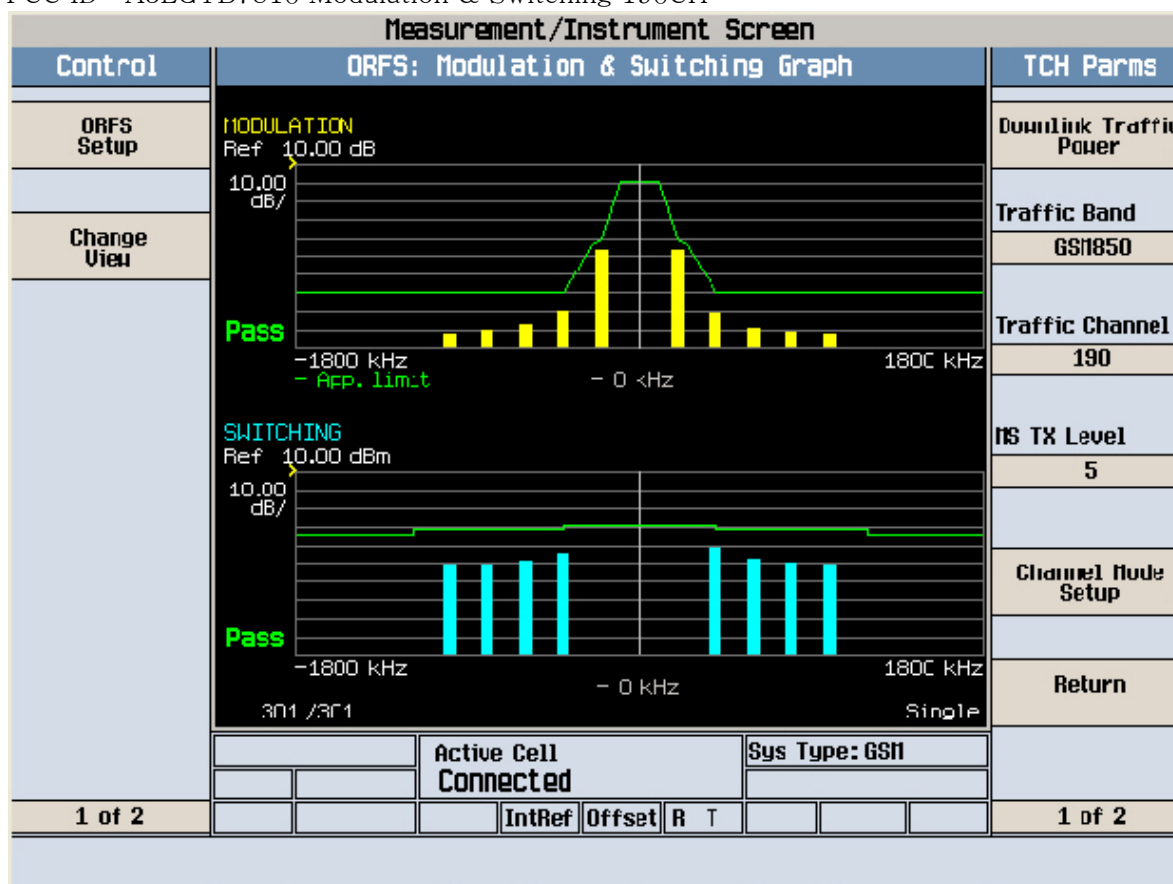
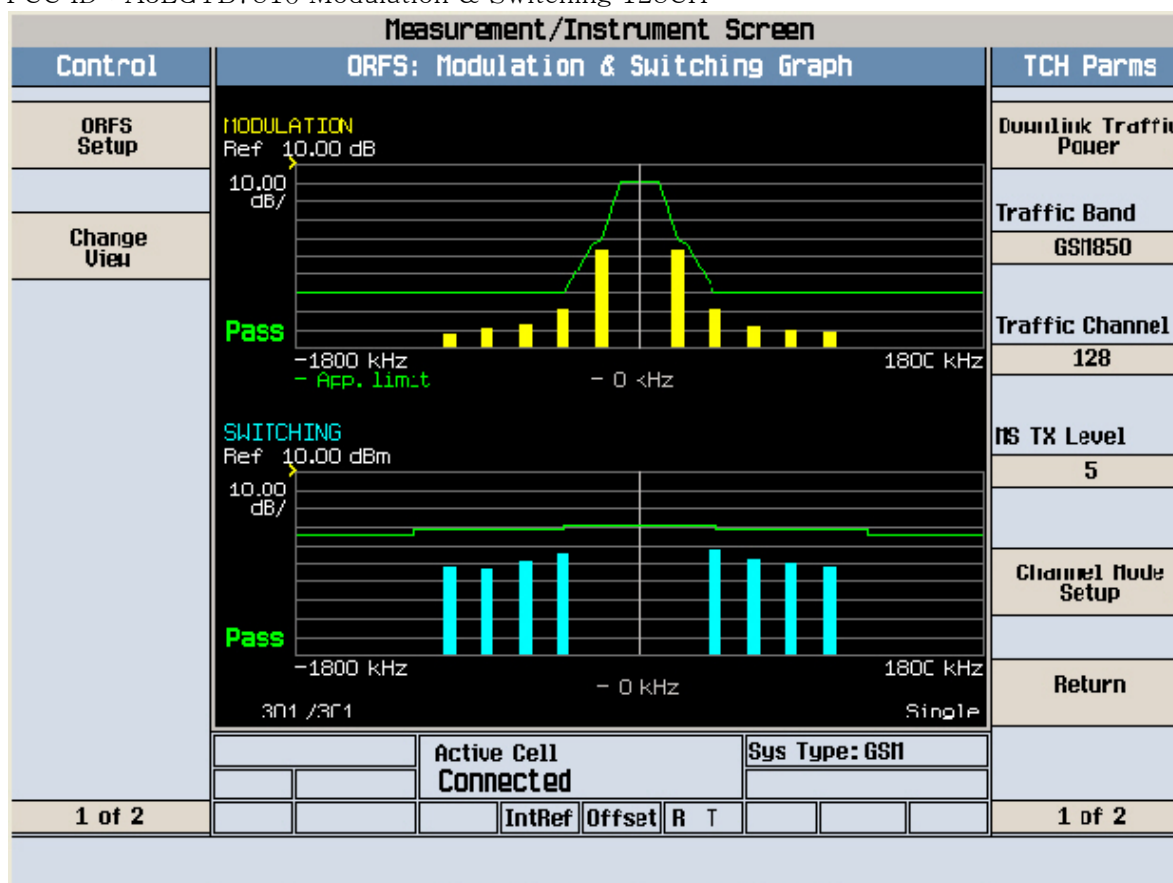


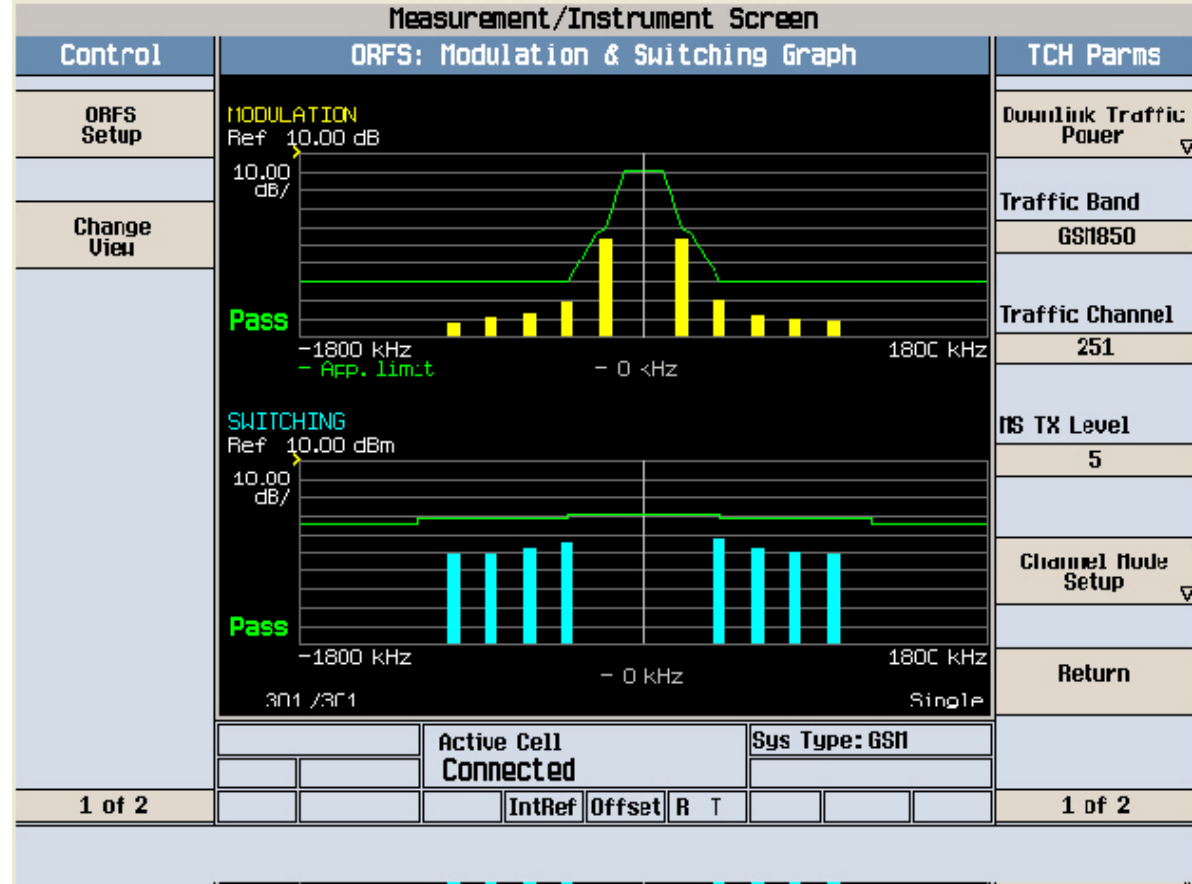
Measurement/Instrument Screen																																																				
Control		Transmit Power							TCH Parms																																											
Transmit Power Setup ▾		<table><tr><td></td><td>Burst 1</td><td>Burst 2</td><td>Burst 3</td><td>Burst 4</td><td>Burst 5</td><td>Burst 6</td></tr><tr><td>BP</td><td>32.55</td><td>----</td><td>----</td><td>----</td><td>----</td><td>----</td></tr><tr><td>ECP</td><td>32.55</td><td>----</td><td>----</td><td>----</td><td>----</td><td>----</td></tr></table>								Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	BP	32.55	----	----	----	----	----	ECP	32.55	----	----	----	----	----	Downlink Traffic Power																						
										Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6																																					
									BP	32.55	----	----	----	----	----																																					
									ECP	32.55	----	----	----	----	----																																					
		Traffic Band																																																		
GSN850																																																				
Swap Window Positions		<table><tr><td colspan="7">Phase & Frequency Error</td></tr><tr><td></td><td colspan="2">Peak Phase °</td><td colspan="2">RMS Phase °</td><td colspan="2">Frequency Hz</td></tr><tr><td>Minimum</td><td colspan="2">1.63</td><td colspan="2">0.44</td><td colspan="2">8.98</td></tr><tr><td>Maximum</td><td colspan="2">2.92</td><td colspan="2">0.58</td><td colspan="2">18.92</td></tr><tr><td>Average</td><td colspan="2">2.15</td><td colspan="2">0.50</td><td colspan="2">13.18</td></tr><tr><td>Pass/Fail</td><td colspan="2">Pass</td><td colspan="2">Pass</td><td colspan="2">Pass</td></tr></table>							Phase & Frequency Error								Peak Phase °		RMS Phase °		Frequency Hz		Minimum	1.63		0.44		8.98		Maximum	2.92		0.58		18.92		Average	2.15		0.50		13.18		Pass/Fail	Pass		Pass		Pass		Traffic Channel	
									Phase & Frequency Error																																											
										Peak Phase °		RMS Phase °		Frequency Hz																																						
									Minimum	1.63		0.44		8.98																																						
		Maximum	2.92		0.58		18.92																																													
Average	2.15		0.50		13.18																																															
Pass/Fail	Pass		Pass		Pass																																															
Single		128																																																		
1 of 2		<table><tr><td colspan="7">50 / 50</td></tr><tr><td colspan="7">Single</td></tr><tr><td colspan="5">Active Cell Connected</td><td colspan="2">Sys Type: GSM</td></tr><tr><td colspan="5"></td><td colspan="2"></td></tr></table>							50 / 50							Single							Active Cell Connected					Sys Type: GSM									MS TX Level															
									50 / 50																																											
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									50 / 50																																											
									Single																																											
									Active Cell Connected					Sys Type: GSM																																						
Return																																																				
1 of 2		<table><tr><td colspan="7">50 / 50</td></tr><tr><td colspan="7">Single</td></tr><tr><td colspan="5">Active Cell Connected</td><td colspan="2">Sys Type: GSM</td></tr><tr><td colspan="5"></td><td colspan="2"></td></tr></table>							50 / 50							Single							Active Cell Connected					Sys Type: GSM									1 of 2															
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		GSM850																																					
		Traffic Channel																																					
		190																																					
50 / 50		Single						MS TX Level																															
		Phase & Frequency Error						5																															
		<table><tr><td></td><td>Peak Phase °</td><td colspan="2">RMS Phase °</td><td colspan="2">Frequency Hz</td></tr><tr><td>Minimum</td><td>1.75</td><td colspan="2">0.45</td><td colspan="2">0.10</td></tr><tr><td>Maximum</td><td>3.20</td><td colspan="2">0.63</td><td colspan="2">11.63</td></tr><tr><td>Average</td><td>2.28</td><td colspan="2">0.52</td><td colspan="2">4.86</td></tr><tr><td>Pass/Fail</td><td>Pass</td><td colspan="2">Pass</td><td colspan="2">Pass</td></tr></table>							Peak Phase °	RMS Phase °		Frequency Hz		Minimum	1.75	0.45		0.10		Maximum	3.20	0.63		11.63		Average	2.28	0.52		4.86		Pass/Fail	Pass	Pass		Pass		Channel Mode Setup	
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Pass/Fail	Pass	Pass		Pass																																			
Single						Return																																	
1 of 2		Active Cell Connected				Sys Type: GSM		1 of 2																															
			IntRef	Offset	R	T																																	









Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.128

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

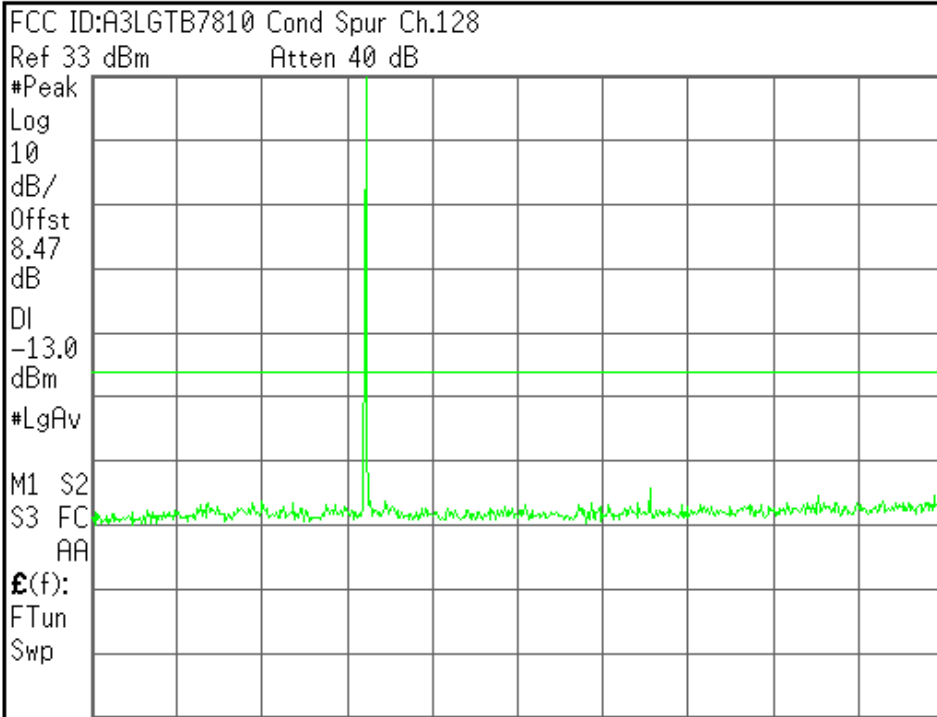
S3 FC

AA

E(f):

FTun

Swp



Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 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:A3LGTB7810 Cond Spur Ch.128

Mkr1 817.9 MHz

Ref 33 dBm

Atten 40 dB

-31.43 dBm

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

V1 S2

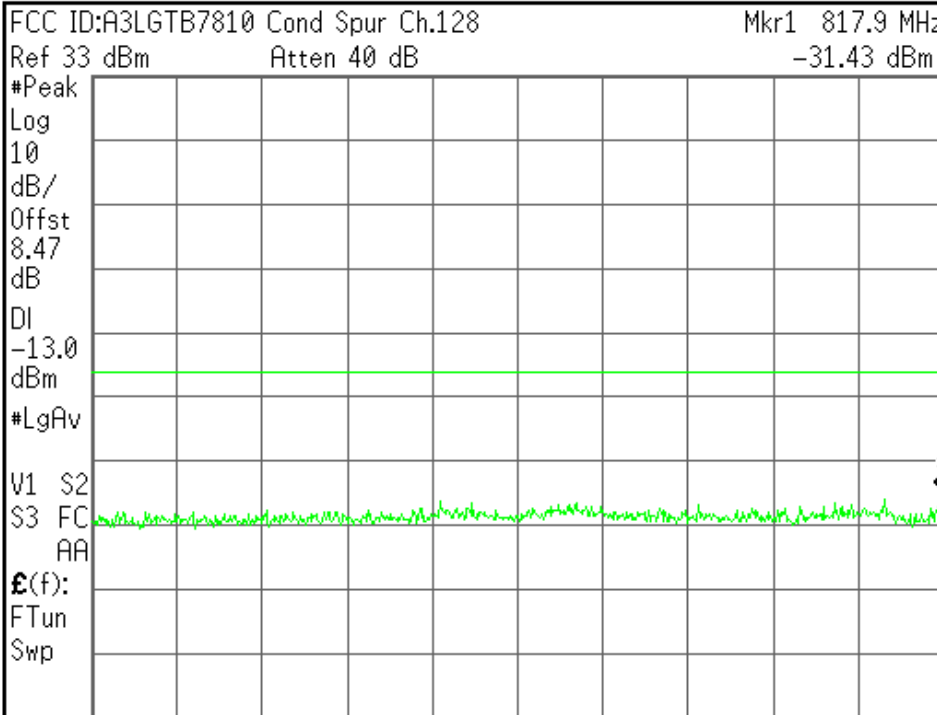
S3 FC

AA

E(f):

FTun

Swp



Center 424.6 MHz

Span 789.2 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.32 ms (601 pts)

Center Freq
424.600000 MHz

Start Freq
30.0000000 MHz

Stop Freq
819.200000 MHz

CF Step
78.9200000 MHz
Auto Man

Freq Offset
0.00000000 Hz

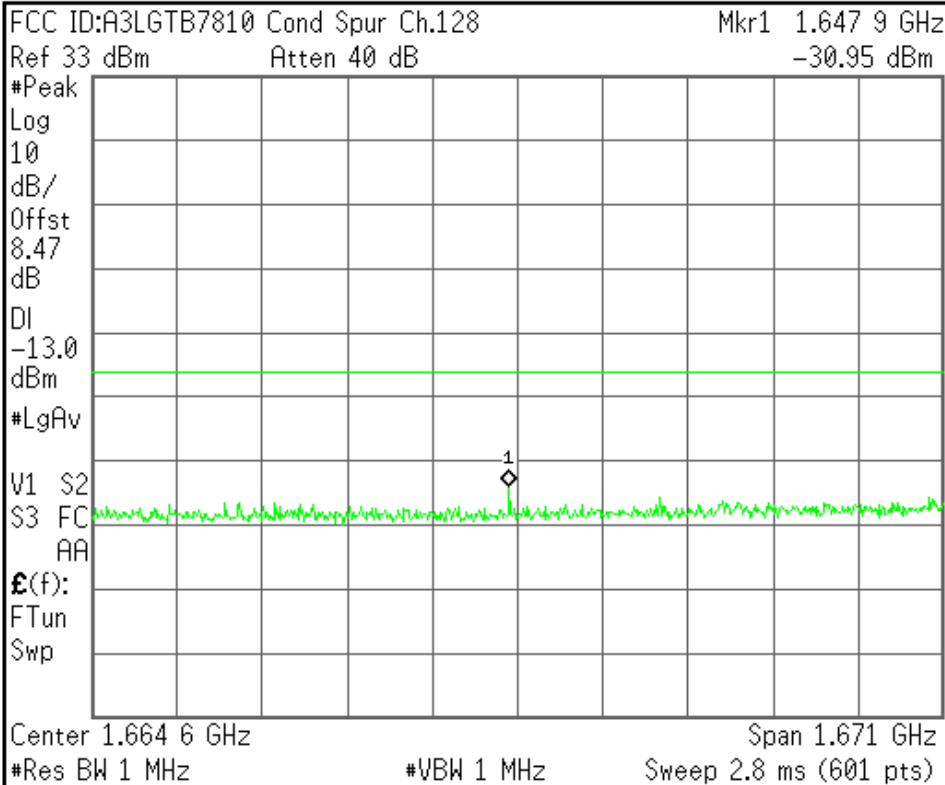
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
1.66460000 GHz

Start Freq
829.200000 MHz

Stop Freq
2.50000000 GHz

CF Step
167.080000 MHz
Auto Man

Freq Offset
0.00000000 Hz

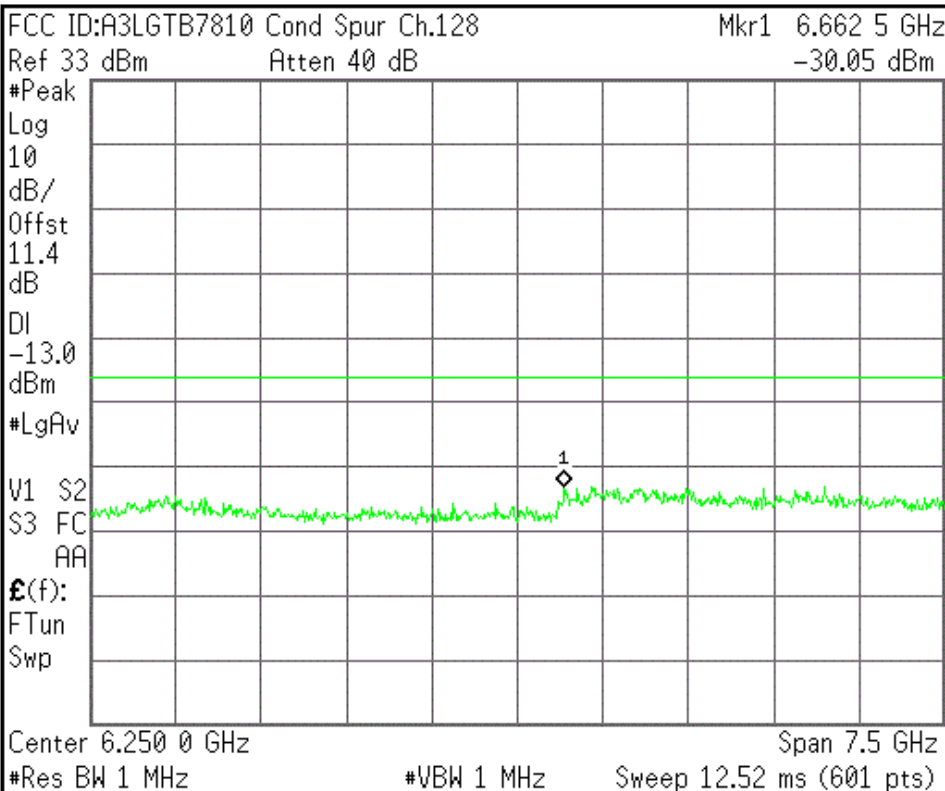
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
6.25000000 GHz

Start Freq
2.50000000 GHz

Stop Freq
10.00000000 GHz

CF Step
750.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.190

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

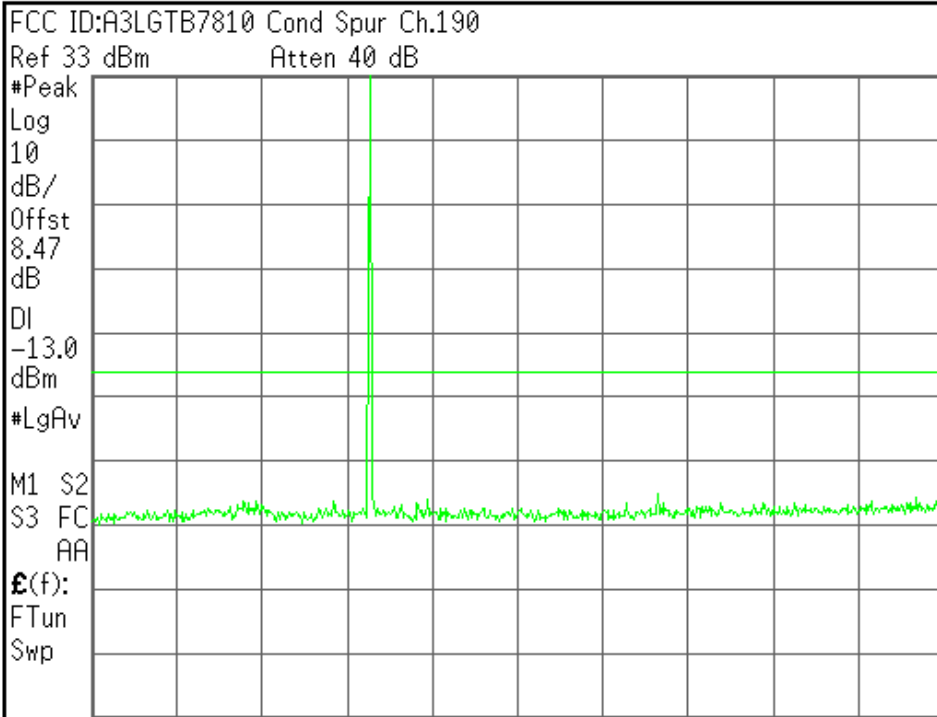
S3 FC

AA

E(f):

