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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 : S7220
FCC ID(Requested) : A3LSWDS7220
Report No : FF-279-R1
Job No : FF-279
Date issued : January 9, 2009

- Abstract -

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

Prepared By

KJ KWON – Test Engineer

Authorized By

WT JANG – Technical Manager



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MEASUREMENT REPORT

1. FCC Certification Information

The following information is in accordance with FCC Rules, 47CFR Part2, Subpart J, Sections 2.1033 – 2.1055.

1.1. §2.1033 General Information

- Applicant Name : SAMSUNG ELECTRONICS CO., LTD.
- Address : 416 Maetan3-Dong, Yeongtong-gu, Suwon City
Gyeonggi-Do, Korea 443-742
- Attention : SungJoo KIM, Engineering Manager (QA Lab)
- FCC ID : A3LSWDS7220
- Quantity : Quantity production is planned
- Emission Designators : 252KGXW(GSM850), 246KG7W(GSM850 EDGE)
249KGXW(GSM1900), 244KG7W(GSM1900 EDGE)
- Tx Freq. Range : 824.2 - 848.8MHz (GSM850)
1850.2MHz - 1909.8MHz (GSM1900)
- Rx Freq. Range : 869.2 - 893.8 MHz (GSM850)
1930.2MHz - 1989.8MHz (GSM1900)
- Max. Power Rating : 0.711 W ERP GSM850 (28.52 dBm)
1.072 W EIRP GSM1900 (30.30 dBm)
0.286 W ERP GSM850 EDGE(24.56dBm)
0.664 W EIRP GSM1900 EDGE(28.22dBm)
- FCC Classification(s) : PCS Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type : 850/1900 GSM/EDGE/GPRS Phone with Bluetooth
- Frequency Tolerance : $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s) : §24(E), §22(H), §2.
- Dates of Test : January 6-7, 2009
- Place of Test : SAMSUNG Lab,
- Test Report S/N : FF-279-R1

2. INTRODUCTION

2.1. General

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

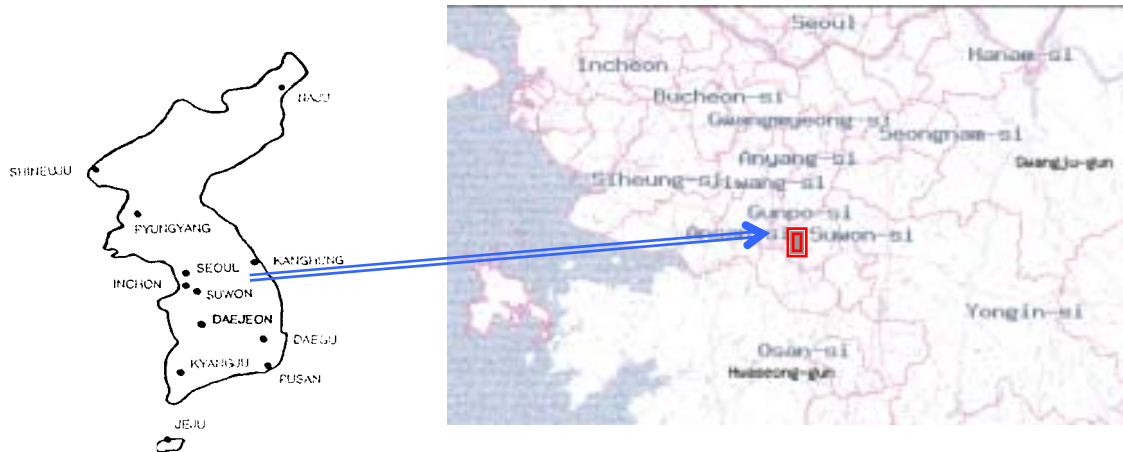


Figure1. Map of the Suwon City area.

Measurement Procedure

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

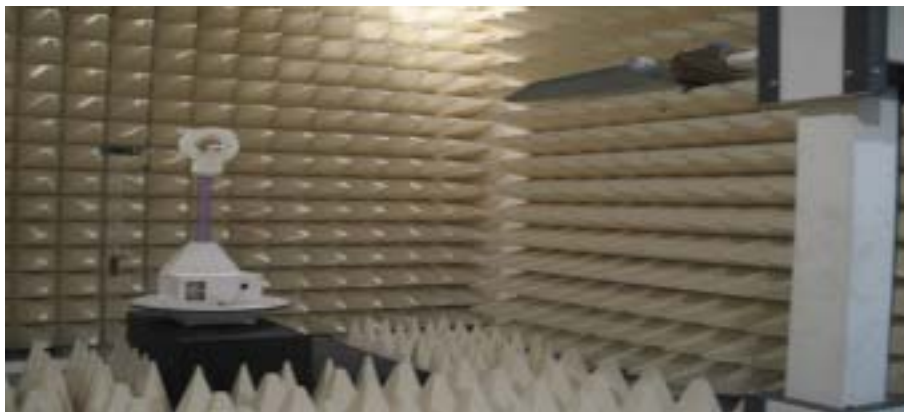


Figure2. Photograph of 3m Fully-Anechoic Chamber



3. MEASURING INSTRUMENT CALIBRATION

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

4. TEST EQUIPMENT LIST

Name Of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/010	2009-10-21
	E4440A(3Hz~26.5GHz)	MY46187454	2009-03-03
	E4440A(3Hz~26.5GHz)	MY41000236	2009-04-15
Signal Generator	SMR20	835197/030	2009-12-05
Network Analyzer	8753E	JP38160590	2009-06-20
Power Sensor	E9300H	MY41495838	2009-09-12
	8481B	3318A10325	2009-09-28
Power Meter	E4417A	MY45101042	2009-09-12
	E4419B	GB41293846	2009-09-12
Pre-Amplifier	8449B	3008A00691	2009-12-15
Communication test set	8960	MY47510060	2009-03-03
	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
	3121C-DB4	9007-587	2009-04-16
Communication test set	CMU200	109162	2009-10-17
Receive Antenna	HL040	353255/019	2009-10-29
	HL040	353255/020	2010-06-13
Power Supply	E3640A	MY40003594	2009-06-20
	E3640A	MY40003595	2009-05-22
	E3632A	MY40022438	2009-03-03
Divider	11636B	51946	Not Required
	11636B	51942	Not Required
	11636B	56913	Not Required
	11636B	56918	Not Required
High Pass Filter	WHK1.0/15G-10SS	1	Not Required
	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

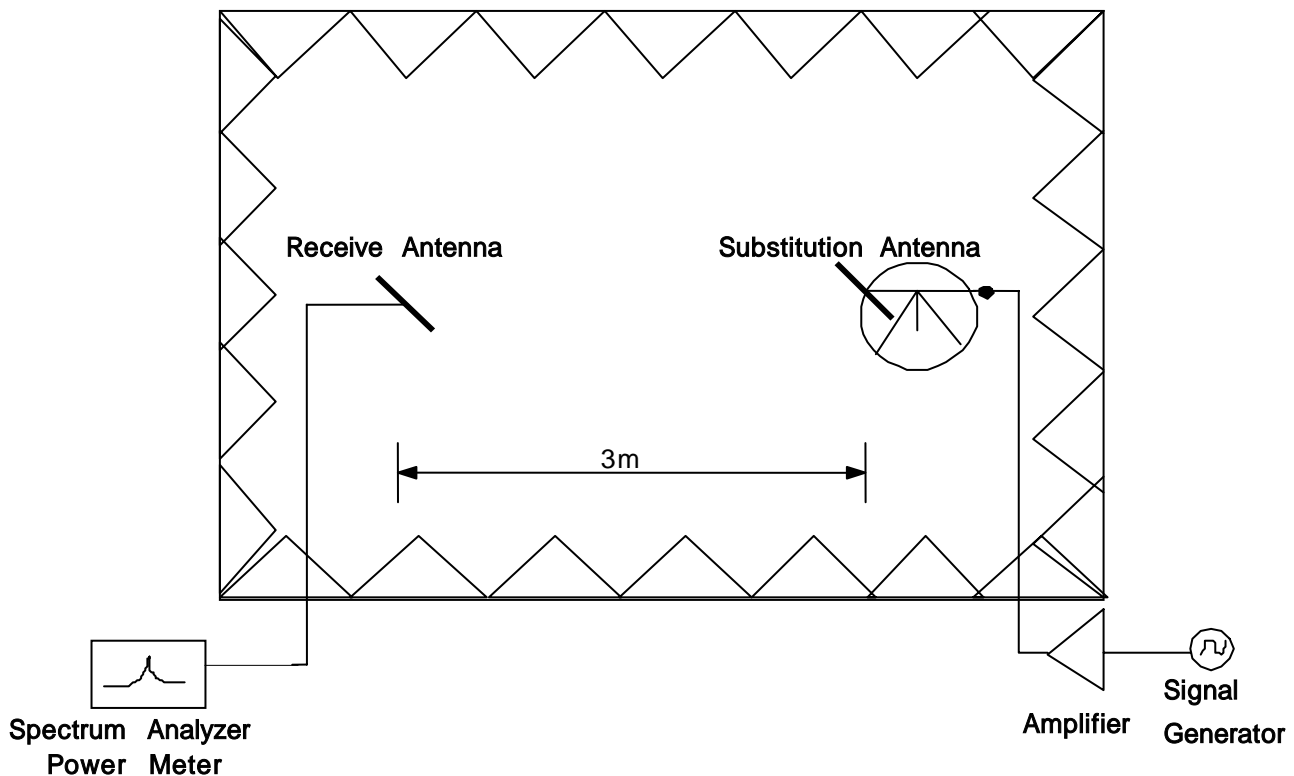


Figure 3. Diagram of ERP/EIRP test Set-up

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

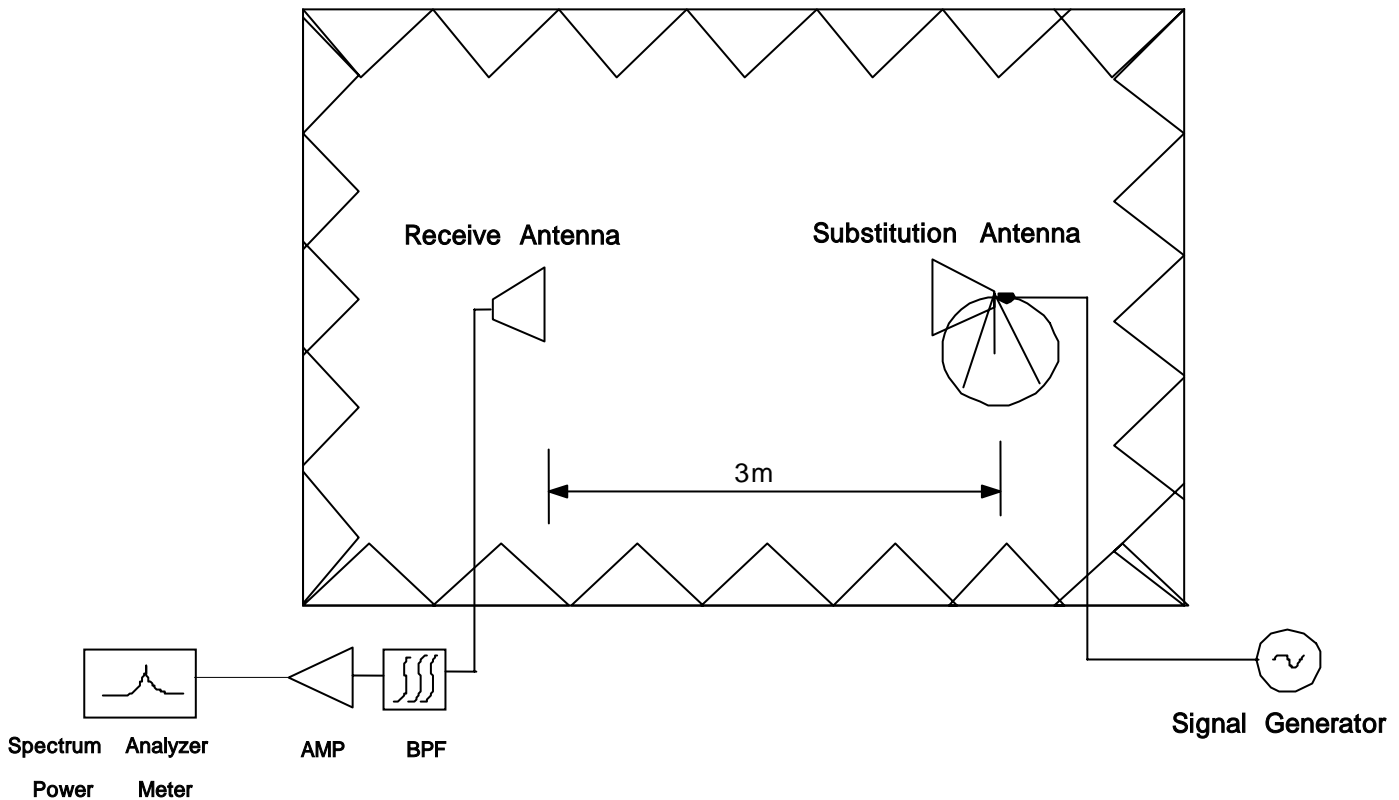


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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.

$$43 + 10\log (0.711 \text{ W}) = 41.52 \text{ dB}$$

$$28.52 \text{ dBm} - 41.52 \text{ dB} = -13 \text{ dBm}$$

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. 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	25.00	H	-12.24	-0.67	-11.57
		V	-12.44	-0.67	-11.77
836.60	27.00	H	-11.18	-0.73	-10.45
		V	-10.32	-0.73	-9.59
848.80	29.00	H	-11.35	-0.79	-10.56
		V	-9.61	-0.79	-8.82

Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.20	-11.43	H	74/110	25.14	0.327	Standard
836.60	-10.31	H	67/90	27.14	0.518	Standard
848.80	-11.04	H	290/90	28.52	0.711	Standard

EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
848.80	-15.05	H	290/90	24.56	0.286	Standard

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

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

Radiated measurements at 3 meters by Substitution Method



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

Supply Voltage : 3.7VDC

Modulation : PCS 1900

Reference level

Frequency (MHz)	Output (dBm)	Polarization (H/V)	S/A (dBm)	Ant gain (dBi)	Ref level (dBm)
1850.20	27.00	H	-12.02	9.70	-21.72
		V	-12.14	9.70	-21.84
1880.00	27.00	H	-12.56	9.70	-22.26
		V	-12.49	9.70	-22.19
1909.80	30.00	H	-9.41	9.70	-19.11
		V	-9.45	9.70	-19.15

Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-22.19	V	333/110	26.65	0.462	Standard
1880.00	-21.82	H	71/10	27.44	0.555	Standard
1909.80	-18.85	V	213/100	30.30	1.072	Standard

EDGE Result

Frequency (MHz)	Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1909.80	-20.93	V	213/100	28.22	0.664	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 : 28.52 dBm = 0.711 W

Modulation Signal : GSM850

Limit : $43 + 10\log_{10}(P) = 41.52 \text{ dBc}$

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
128	2	1648.40	-48.31	64.87	H
	3	2472.60	-61.29	73.08	H
	4	3296.80	-68.44	77.35	H
	5	4121.00	-	-	-
	6	4945.20	-	-	-
	7	5769.40	-	-	-
190	2	1673.20	-51.59	67.29	V
	3	2509.80	-64.16	76.01	V
	4	3346.40	-67.84	76.24	V
	5	4183.00	-	-	-
	6	5019.60	-	-	-
	7	5856.20	-	-	-
251	2	1697.60	-53.12	68.99	V
	3	2546.40	-63.07	74.79	V
	4	3395.20	-68.51	76.64	H
	5	4244.00	-	-	-
	6	5092.80	-	-	-
	7	5941.60	-	-	-

NOTE :

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

Radiated Spurious Emission measurements at 3 meters by Substitution Method



6.4. GSM1900 Radiated Spurious & Harmonic measurement

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

Measured Output Power : 30.30 dBm = 1.072 W

Modulation Signal : GSM1900

Limit : $43 + 10\log_{10}(P) = 43.3$ dBc

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	Result (dBc)	POL (H/V)
512	2	3700.40	-67.80	74.57	H
	3	5550.60	-67.94	71.13	H
	4	7400.80	-70.28	69.22	V
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
661	2	3760.00	-69.18	75.41	V
	3	5640.00	-67.92	70.71	H
	4	7520.00	-69.75	68.94	V
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
810	2	3819.60	-67.21	73.94	V
	3	5729.40	-68.48	70.76	H
	4	7639.20	-70.32	68.68	V
	5	9549.00	-	-	-
	6	11458.80	-	-	-
	7	13368.60	-	-	-

NOTE :

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

Radiated Spurious Emission measurements at 3 meters by Substitution Method



6.5. GSM850 Radiated Spurious & Harmonic Conversion Table

Date : 2009. 1. 7

Test Engineer : KJ KWON

Tx Cable loss
 Tx Horn Ant Gain
 Tx Level to radiate -13dBm
 ESI Level received from Tx with -13dBm
 Tested Level from EUT
 = ERP+2.14 - (-13 + -)

CH	Har	Frequency (MHz)	Tx C/L dB	Tx Horn Gain dBi	Tx Level dBm	ESI Level : H dBm	ESI Level : V dBm	Tested EUT Level : H dBm	Tested EUT Level : H dBm	Result EUT : H (dBc)	Result EUT : V (dBc)
128	2	1648.40	-8.90	9.50	-13.60	-25.78	-25.24	-48.31	-49.89	64.87	66.13
	3	2472.60	-11.09	10.70	-12.60	-30.65	-30.96	-61.29	-66.34	73.08	78.26
	4	3296.80	-13.06	12.30	-12.20	-34.30	-34.88	-68.44	-68.78	77.35	77.72
	5	4121.00	-14.55	12.50	-10.90	-37.37	-37.16	-	-	-	-
	6	4945.20	-16.36	12.70	-9.30	-39.95	-40.17	-	-	-	-
	7	5769.40	-17.76	12.90	-8.10	-42.25	-42.16	-	-	-	-
190	2	1673.20	-8.92	9.50	-13.60	-26.45	-26.15	-52.64	-51.59	68.02	67.29
	3	2509.80	-11.14	10.70	-12.60	-30.90	-30.96	-65.66	-64.16	77.14	76.01
	4	3346.40	-13.11	12.30	-12.20	-34.28	-34.36	-68.17	-67.84	76.71	76.24
	5	4183.00	-14.77	12.50	-10.70	-36.90	-37.13	-	-	-	-
	6	5019.60	-16.62	12.70	-9.10	-40.04	-40.64	-	-	-	-
	7	5856.20	-17.95	12.90	-7.90	-42.75	-42.94	-	-	-	-
251	2	1697.60	-8.96	9.50	-13.50	-26.64	-26.78	-54.23	-53.12	68.99	69.07
	3	2546.40	-11.17	10.70	-12.50	-30.32	-30.81	-63.66	-63.07	75.29	74.79
	4	3395.20	-13.04	12.30	-12.30	-34.25	-34.55	-68.51	-68.55	76.64	77.28
	5	4244.00	-14.95	12.50	-10.60	-37.07	-37.26	-	-	-	-
	6	5092.80	-16.73	12.70	-9.00	-40.12	-40.75	-	-	-	-
	7	5941.60	-18.12	12.90	-7.80	-43.10	-42.67	-	-	-	-



6.6. GSM1900 Radiated Spurious & Harmonic Conversion Table

Date : 2009. 1. 7

Test Engineer : KJ KWON

Tx Cable loss
 Tx Horn Ant Gain
 Tx Level to radiate -13dBm
 ESI Level received from Tx with -13dBm
 Tested Level from EUT
 = EIRP - (-13 + -)

CH	Har	Frequency (MHz)	Tx C/L dB	Tx Horn Gain dBi	Tx Level dBm	ESI Level : H dBm	ESI Level : V dBm	Tested EUT Level : H dBm	Tested EUT Level : H dBm	Result EUT : H (dBc)	Result EUT : V (dBc)
512	2	3700.40	-13.79	12.40	-11.60	-36.53	-36.57	-67.80	-69.13	74.57	75.86
	3	5550.60	-17.44	12.90	-8.50	-40.11	-40.25	-67.94	-68.70	71.13	71.75
	4	7400.80	-20.28	10.50	-3.20	-43.54	-44.36	-70.80	-70.28	70.56	69.22
	5	9251.00	-23.40	11.20	-0.80	-46.74	-47.00	-	-	-	-
	6	11101.20	-26.60	11.60	2.00	-48.49	-49.44	-	-	-	-
	7	12951.40	-28.40	12.90	2.50	-50.19	-50.24	-	-	-	-
	661	2	3760.00	-13.95	12.40	-11.50	-36.86	-37.07	-69.29	-69.18	75.73
3		5640.00	-17.58	12.90	-8.30	-40.51	-40.80	-67.92	-69.06	70.71	71.56
4		7520.00	-20.37	10.60	-3.20	-44.31	-44.11	-70.04	-69.75	69.03	68.94
5		9400.00	-22.95	11.60	-1.70	-46.81	-47.76	-	-	-	-
6		11280.00	-26.09	12.10	1.00	-48.95	-49.40	-	-	-	-
7		13160.00	-27.98	12.80	2.20	-50.07	-50.18	-	-	-	-
810		2	3819.60	-13.97	12.40	-11.40	-36.91	-36.57	-68.12	-67.21	74.51
	3	5729.40	-17.70	13.00	-8.30	-41.02	-41.25	-68.48	-68.94	70.76	70.99
	4	7639.20	-20.69	11.20	-3.50	-44.59	-44.94	-70.66	-70.32	69.37	68.68
	5	9549.00	-23.40	11.70	-1.30	-47.73	-48.13	-	-	-	-
	6	11458.80	-26.51	11.70	1.80	-49.59	-47.93	-	-	-	-
	7	13368.60	-28.12	12.30	2.80	-50.78	-50.09	-	-	-	-