FTun

Swp



Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.190

Mkr1 830.3 MHz

Ref 33 dBm

Atten 40 dB

-30.37 dBm

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

V1 S2

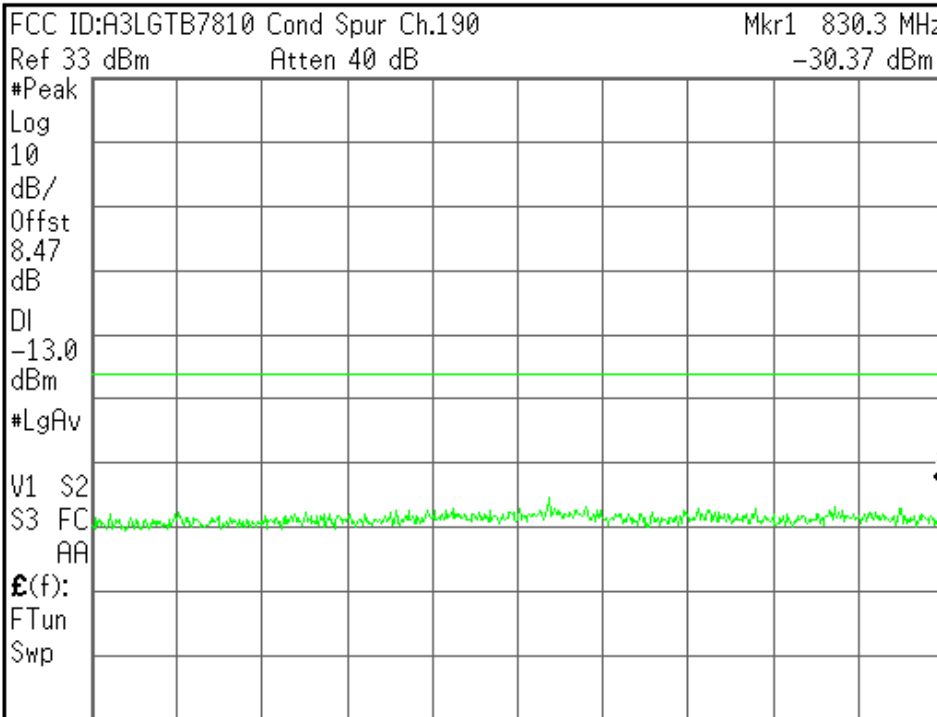
S3 FC

AA

E(f):

FTun

Swp



Center Freq
430.800000 MHz

Start Freq
30.0000000 MHz

Stop Freq
831.600000 MHz

CF Step
80.1600000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 430.8 MHz

Span 801.6 MHz

#Res BW 1 MHz

#VBW 1 MHz

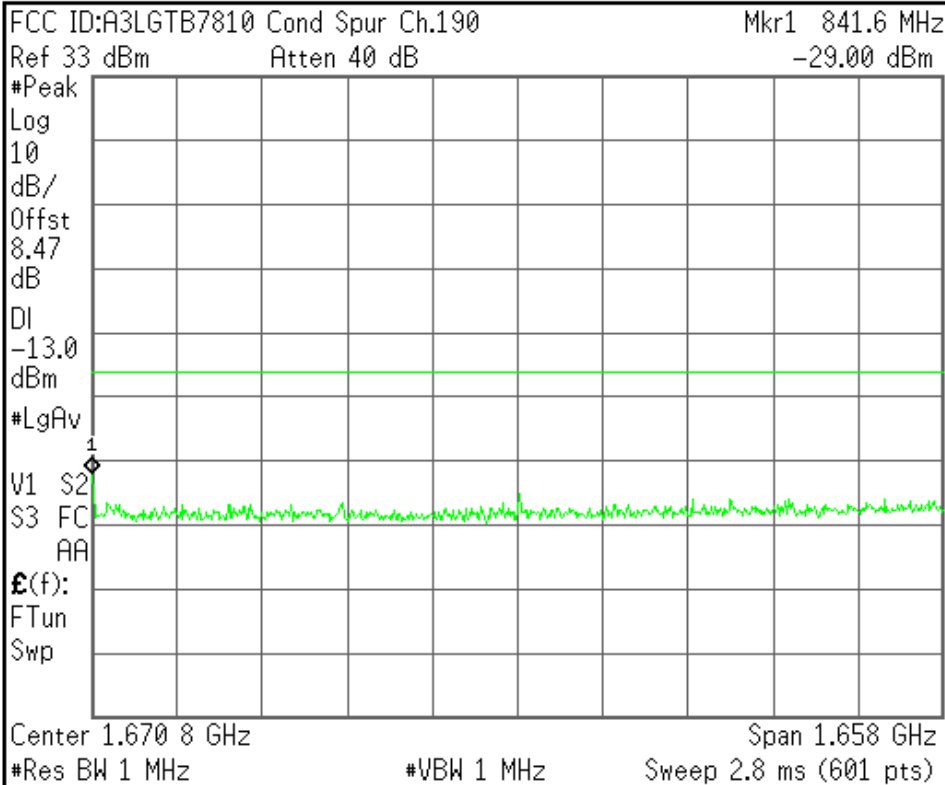
Sweep 1.36 ms (601 pts)

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

Agilent

R T

Freq/Channel



Center Freq
1.67080000 GHz

Start Freq
841.600000 MHz

Stop Freq
2.50000000 GHz

CF Step
165.840000 MHz
Auto Man

Freq Offset
0.00000000 Hz

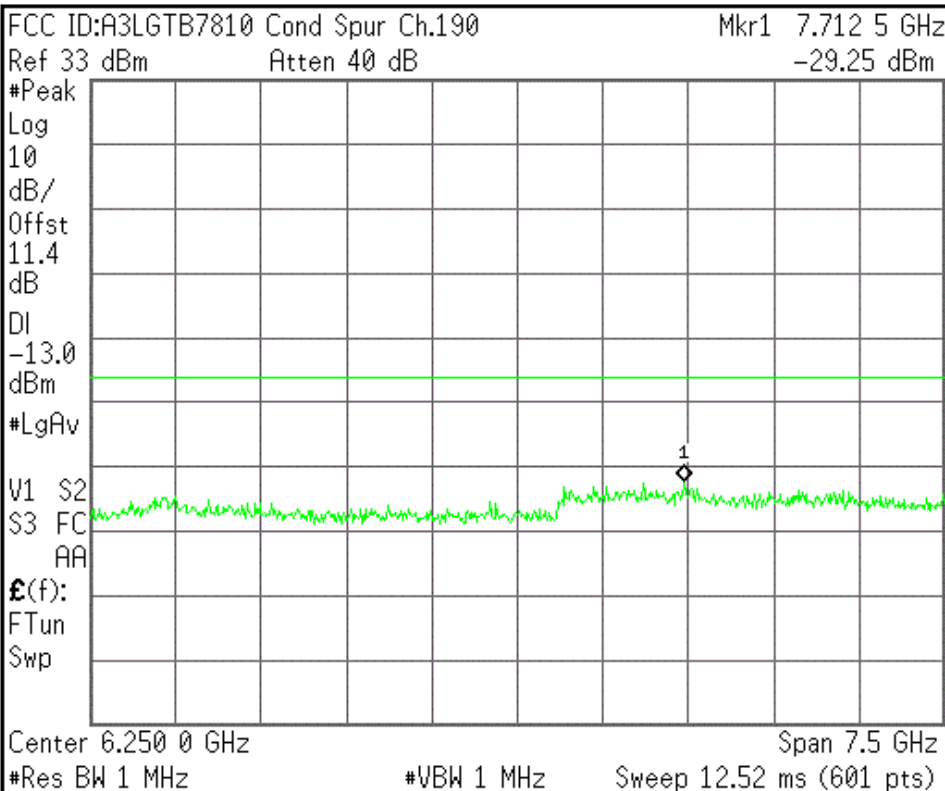
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
6.25000000 GHz

Start Freq
2.50000000 GHz

Stop Freq
10.00000000 GHz

CF Step
750.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.251

Ref 33 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 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:A3LGTB7810 Cond Spur Ch.251

Mkr1 843.8 MHz

Ref 33 dBm

Atten 40 dB

-28.19 dBm

#Peak

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

#LgAv

V1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 436.9 MHz

Span 813.8 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.36 ms (601 pts)

Center Freq
436.900000 MHz

Start Freq
30.0000000 MHz

Stop Freq
843.800000 MHz

CF Step
81.3800000 MHz
Auto Man

Freq Offset
0.00000000 Hz

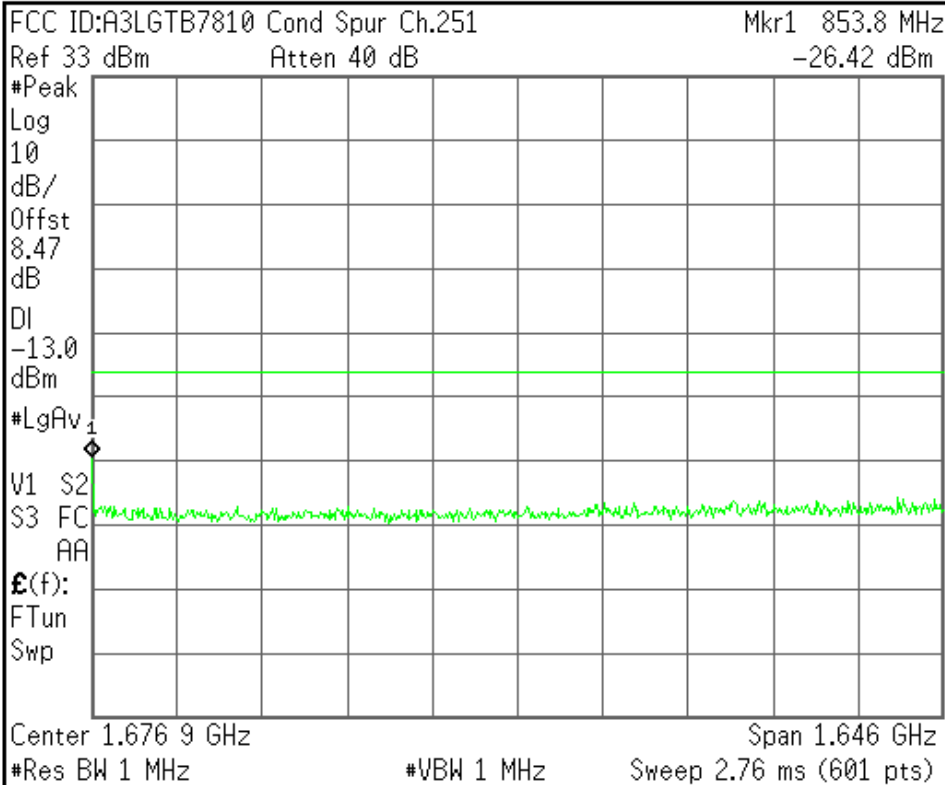
Signal Track
On Off

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

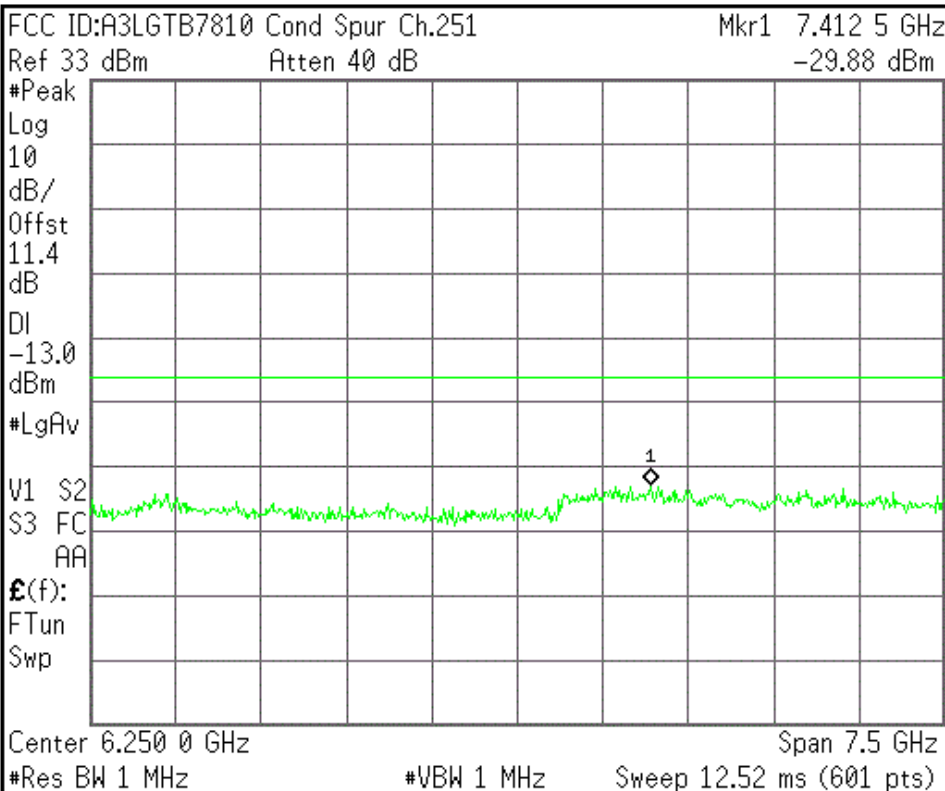
Signal Track
On Off

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:A3LGTB7810 Band Edge Ch.128

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

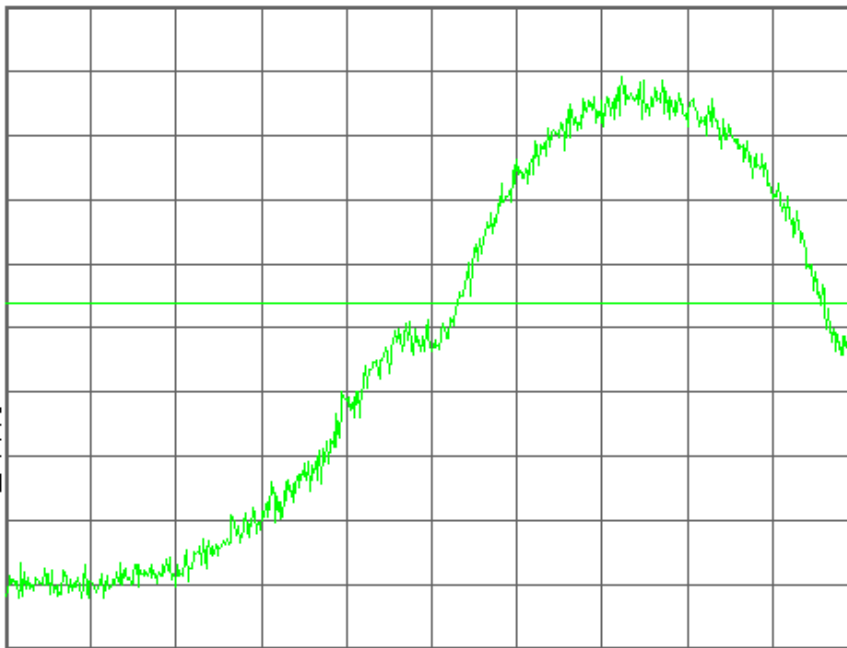
S3 FC

AA

$E(f)$:

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:A3LGTB7810 Band Edge Ch.128

Mkr1 823.977 26 MHz

Ref 33 dBm

Atten 40 dB

-16.02 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

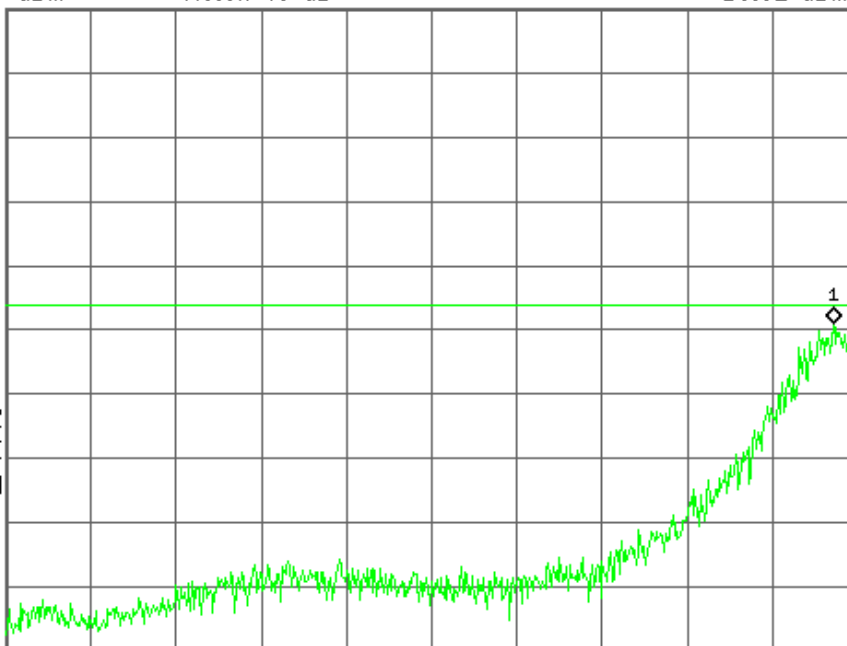
S3 FC

AA

$E(f)$:

f>50k

Swp



Center 823.595 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:A3LGTB7810 Band Edge Ch.251

Ref 33 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

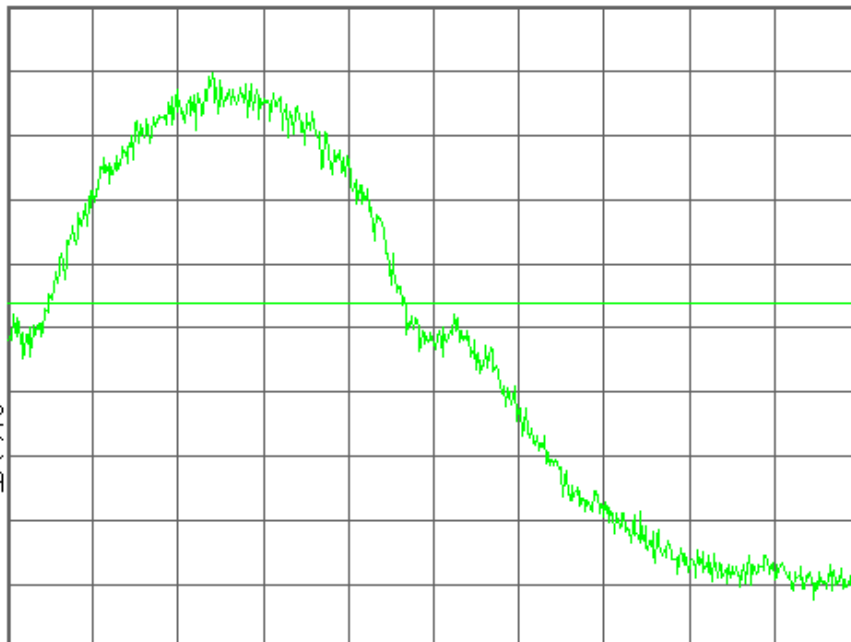
S3 FC

AA

E(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:A3LGTB7810 Band Edge Ch.251

Mkr1 849.022 74 MHz

Ref 33 dBm

Atten 40 dB

-14.80 dBm

#Avg

Log

10

dB/

Offst

8.47

dB

DI

-13.0

dBm

PAvg

M1 S2

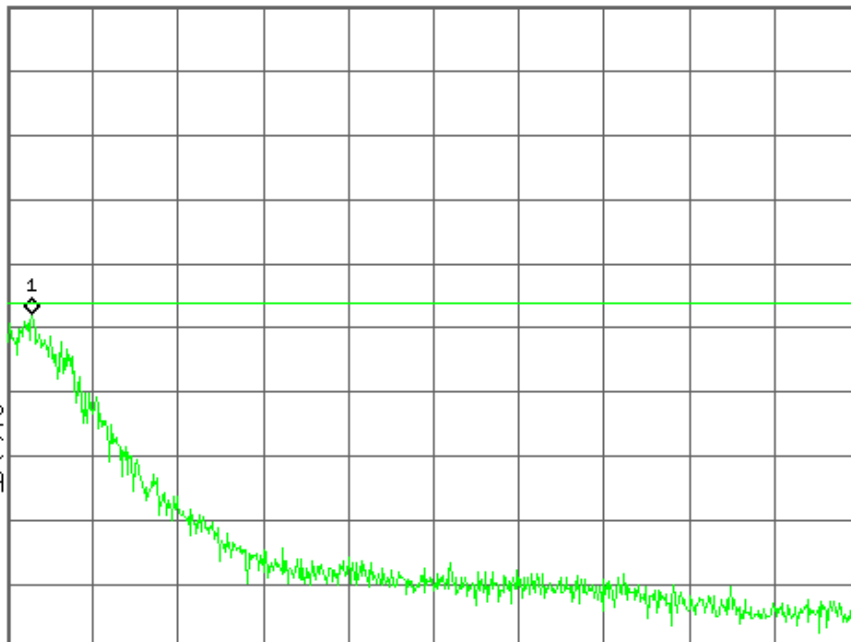
S3 FC

AA

E(f):

f>50k

Swp



Center 849.405 00 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.405000 MHz

Start Freq
849.000000 MHz

Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

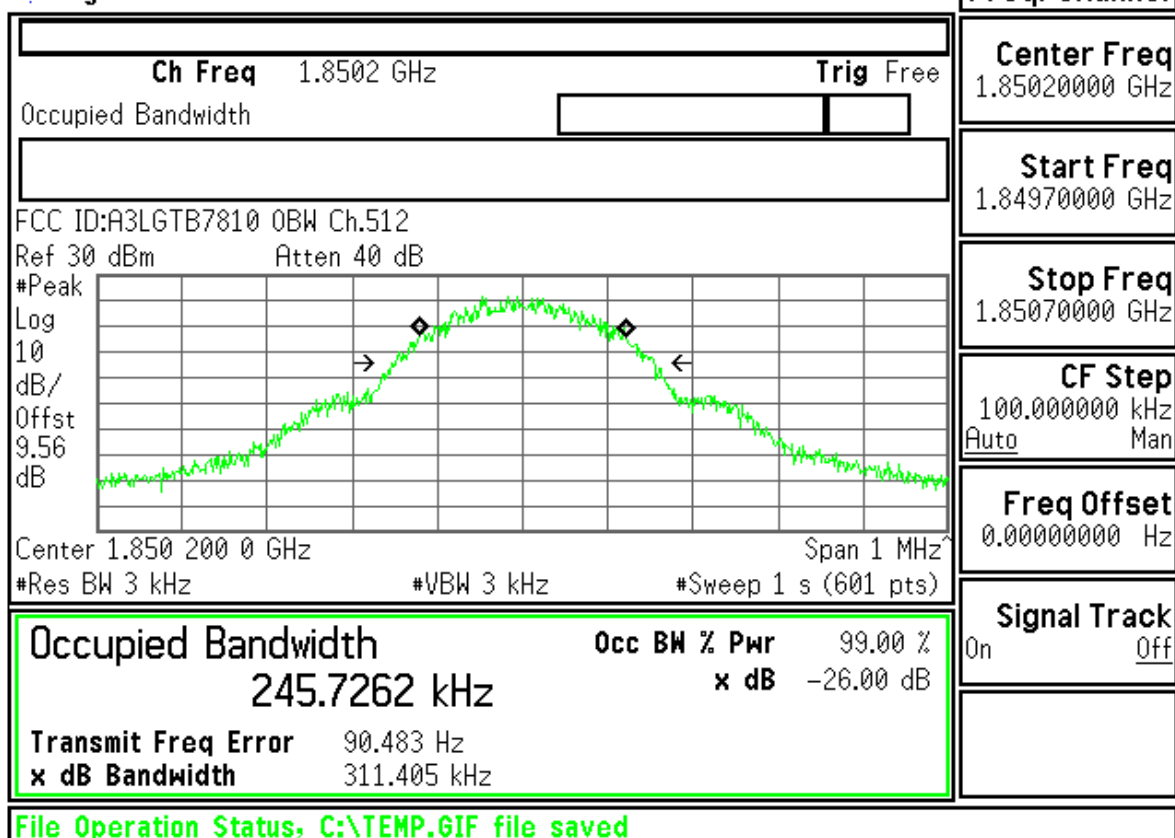
Signal Track
On Off

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

GSM1900

Agilent

R T



Freq/Channel

Center Freq
1.85020000 GHz

Start Freq
1.84970000 GHz

Stop Freq
1.85070000 GHz

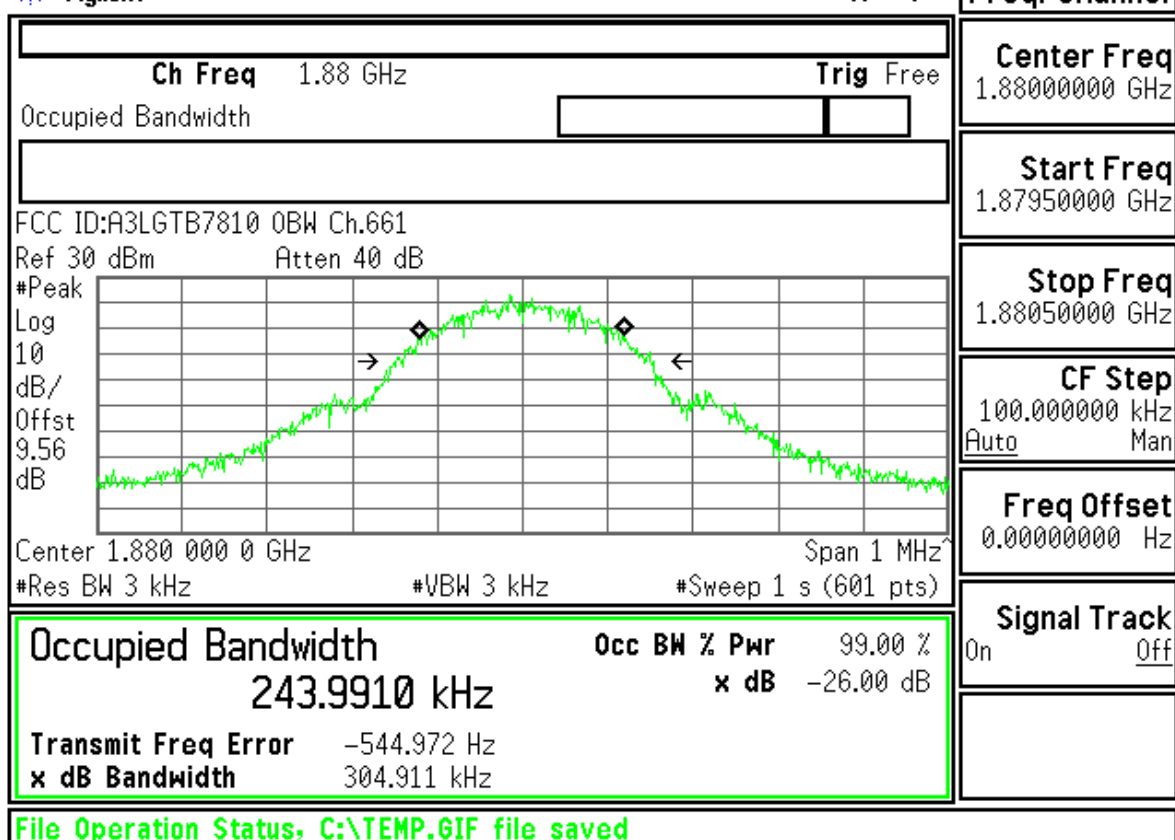
CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Agilent