6.7. Frequency Stability

6.7.1. GSM850 Frequency Stability Table

Operating Frequency : 836,600,000 Hz

Channel : 190

Reference Voltage : 3.7VDC

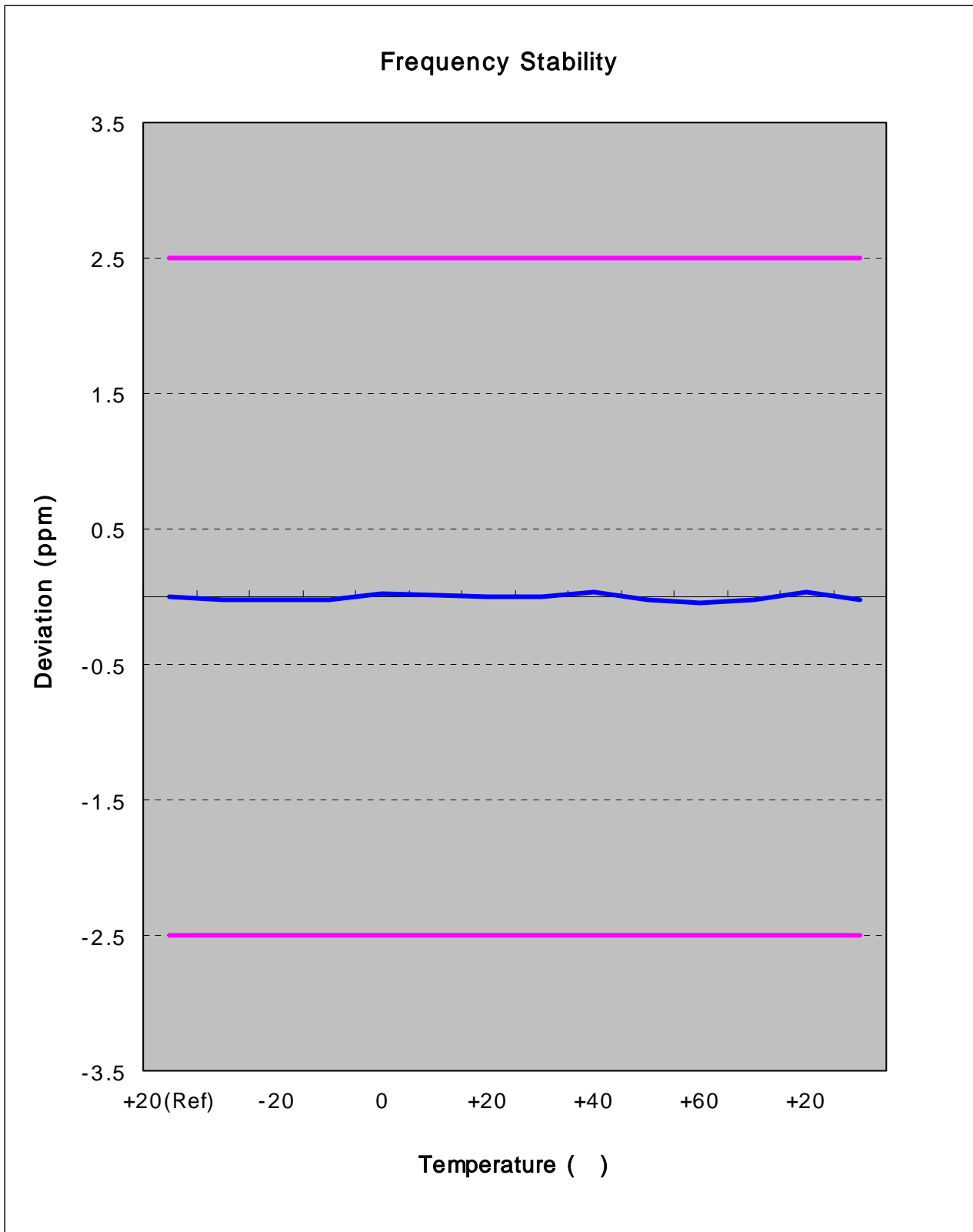
Deviation Limit : $\pm 0.00025\%$ or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	23.90	836,600,024	0.000003	0.029
100%		-30	7.80	836,600,008	0.000001	0.009
100%		-20	30.40	836,600,030	0.000004	0.036
100%		-10	4.20	836,600,004	0.000001	0.005
100%		0	20.30	836,600,020	0.000002	0.024
100%		+10	-31.70	836,599,968	-0.000004	-0.038
100%		+20	23.90	836,600,024	0.000003	0.029
100%		+30	6.40	836,600,006	0.000001	0.008
100%		+40	-6.00	836,599,994	-0.000001	-0.007
100%		+50	25.10	836,600,025	0.000003	0.030
100%		+60	22.60	836,600,023	0.000003	0.027
85%		3.35	+20	36.90	836,600,037	0.000004
115%	4.26	+20	22.60	836,600,023	0.000003	0.027
Batt.Endpoint	3.35	+20	36.90	836,600,037	0.000004	0.044

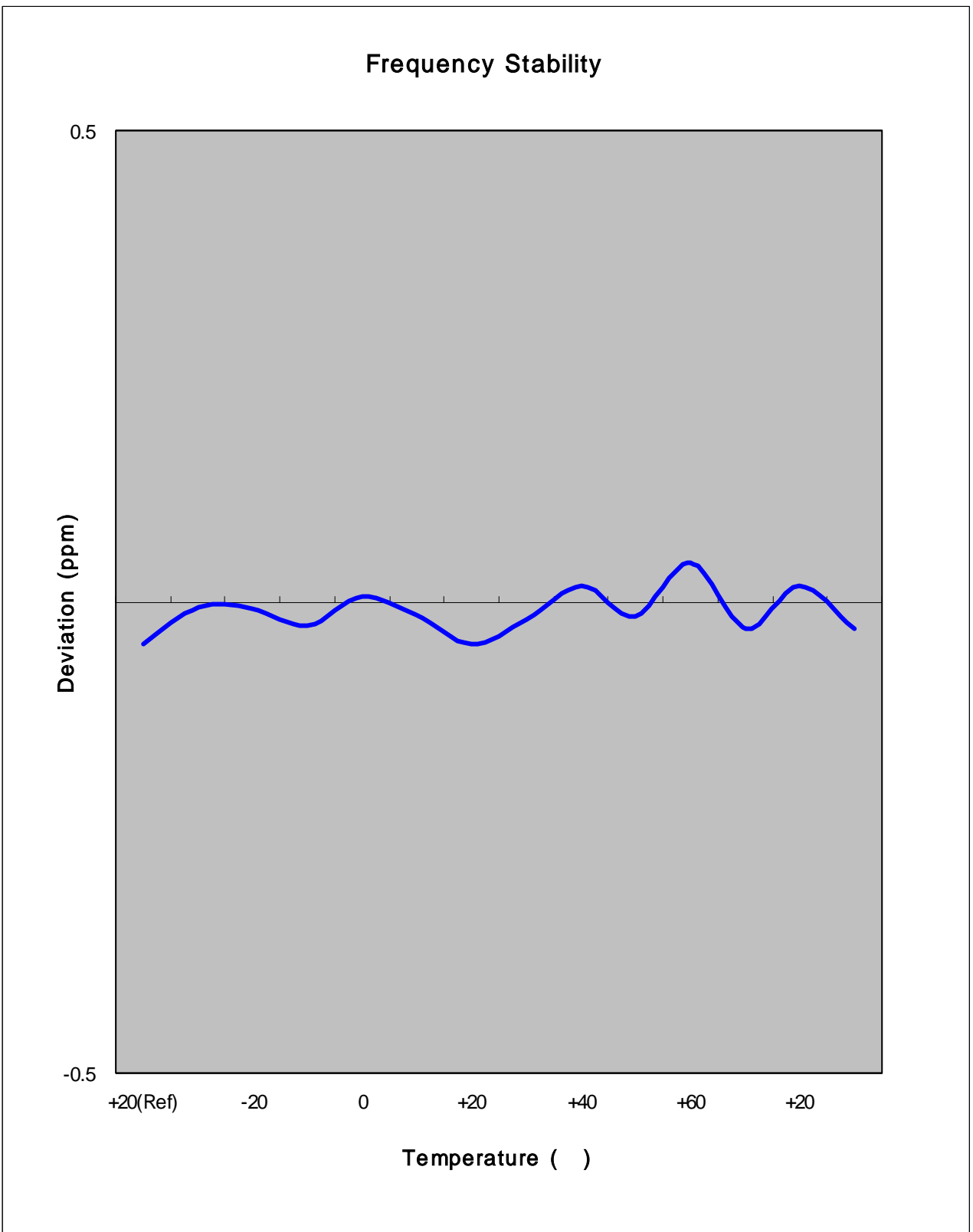
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.2. GSM850 Frequency Stability Graph



Zoom IN





6.7.3. GSM1900 Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference Voltage : 3.7VDC

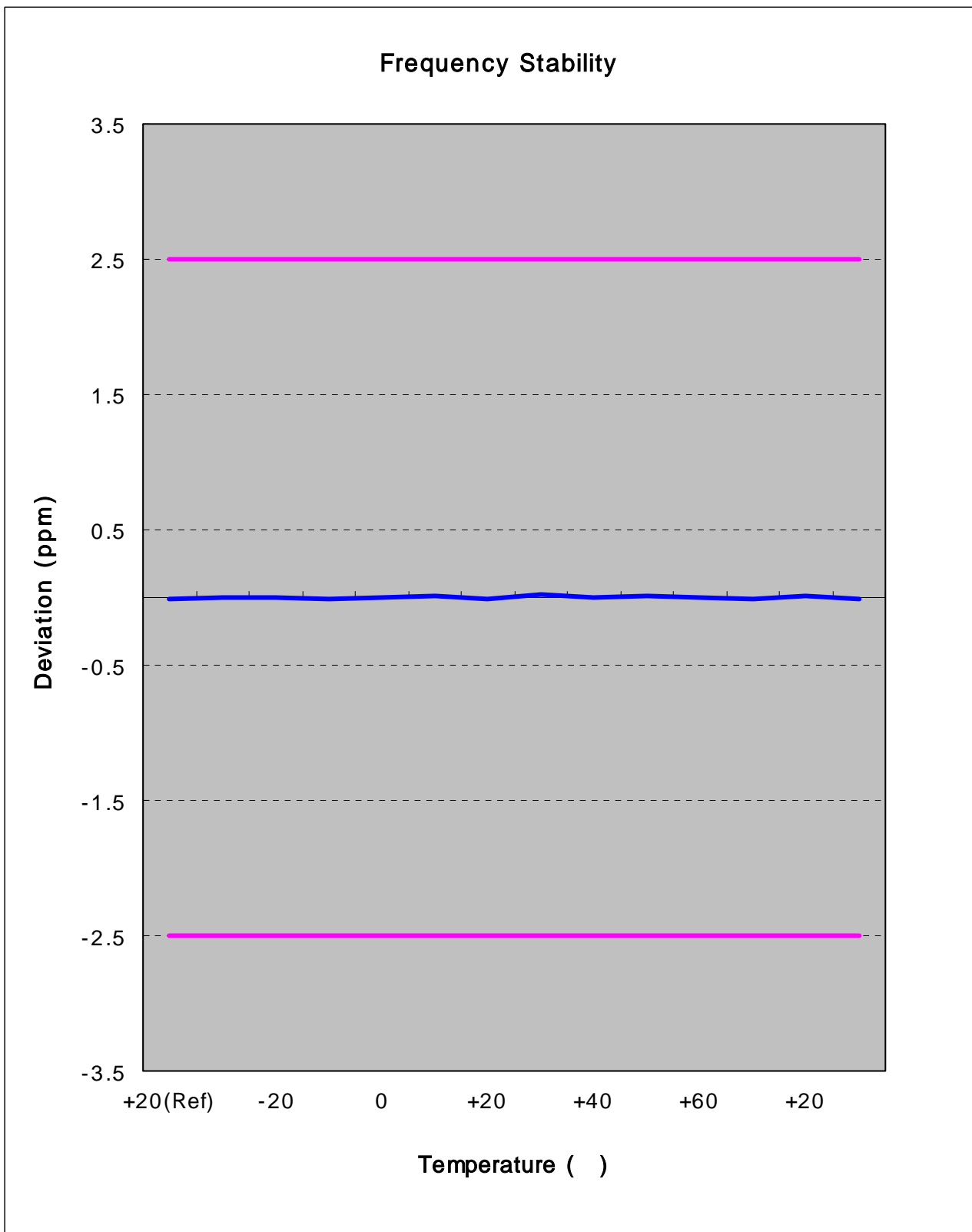
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-6.30	1,879,999,994	0.000000	-0.003
100%		-30	-29.80	1,879,999,970	-0.000002	-0.016
100%		-20	-29.30	1,879,999,971	-0.000002	-0.016
100%		-10	15.60	1,880,000,016	0.000001	0.008
100%		0	22.20	1,880,000,022	0.000001	0.012
100%		+10	25.60	1,880,000,026	0.000001	0.014
100%		+20	-6.30	1,879,999,994	0.000000	-0.003
100%		+30	23.80	1,880,000,024	0.000001	0.013
100%		+40	-27.40	1,879,999,973	-0.000001	-0.015
100%		+50	17.80	1,880,000,018	0.000001	0.009
100%		+60	17.80	1,880,000,018	0.000001	0.009
85%		3.35	+20	19.30	1,880,000,019	0.000001
115%	4.26	+20	-28.20	1,879,999,972	-0.000002	-0.015
Batt.Endpoint	3.35	+20	19.30	1,880,000,019	0.000001	0.010

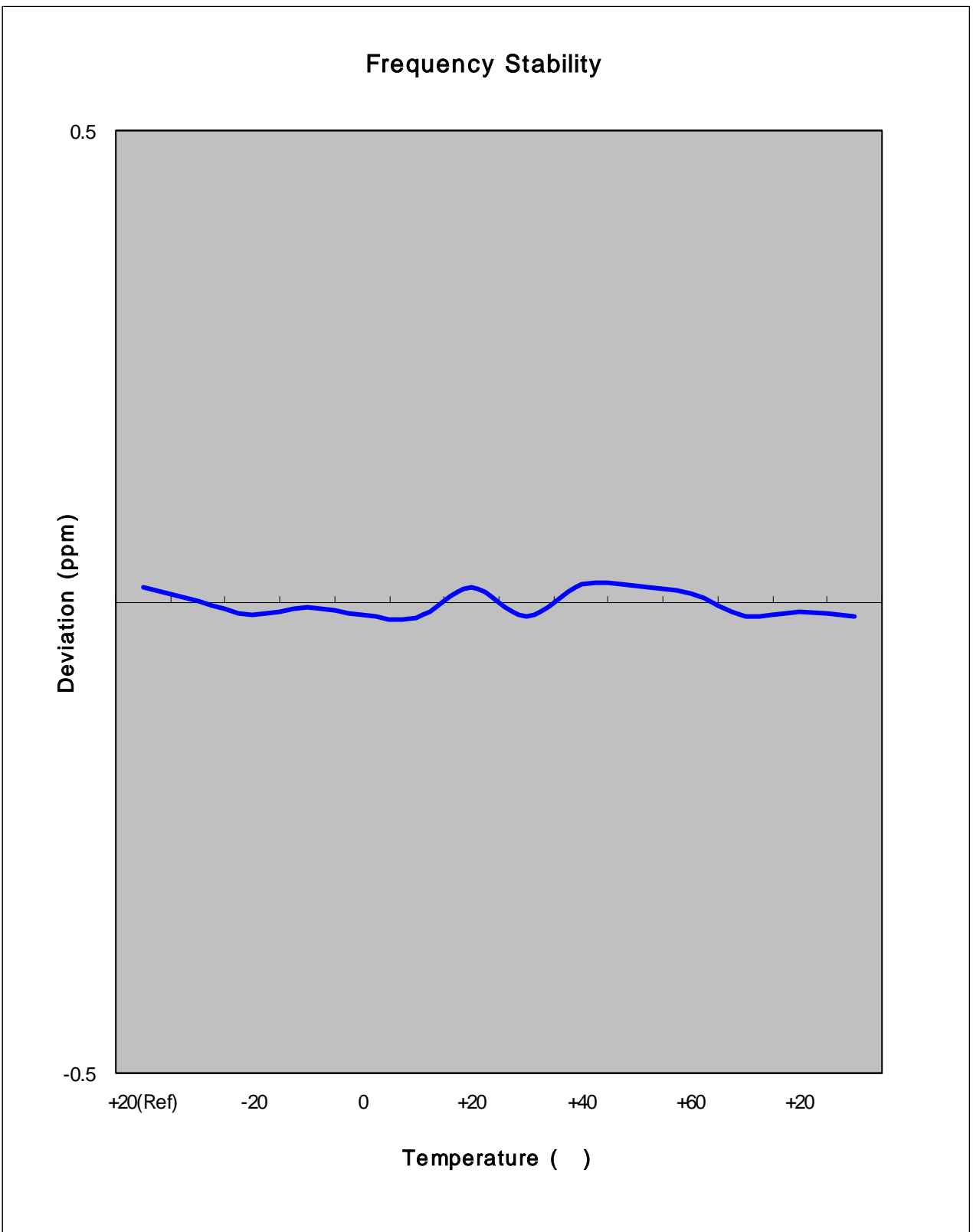
Note : The temperature is varied from -30 °C to +60 °C using an environmental chamber.

The EUT is tested down to the battery end point.

6.7.4. GSM1900 Frequency Stability Graph



Zoom IN





7. CONCLUSION

The data collected shows that the SAMSUNG 850/1900 GSM/EDGE/GPRS Phone with Bluetooth.
FCC ID : A3LSWDS7220 complies with all the requirements of Parts 2,22,24 of the FCC Rules.



8. TEST PLOTS

GSM850

Agilent

R T

Ch Freq 824.2 MHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSWDS7220 0BW Ch.128
Ref 33 dBm Atten 40 dB

Center 824.200 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
252.2533 kHz	x dB	-26.00 dB
Transmit Freq Error	1.288 kHz	
x dB Bandwidth	307.476 kHz	

Freq/Channel	
Center Freq	824.200000 MHz
Start Freq	823.700000 MHz
Stop Freq	824.700000 MHz
CF Step	100.000000 kHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

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

Agilent

R T

Ch Freq 836.6 MHz **Trig** Free

Occupied Bandwidth

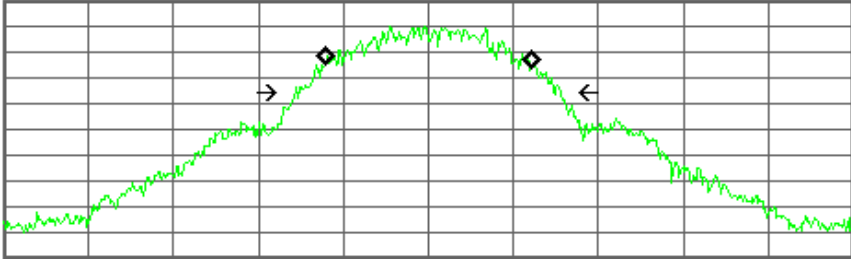
FCC ID:A3LSWDS7220 0BW Ch.190
Ref 33 dBm Atten 40 dB

Center 836.600 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
250.1571 kHz	x dB	-26.00 dB
Transmit Freq Error	1.734 kHz	
x dB Bandwidth	311.939 kHz	