R T



Freq/Channel

Center Freq
1.88000000 GHz

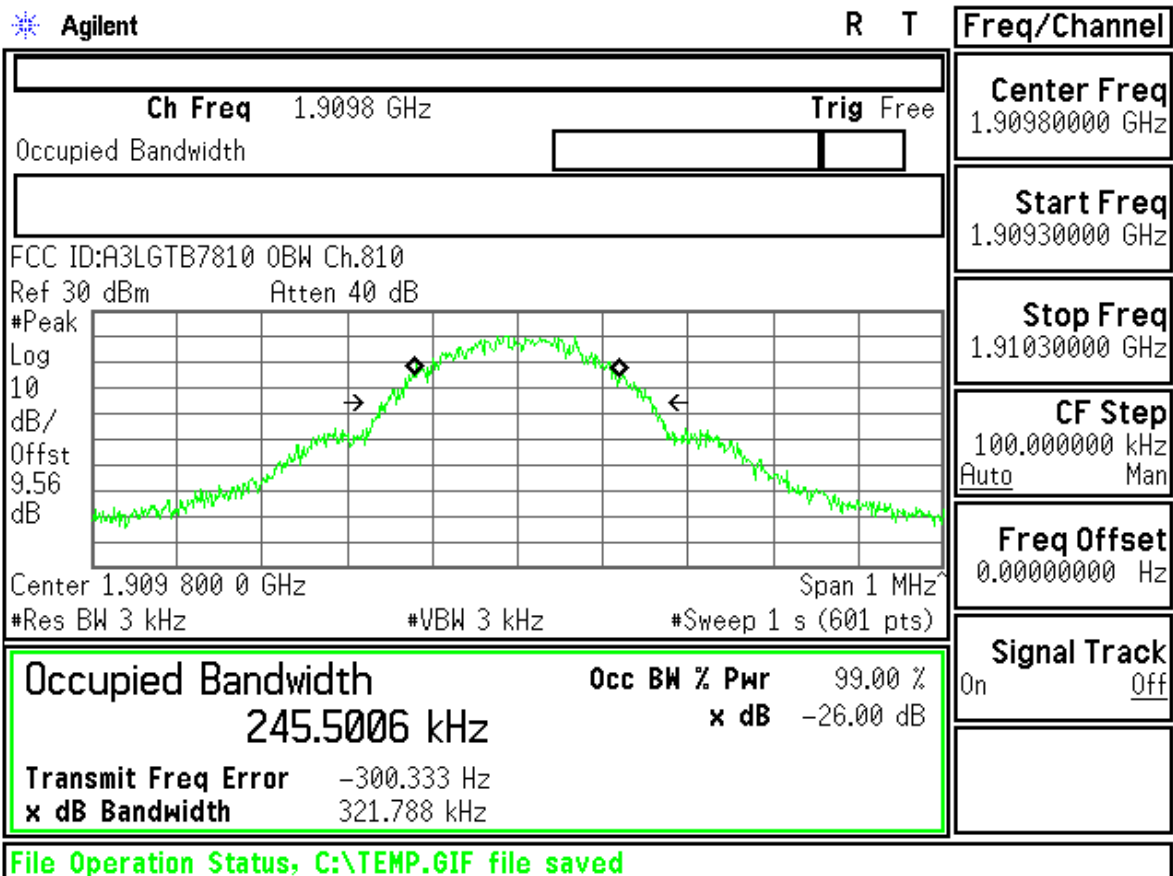
Start Freq
1.87950000 GHz

Stop Freq
1.88050000 GHz

CF Step
100.000000 kHz
Auto Man

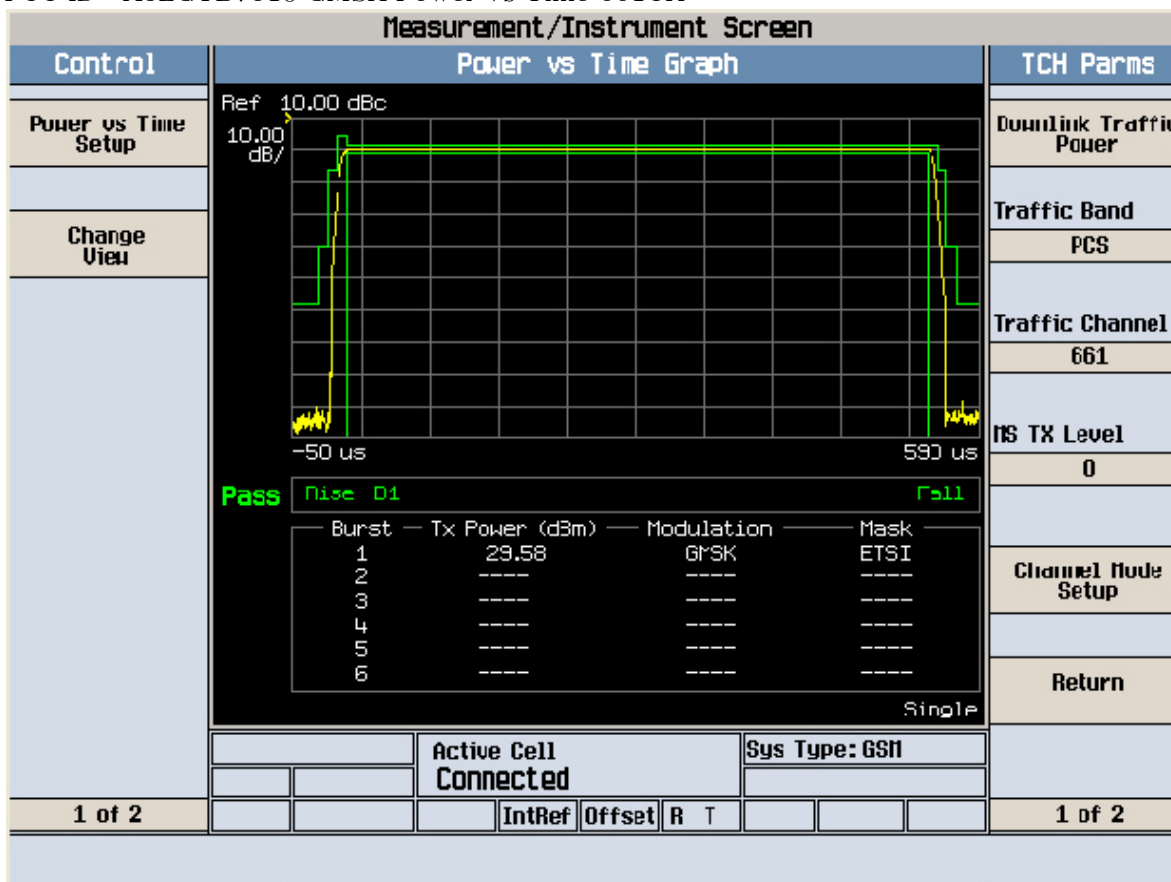
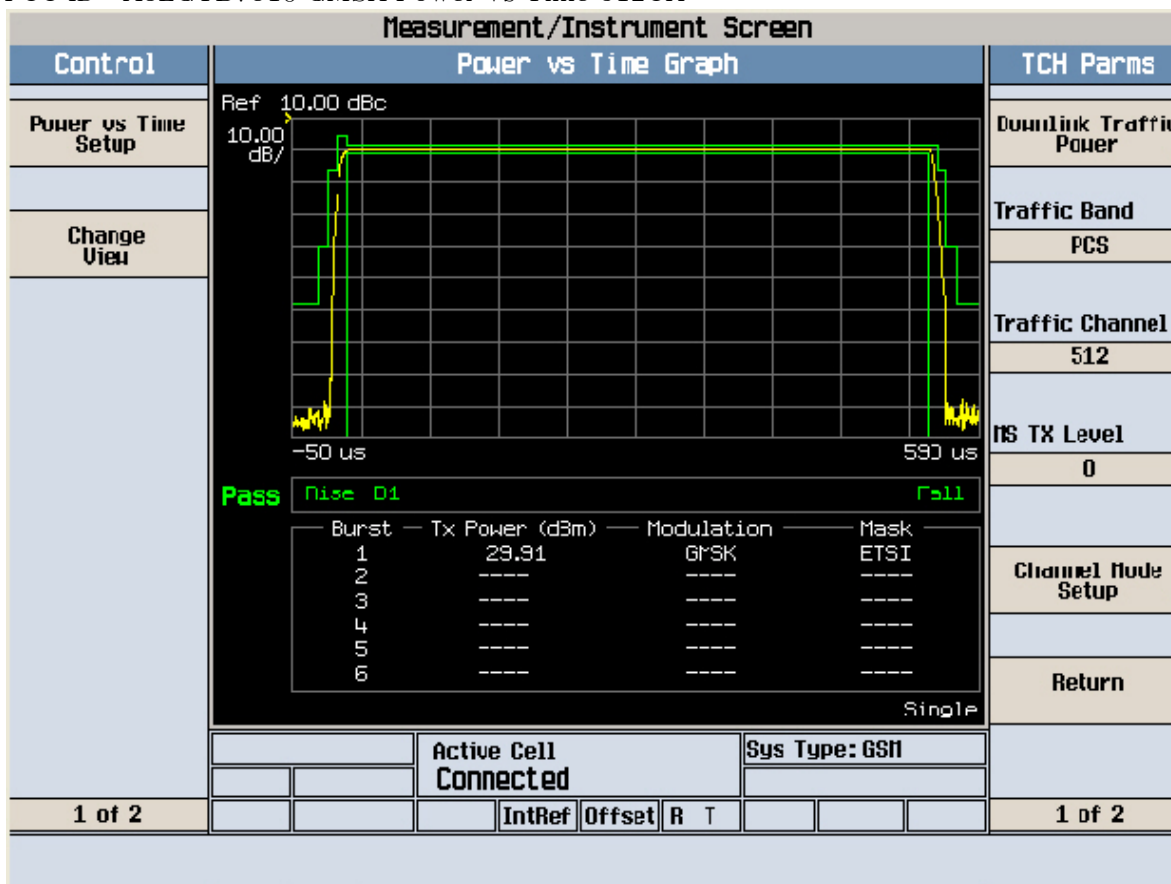
Freq Offset
0.00000000 Hz

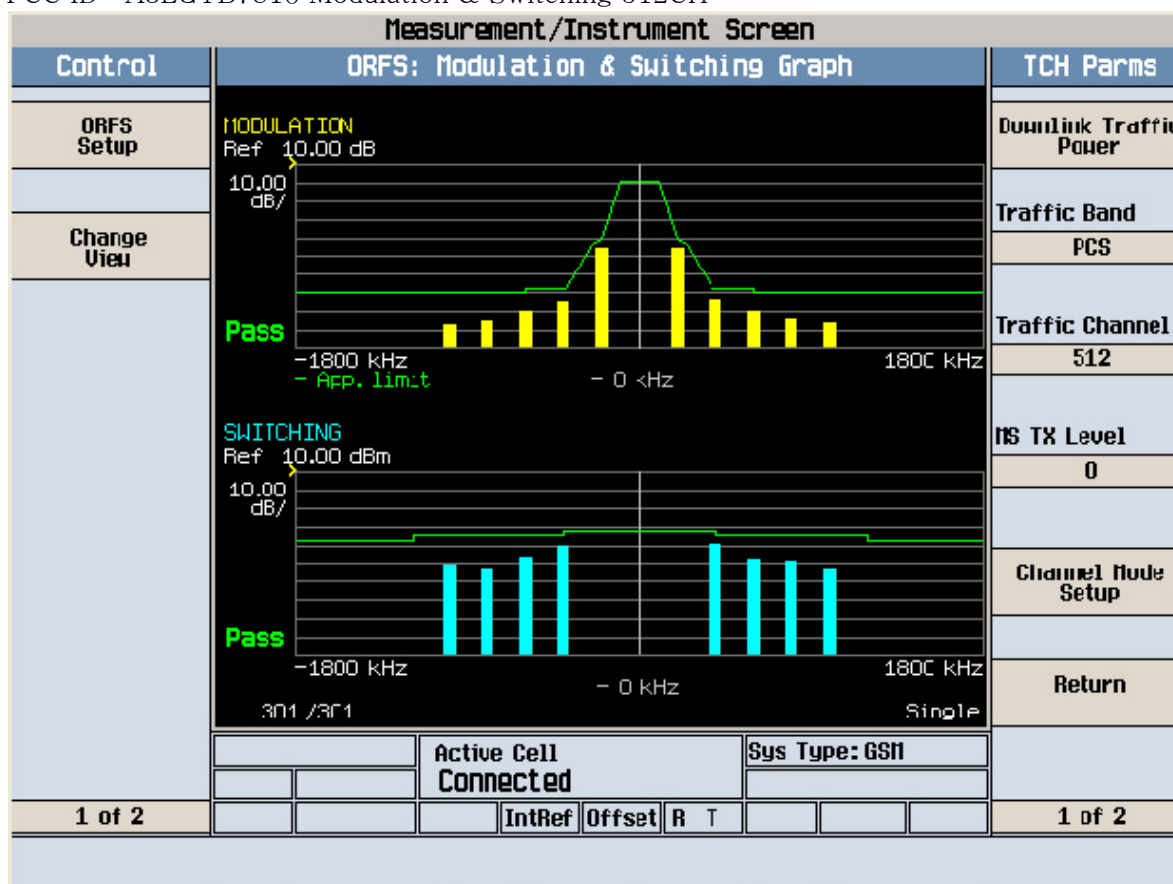
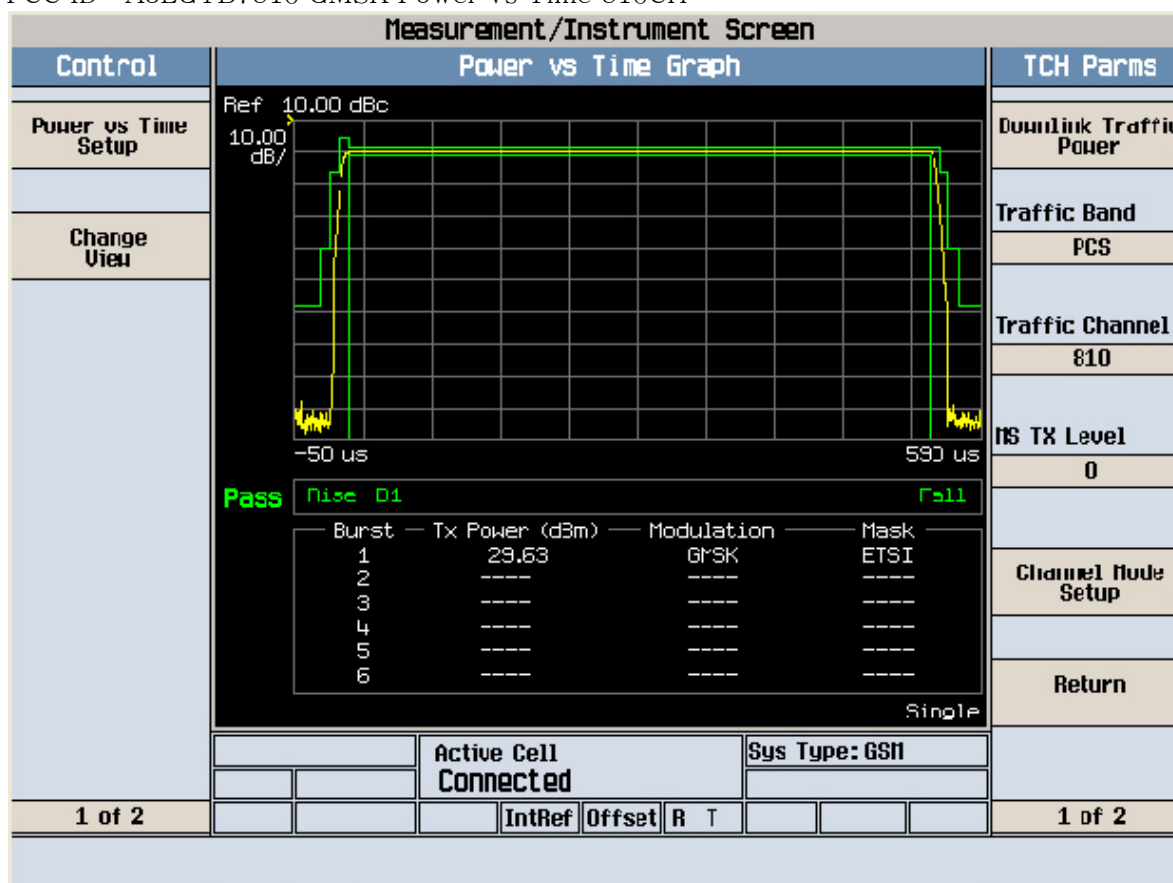
Signal Track
On Off