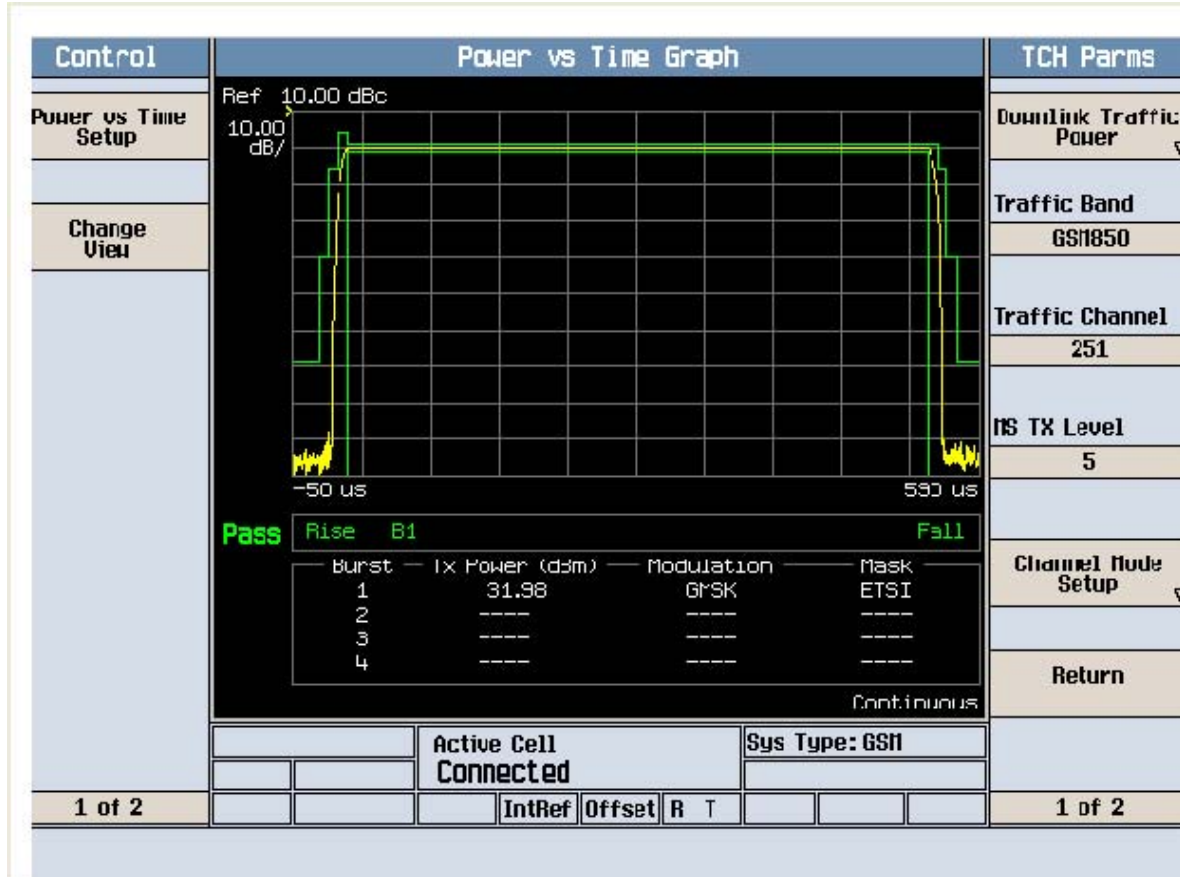
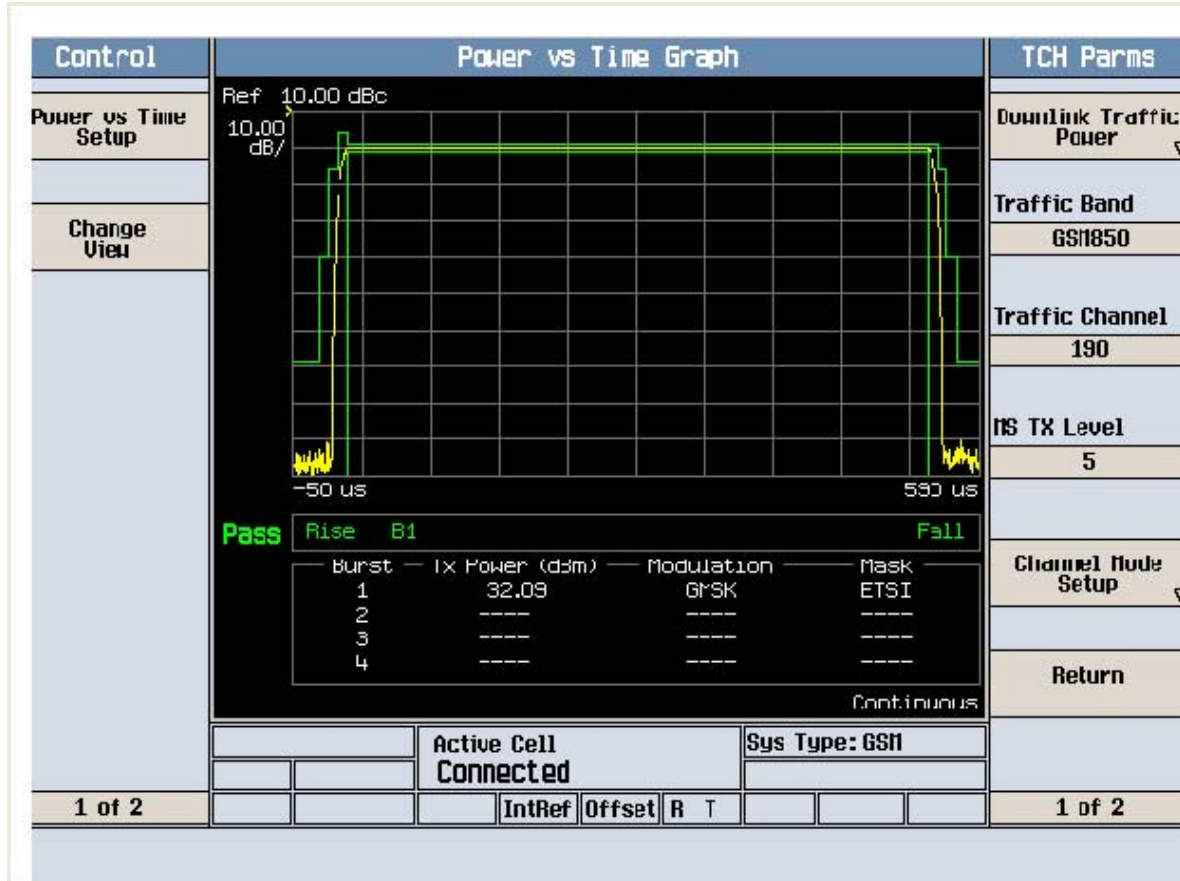
Freq/Channel	
Center Freq	836.600000 MHz
Start Freq	836.100000 MHz
Stop Freq	837.100000 MHz
CF Step	100.000000 kHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

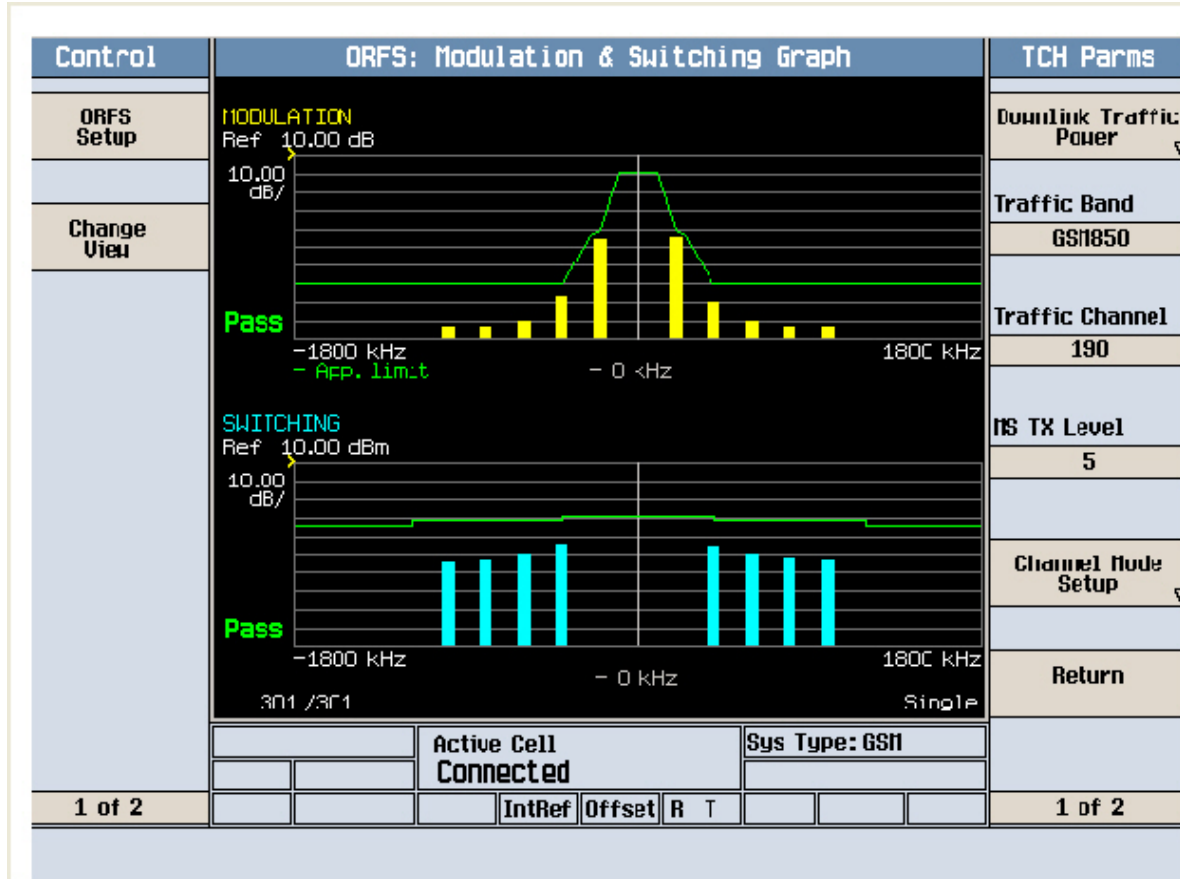
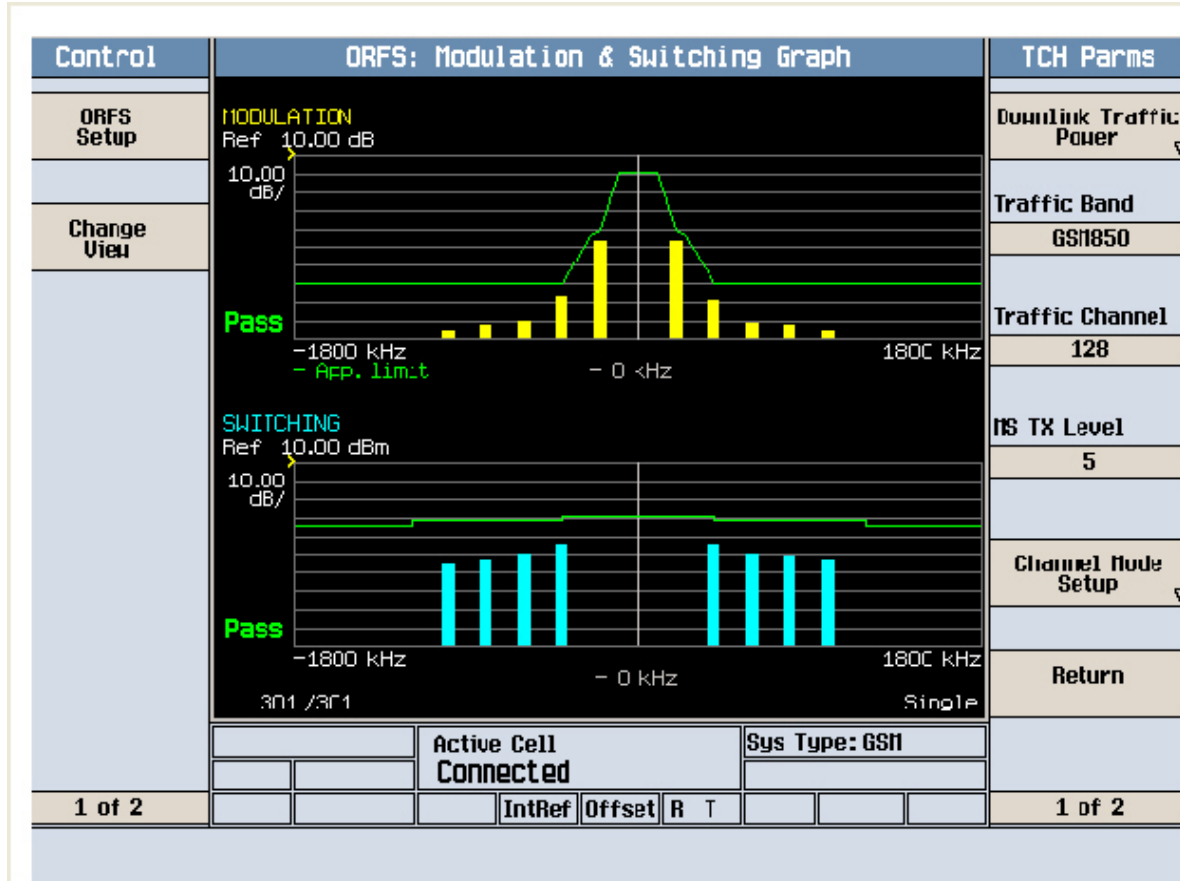
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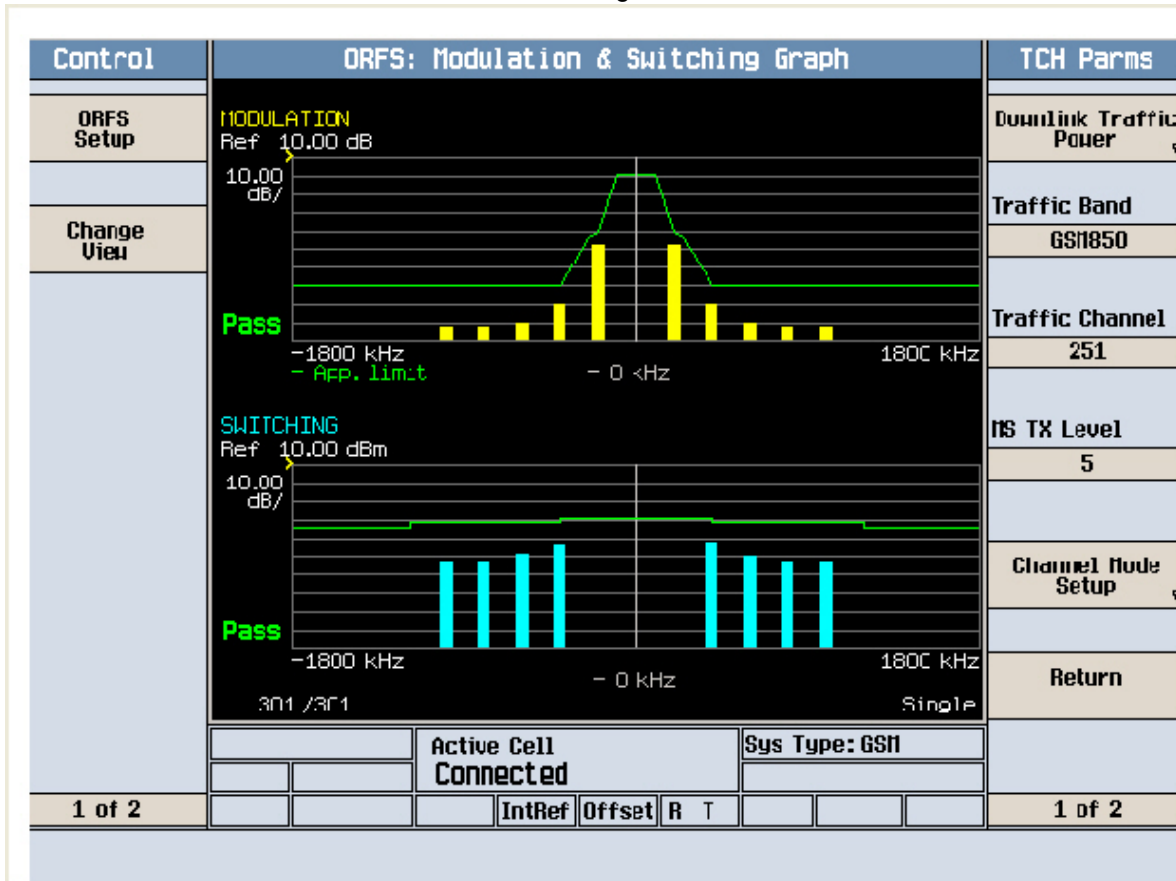
Ch Freq 848.8 MHz Trig Free		Freq/Channel	
Occupied Bandwidth [] []		Center Freq 848.800000 MHz	
FCC ID:A3LSWDS7220 0BW Ch.251 Ref 33 dBm Atten 40 dB		Start Freq 848.300000 MHz	
#Peak 		Stop Freq 849.300000 MHz	
Center 848.800 MHz Span 1 MHz		CF Step 100.000000 kHz Auto Man	
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)		Freq Offset 0.00000000 Hz	
Occupied Bandwidth		Signal Track On Off	
247.5103 kHz		Occ BW % Pwr 99.00 % x dB -26.00 dB	
Transmit Freq Error -194.732 Hz			
x dB Bandwidth 317.104 kHz			
File Operation Status, C:\TEMP.GIF file saved			