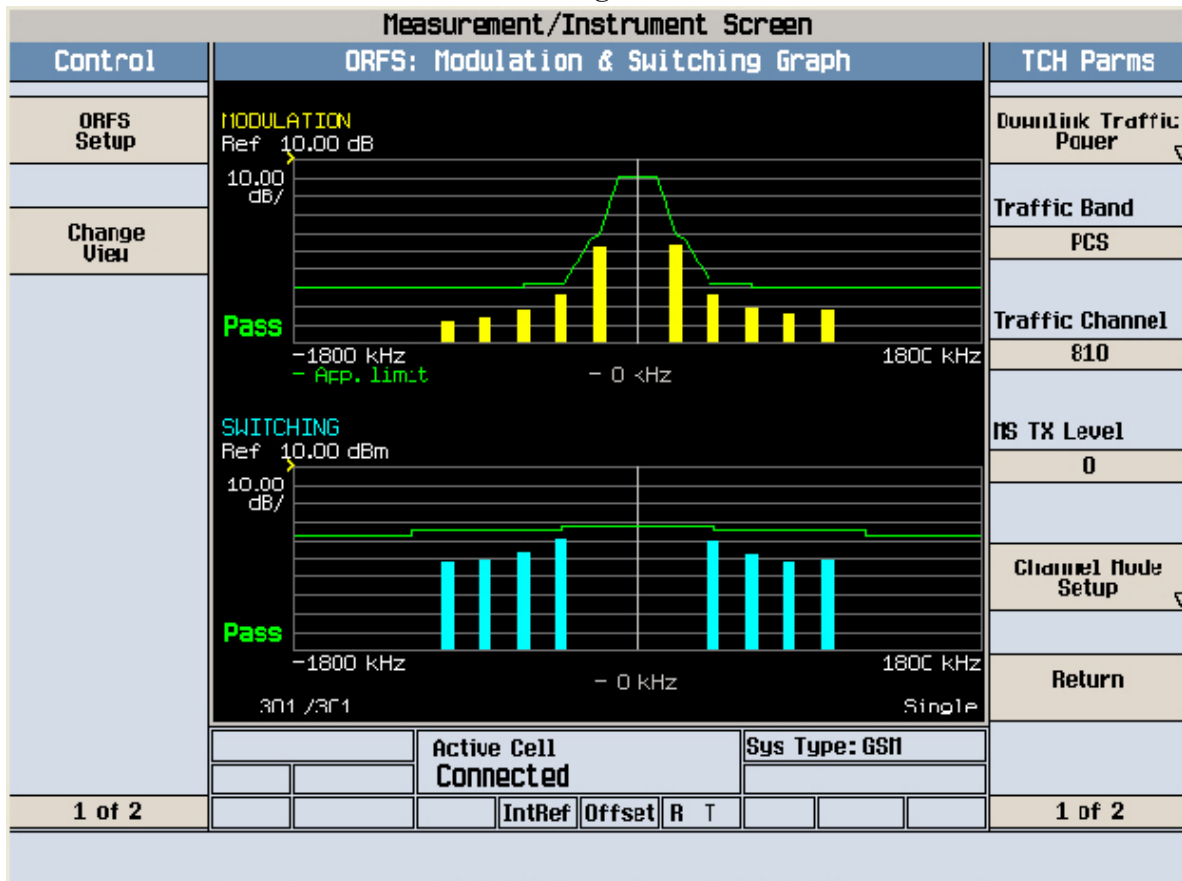
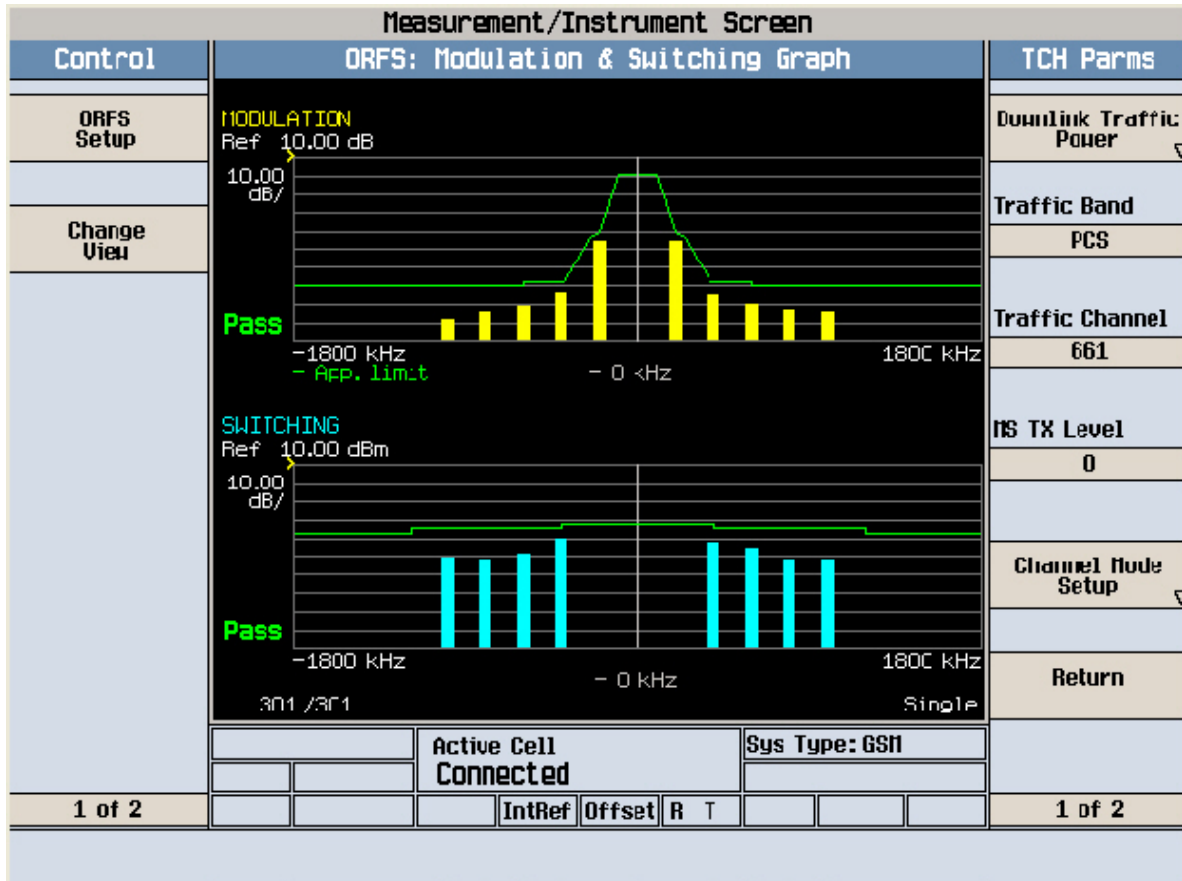


FCC ID : A3LGTB7810 Transmit Power 512CH

Measurement/Instrument Screen										
Control		Transmit Power							TCH Parms	
Transmit Power Setup									Downlink Traffic Power	
			Burst 1	Burst 2	Burst 3	Burst 4	Burst 5	Burst 6	Traffic Band	
		BP	29.91	----	----	----	----	----	PCS	
		ECP	29.91	----	----	----	----	----	Traffic Channel	
									512	
		Single								
		Phase & Frequency Error							MS TX Level	
			Peak Phase °		RMS Phase °		Frequency Hz		0	
		Minimum	2.33		0.74		-1.00			
		Maximum	5.09		1.05		10.99		Channel Mode Setup	
		Average	3.69		0.87		4.84			
		Pass/Fail	Pass		Pass		Pass		Return	
		50 / 50							Single	
				Active Cell Connected				Sys Type: GSM		
1 of 2				IntRef	Offset	R	T			
								1 of 2		







Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.512

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

M1 S2

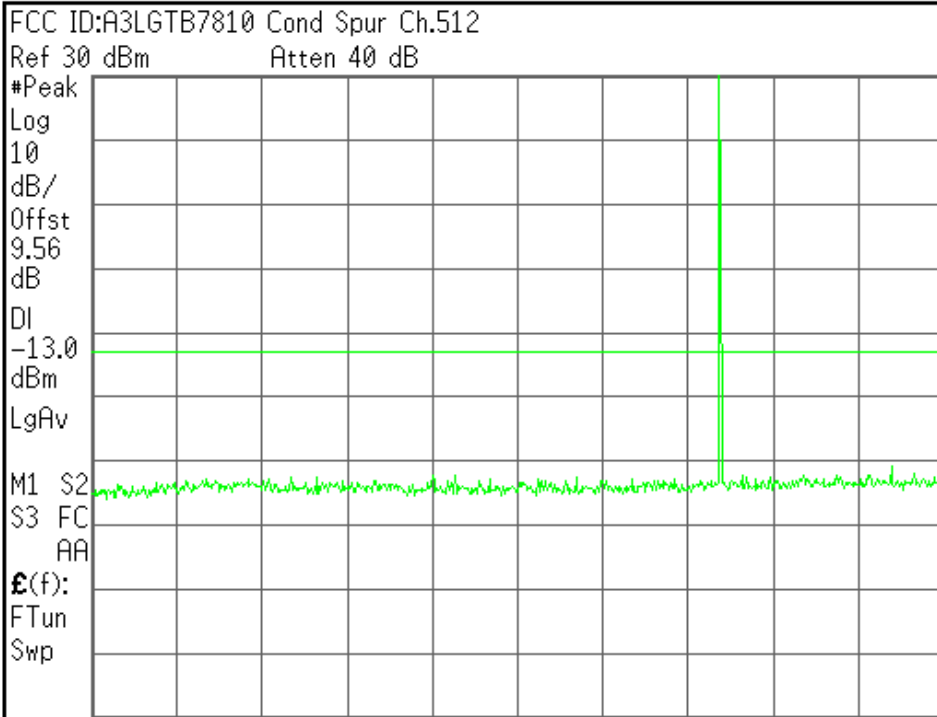
S3 FC

AA

E(f):

FTun

Swp



Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.512

Mkr1 1.344 GHz

Ref 30 dBm

Atten 40 dB

-32.29 dBm

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

V1 S2

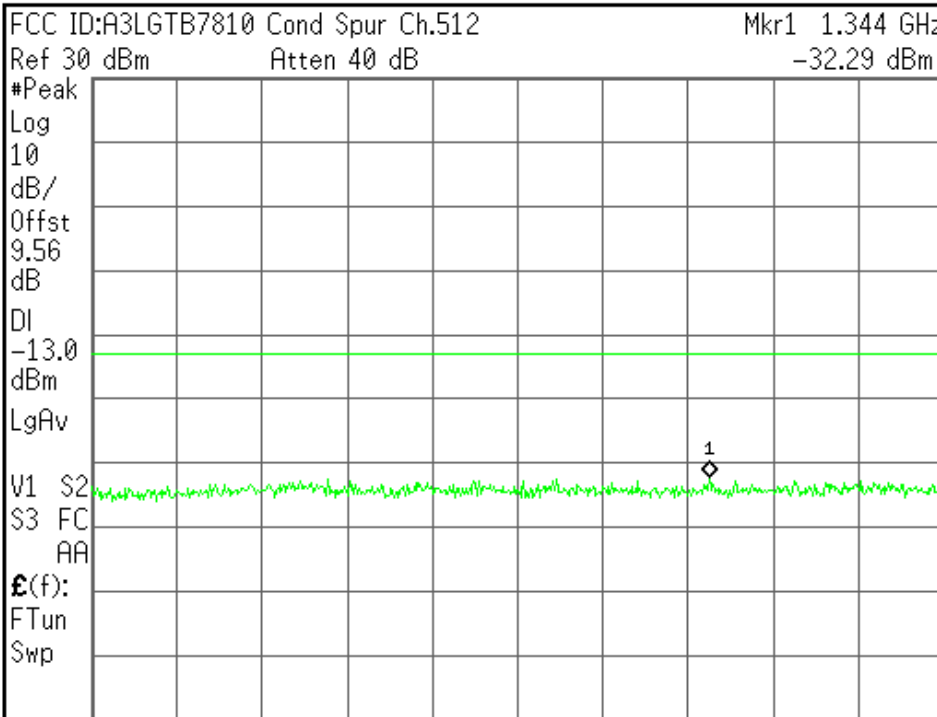
S3 FC

AA

E(f):