Control	Transmit Power				TCH Parms																								
Transmit Power Setup	<table border="1"> <thead> <tr> <th></th> <th>Burst 1</th> <th>Burst 2</th> <th>Burst 3</th> <th>Burst 4</th> </tr> </thead> <tbody> <tr> <td>Burst Power</td> <td>31.98</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>Estimated Carrier Power</td> <td>31.98</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>					Burst 1	Burst 2	Burst 3	Burst 4	Burst Power	31.98	----	----	----	Estimated Carrier Power	31.98	----	----	----	Downlink Traffic Power									
	Burst 1	Burst 2	Burst 3	Burst 4																									
Burst Power	31.98	----	----	----																									
Estimated Carrier Power	31.98	----	----	----																									
	Single				Traffic Band																								
					GS1850																								
					Traffic Channel																								
					251																								
					MS TX Level																								
					5																								
Swap Window Positions	<table border="1"> <thead> <tr> <th colspan="4">Phase & Frequency Error</th> </tr> <tr> <th></th> <th>Peak Phase °</th> <th>RMS Phase °</th> <th>Frequency Hz</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>4.38</td> <td>0.96</td> <td>-42.19</td> </tr> <tr> <td>Maximum</td> <td>6.48</td> <td>1.34</td> <td>-26.84</td> </tr> <tr> <td>Average</td> <td>5.48</td> <td>1.16</td> <td>-34.59</td> </tr> <tr> <td>Pass/Fail</td> <td>Pass</td> <td>Pass</td> <td>Pass</td> </tr> </tbody> </table>				Phase & Frequency Error					Peak Phase °	RMS Phase °	Frequency Hz	Minimum	4.38	0.96	-42.19	Maximum	6.48	1.34	-26.84	Average	5.48	1.16	-34.59	Pass/Fail	Pass	Pass	Pass	Channel Mode Setup
Phase & Frequency Error																													
	Peak Phase °	RMS Phase °	Frequency Hz																										
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Average	5.48	1.16	-34.59																										
Pass/Fail	Pass	Pass	Pass																										
	50 / 50 Single				Return																								
	Active Cell Connected		Sys Type: GSM																										
1 of 2	IntRef	Offset	R	T	1 of 2																								

Control	Power vs Time Graph	TCH Parms																				
Power vs Time Setup		Downlink Traffic Power																				
Change View		Traffic Band																				
		GS1850																				
		Traffic Channel																				
		128																				
		MS TX Level																				
		5																				
	<table border="1"> <thead> <tr> <th>Burst</th> <th>Px Power (dBm)</th> <th>Modulation</th> <th>Mask</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>32.15</td> <td>GMSK</td> <td>ETSI</td> </tr> <tr> <td>2</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>3</td> <td>----</td> <td>----</td> <td>----</td> </tr> <tr> <td>4</td> <td>----</td> <td>----</td> <td>----</td> </tr> </tbody> </table>	Burst	Px Power (dBm)	Modulation	Mask	1	32.15	GMSK	ETSI	2	----	----	----	3	----	----	----	4	----	----	----	Channel Mode Setup
Burst	Px Power (dBm)	Modulation	Mask																			
1	32.15	GMSK	ETSI																			
2	----	----	----																			
3	----	----	----																			
4	----	----	----																			
		Return																				
	Active Cell Connected	Sys Type: GSM																				
1 of 2	IntRef	Offset	R	T	1 of 2																	



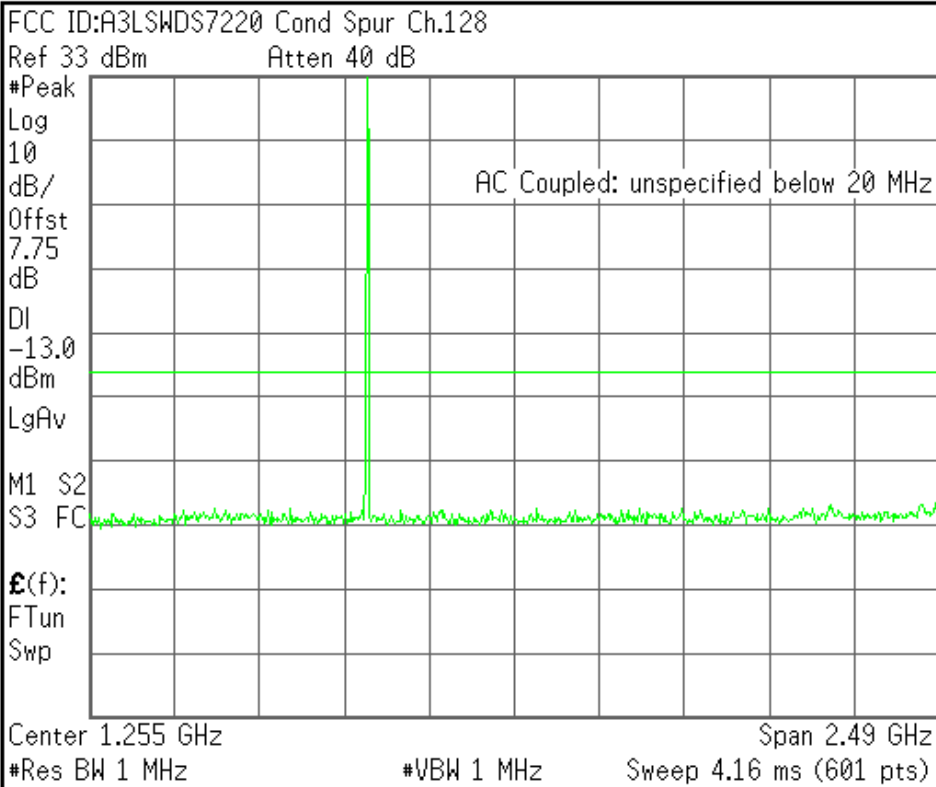




Agilent

R T

Freq/Channel



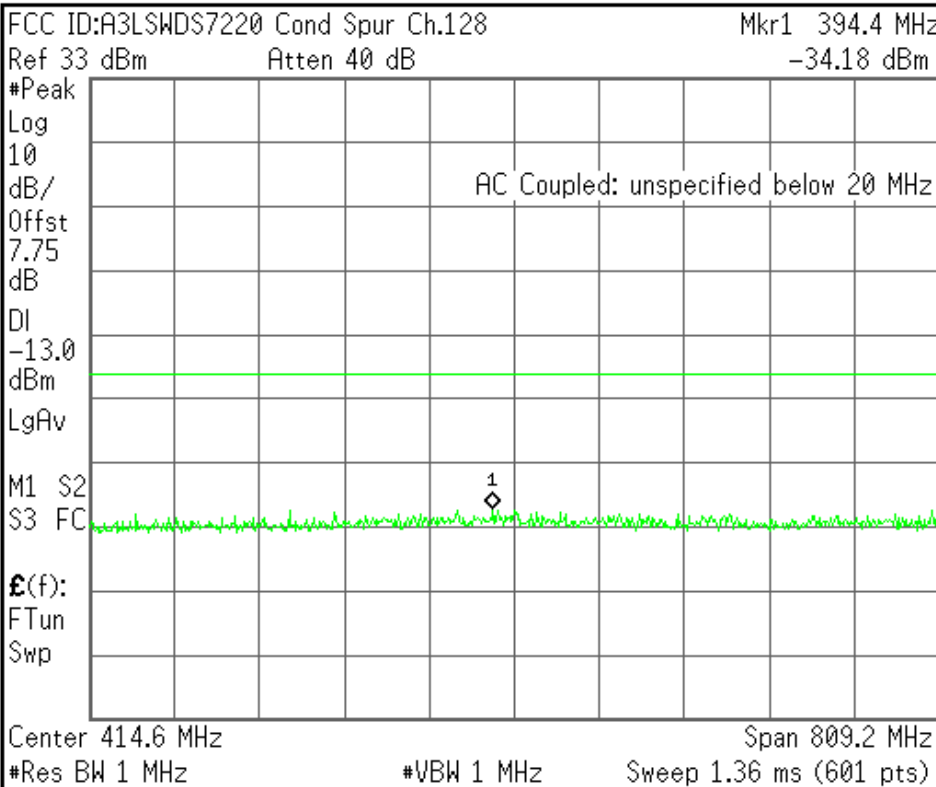
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Start Freq	10.00000000 MHz
Stop Freq	2.50000000 GHz
CF Step	249.0000000 MHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

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

Agilent

R T

Freq/Channel



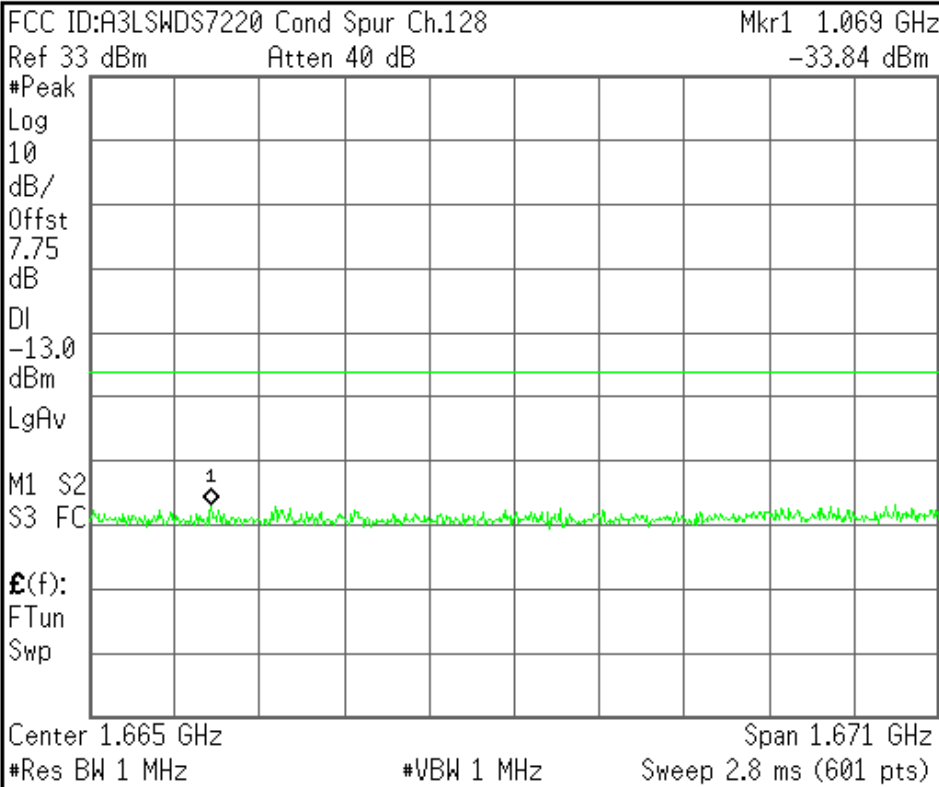
Center Freq	414.600000 MHz
Start Freq	10.00000000 MHz
Stop Freq	819.200000 MHz
CF Step	80.9200000 MHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

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Agilent

R T

Freq/Channel



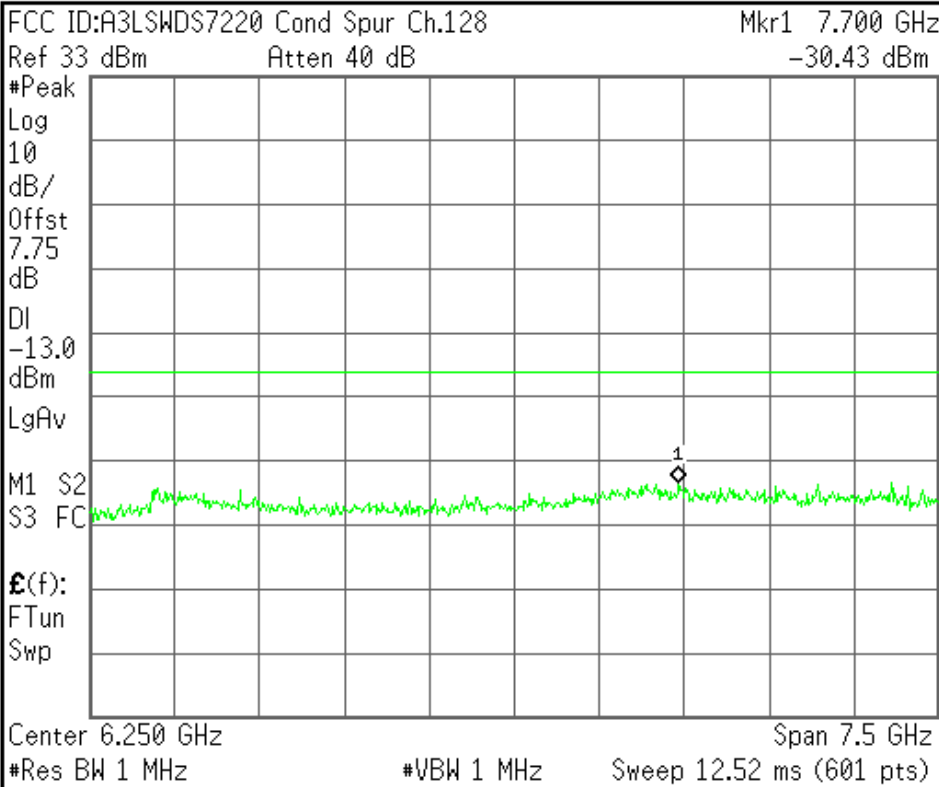
Center Freq 1.66460000 GHz
Start Freq 829.200000 MHz
Stop Freq 2.50000000 GHz
CF Step 167.080000 MHz Auto Man
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Signal Track On Off

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

Agilent

R T

Freq/Channel



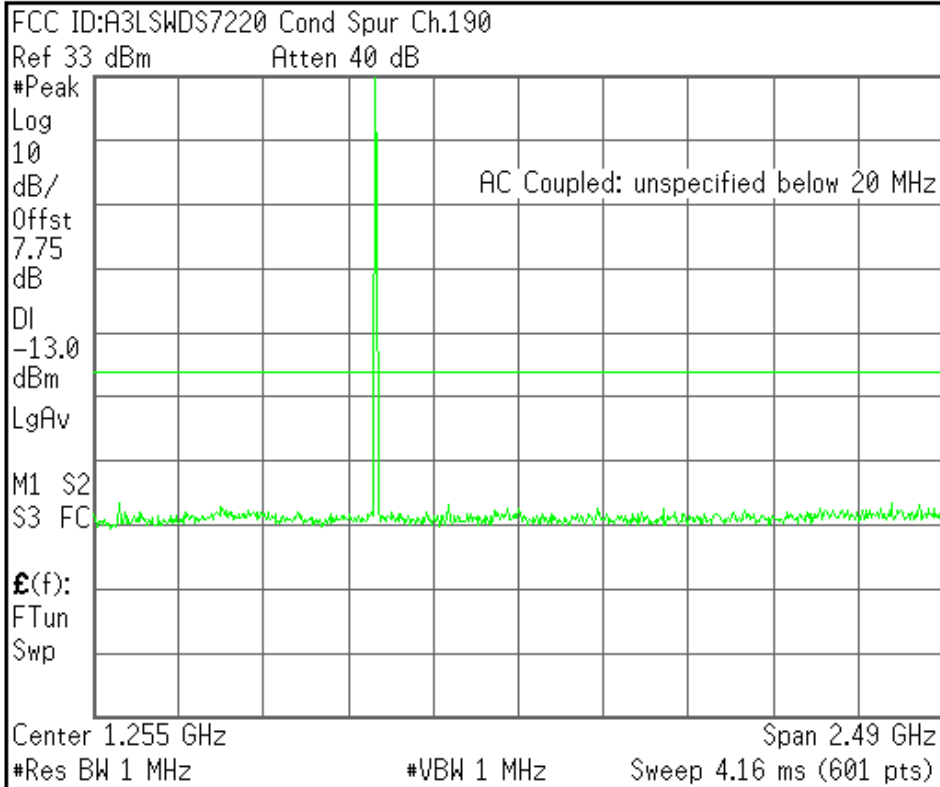
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Start Freq 2.50000000 GHz
Stop Freq 10.00000000 GHz
CF Step 750.000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

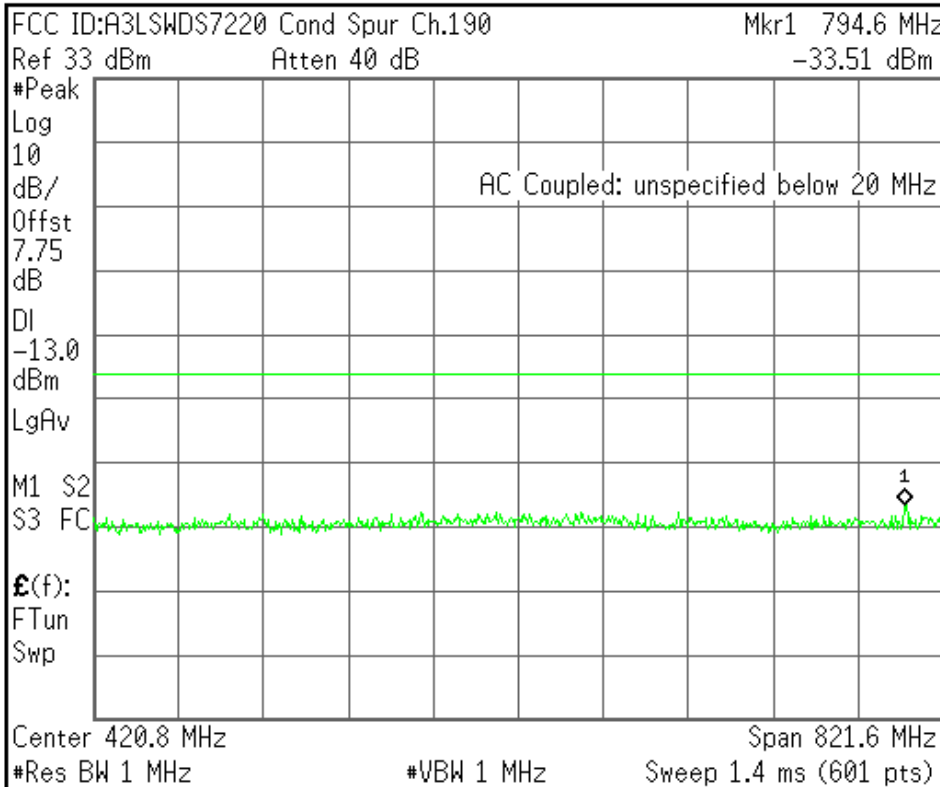
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
420.800000 MHz