FTun

Swp



Center 936 MHz

Span 1.813 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 3.04 ms (601 pts)

Center Freq
936.350000 MHz

Start Freq
30.0000000 MHz

Stop Freq
1.84270000 GHz

CF Step
181.270000 MHz
Auto Man

Freq Offset
0.00000000 Hz

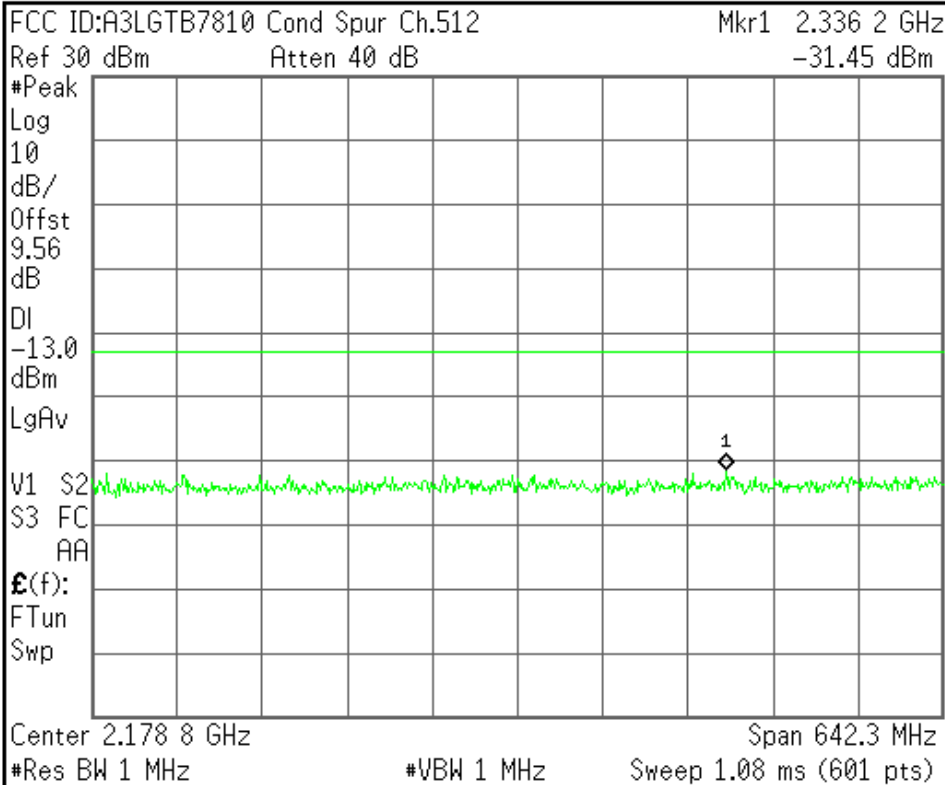
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
2.17885000 GHz

Start Freq
1.85770000 GHz

Stop Freq
2.50000000 GHz

CF Step
64.2300000 MHz
Auto Man

Freq Offset
0.00000000 Hz

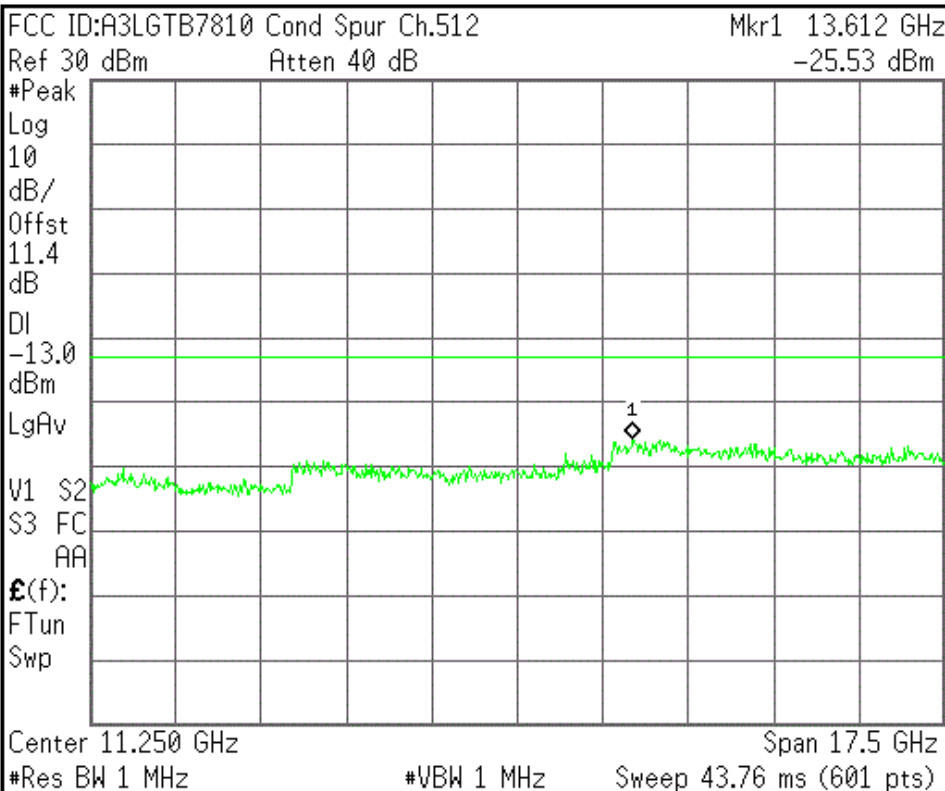
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Cond Spur Ch.661

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 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:A3LGTB7810 Cond Spur Ch.661

Mkr1 607 MHz

Ref 30 dBm

Atten 40 dB

-31.94 dBm

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

V1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 951 MHz

Span 1.843 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 3.08 ms (601 pts)

Center Freq
951.250000 MHz

Start Freq
30.0000000 MHz

Stop Freq
1.87250000 GHz

CF Step
184.250000 MHz
Auto Man

Freq Offset
0.00000000 Hz

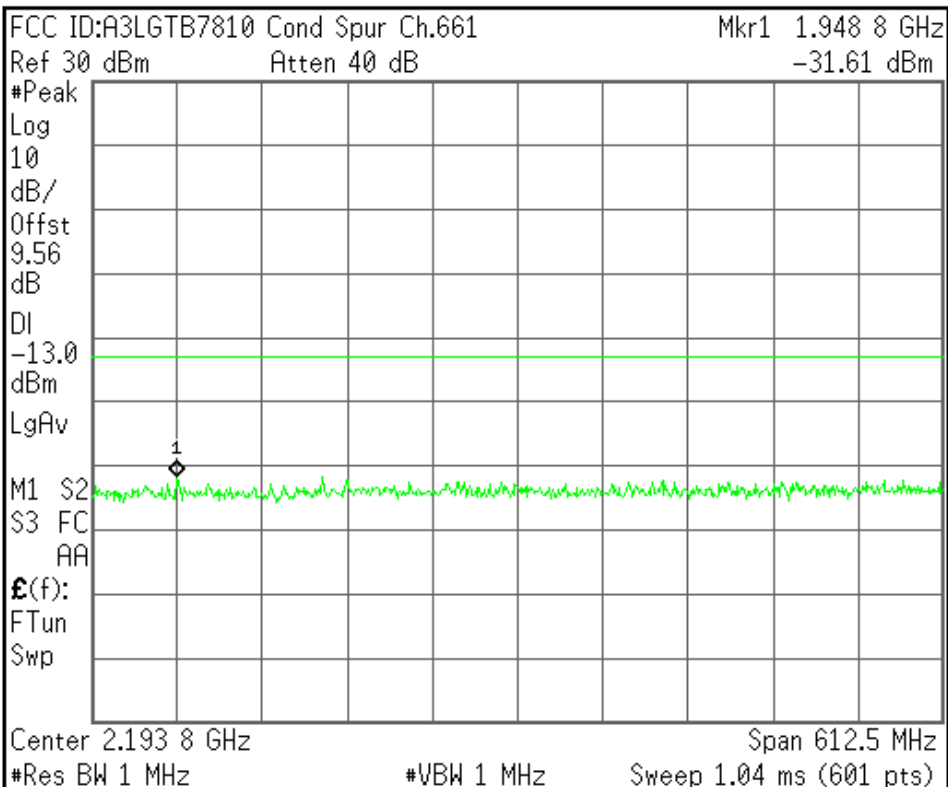
Signal Track
On Off

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

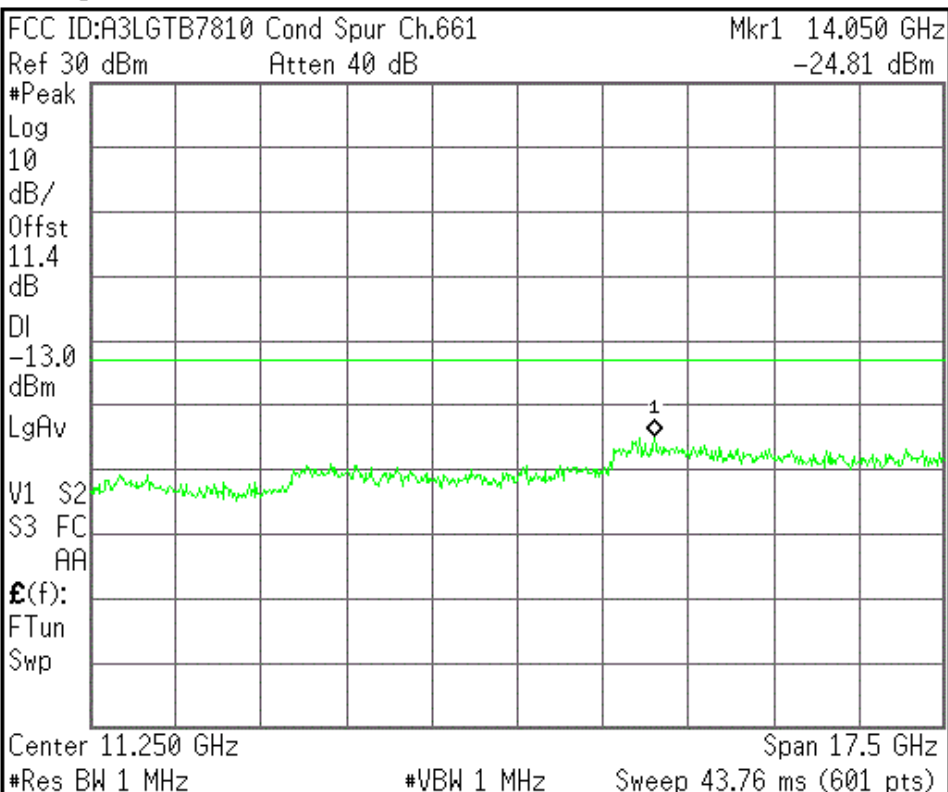
Signal Track
On Off

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:A3LGTB7810 Cond Spur Ch.810

Ref 30 dBm

Atten 40 dB

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

M1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 1.265 GHz

Span 2.47 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.12 ms (601 pts)

Center Freq
1.26500000 GHz

Start Freq
30.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
247.000000 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:A3LGTB7810 Cond Spur Ch.810

Mkr1 1.837 GHz

Ref 30 dBm

Atten 40 dB

-31.81 dBm

#Peak

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

LgAv

V1 S2

S3 FC

AA

E(f):

FTun

Swp

Center 966 MHz

Span 1.872 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 3.16 ms (601 pts)

Center Freq
966.150000 MHz

Start Freq
30.0000000 MHz

Stop Freq
1.90230000 GHz

CF Step
187.230000 MHz
Auto Man

Freq Offset
0.00000000 Hz

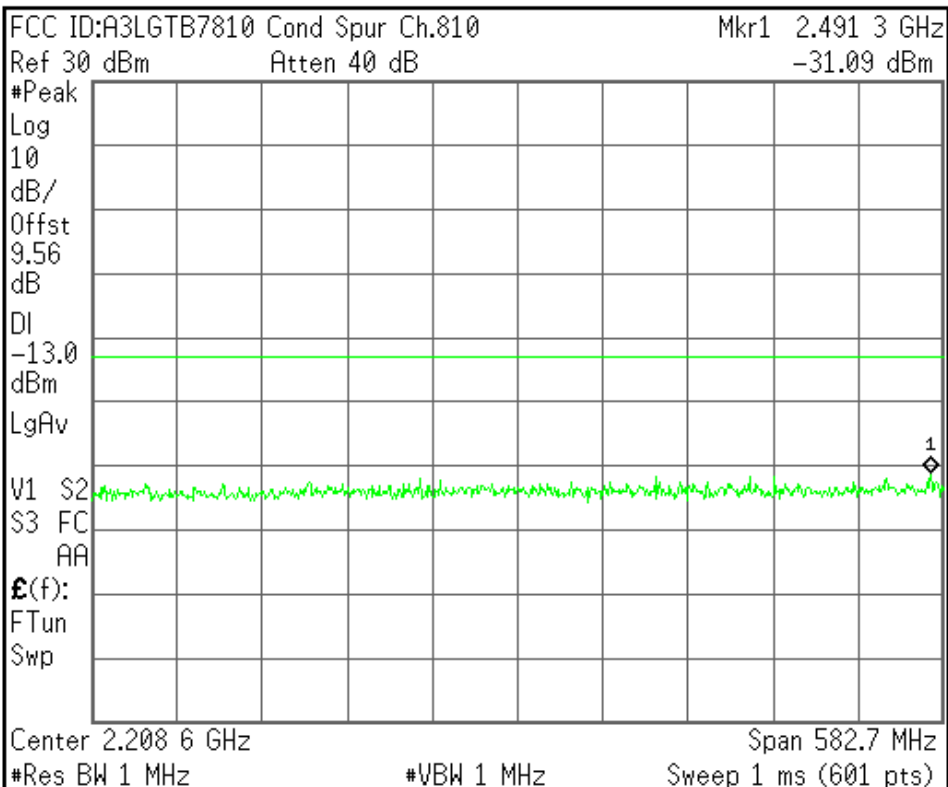
Signal Track
On Off

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
58.2700000 MHz
Auto Man

Freq Offset
0.00000000 Hz

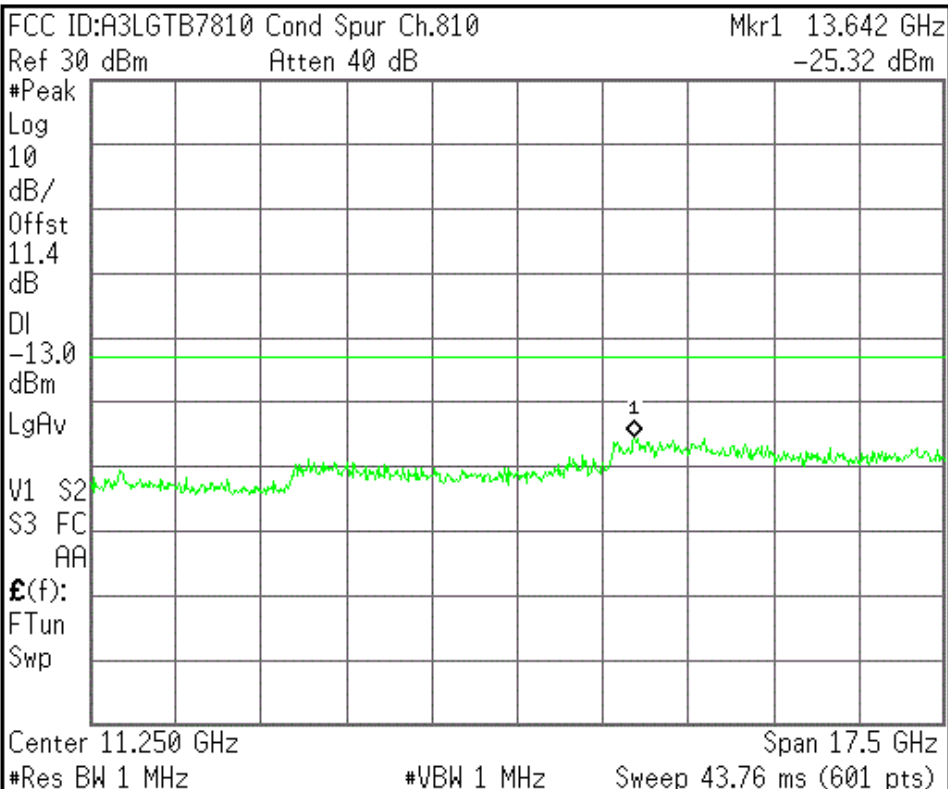
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Band Edge Ch.512

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

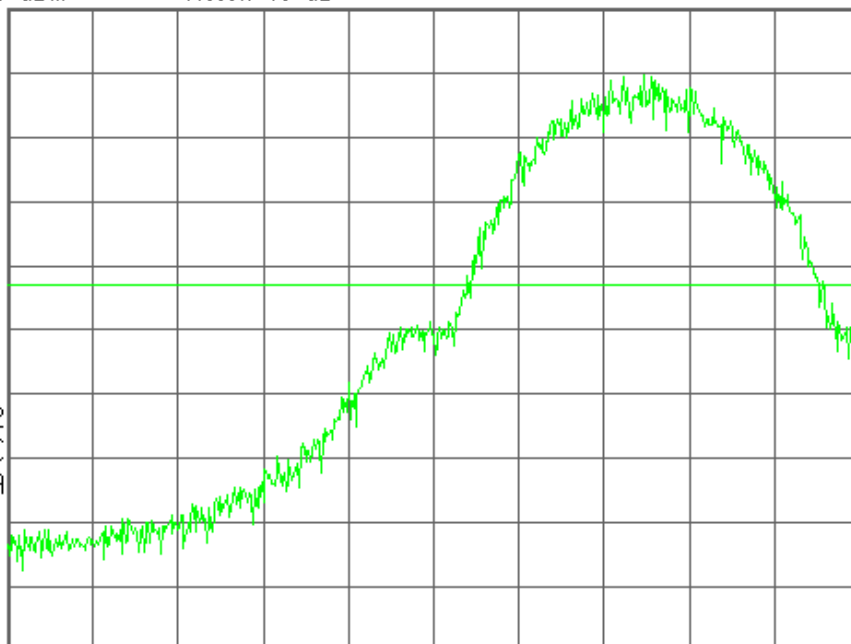
S3 FC

AA

E(f):

f>50k

Swp



Center 1.850 000 00 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Band Edge Ch.512

Mkr1 1.849 975 93 GHz

Ref 30 dBm

Atten 40 dB

-17.94 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

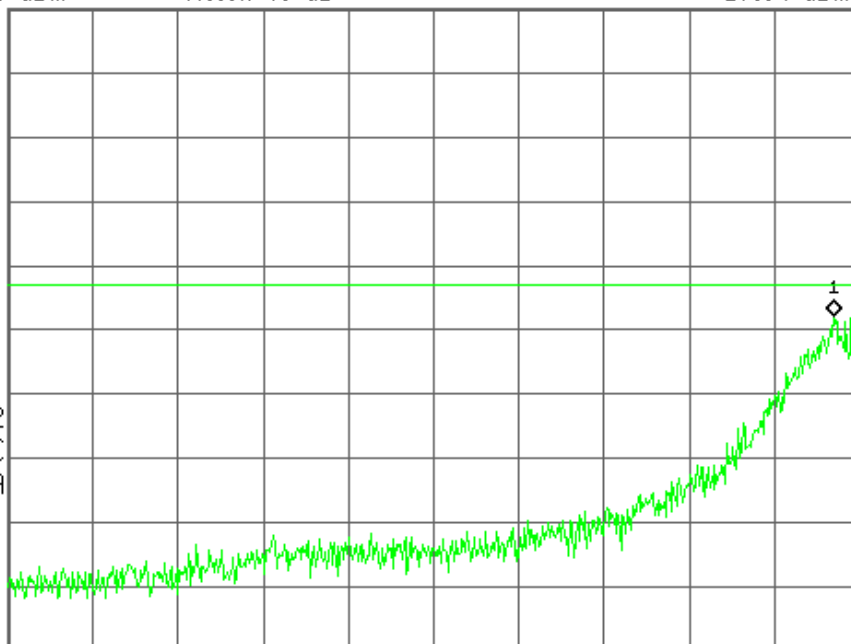
S3 FC

AA

E(f):

f>50k

Swp



Center 1.849 595 00 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.84959500 GHz

Start Freq
1.84919000 GHz

Stop Freq
1.85000000 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

FCC ID:A3LGTB7810 Band Edge Ch.810

Ref 30 dBm

Atten 40 dB

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

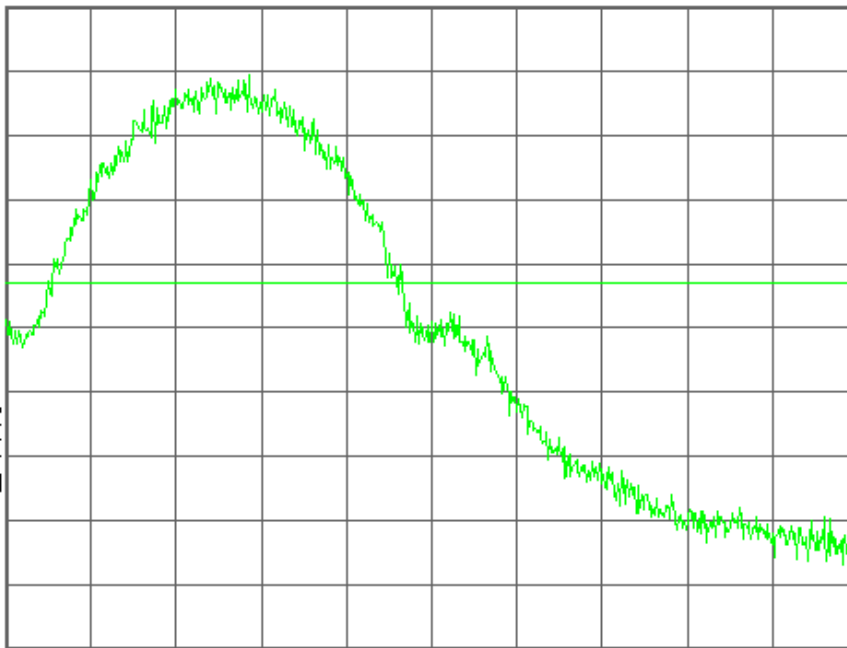
S3 FC

AA

$\mathcal{E}(f)$:

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

81.00000000 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:A3LGTB7810 Band Edge Ch.810

Mkr1 1.910 016 21 GHz

Ref 30 dBm

Atten 40 dB

-18.27 dBm

#Avg

Log

10

dB/

Offst

9.56

dB

DI

-13.0

dBm

PAvg

M1 S2

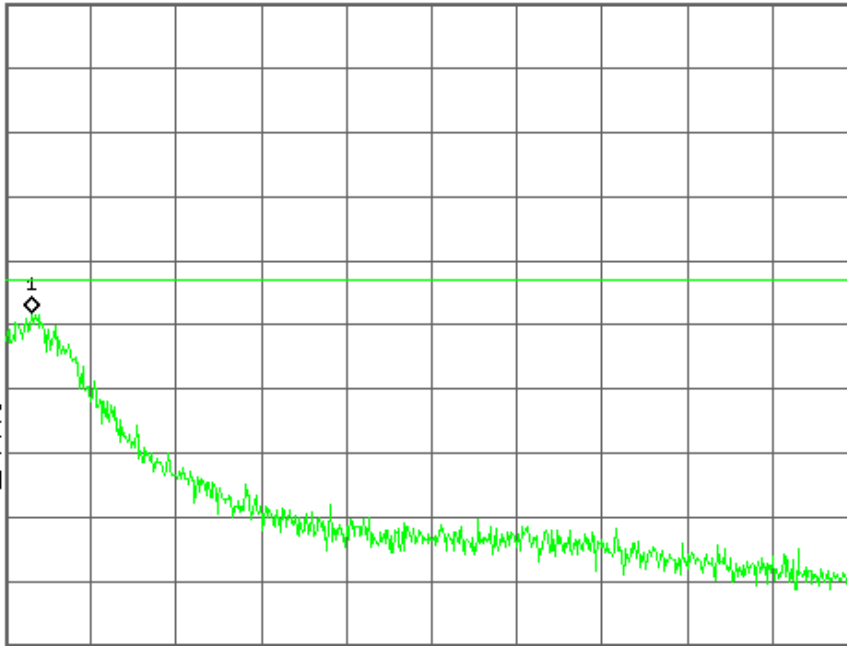
S3 FC

AA

$\mathcal{E}(f)$:

f>50k

Swp



Center 1.910 405 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

81.00000000 kHz

Auto

Man

Freq Offset

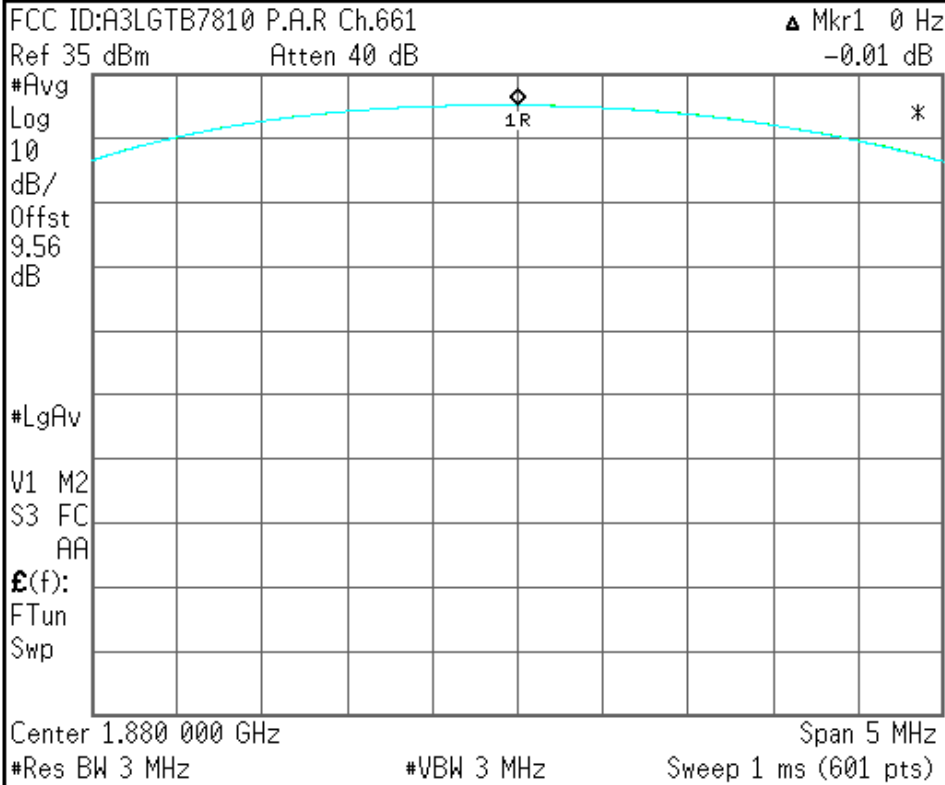
0.00000000 Hz

Signal Track

On

Off

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



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

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