Start Freq
10.0000000 MHz

Stop Freq
831.600000 MHz

CF Step
82.1600000 MHz
Auto Man

Freq Offset
0.00000000 Hz

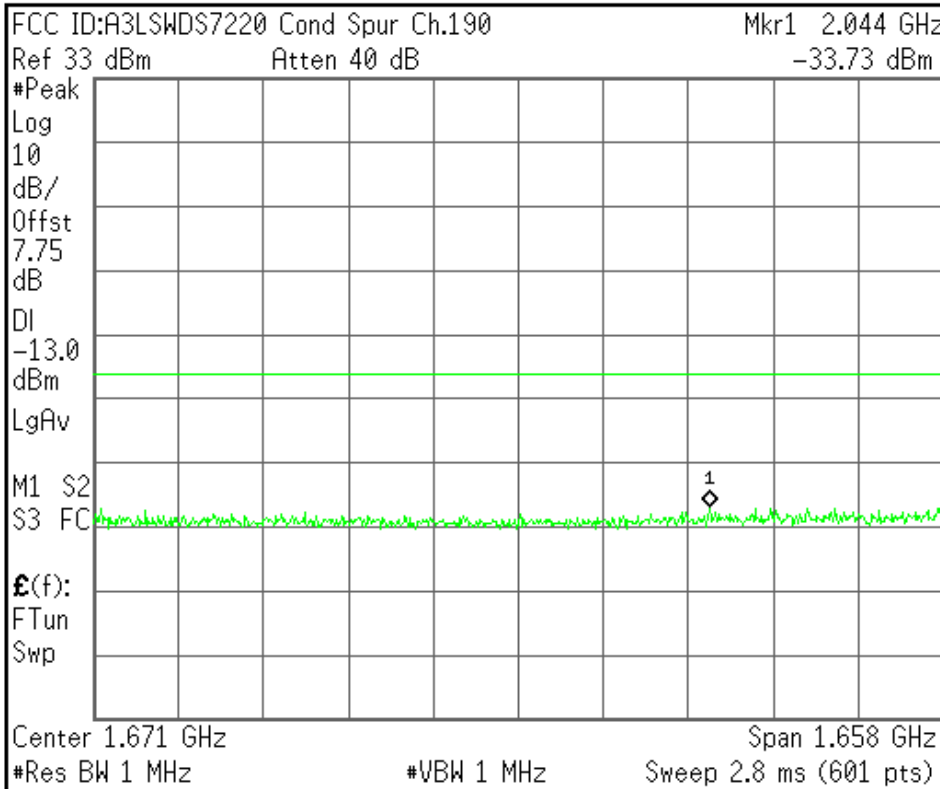
Signal Track
On Off

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

Agilent

R T

Freq/Channel



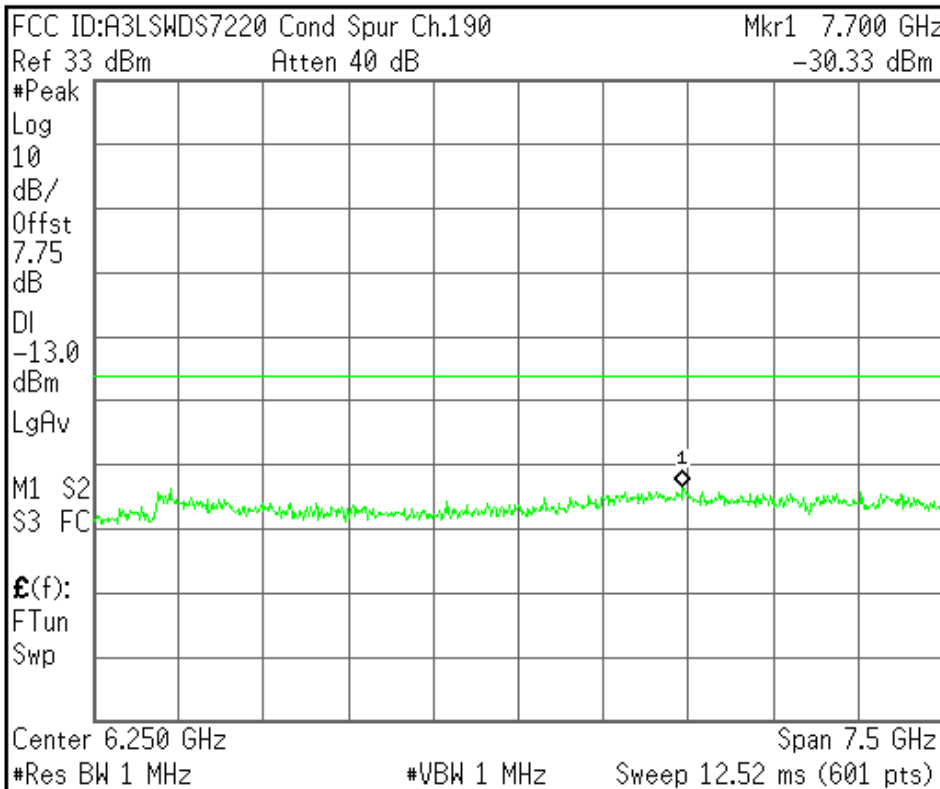
Center Freq 1.67080000 GHz
Start Freq 841.600000 MHz
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Agilent

R T

Freq/Channel



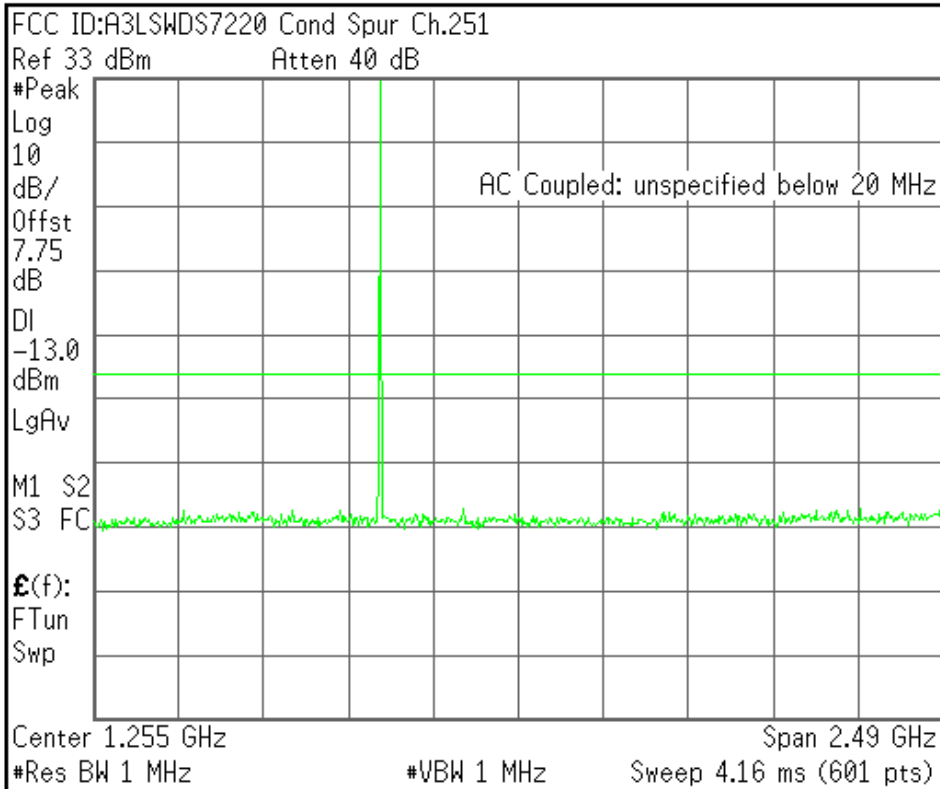
Center Freq 6.25000000 GHz
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CF Step 750.000000 MHz Auto Man
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Signal Track On Off

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

Agilent

R T

Freq/Channel



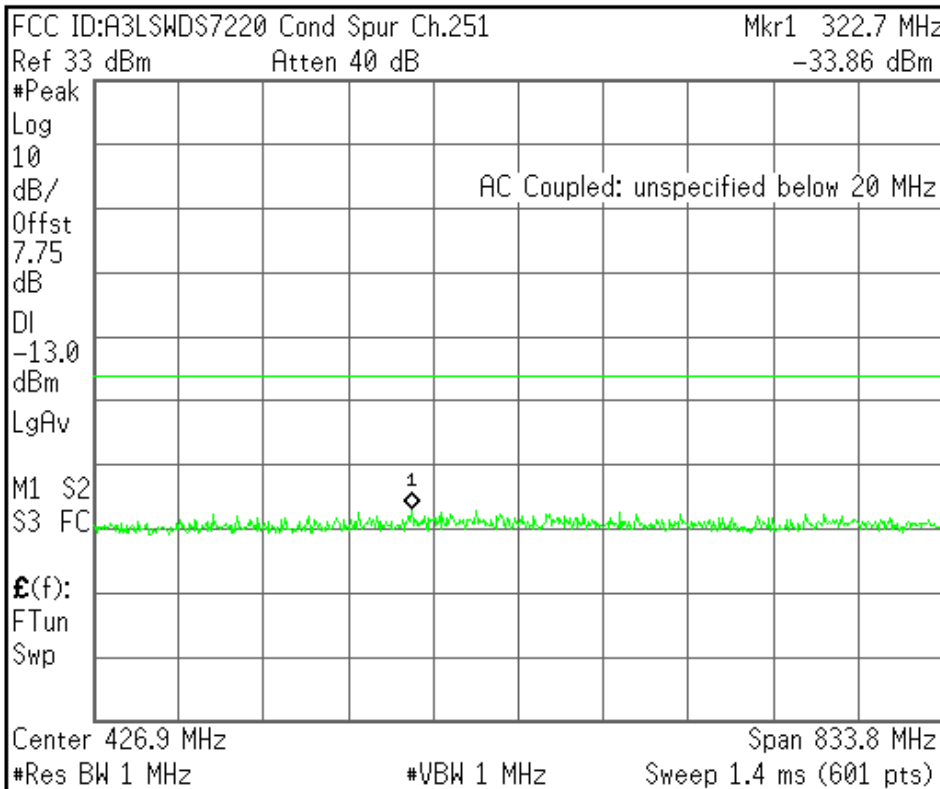
Center Freq 1.25500000 GHz
Start Freq 10.00000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.0000000 MHz Auto Man
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Signal Track On Off

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

Agilent

R T

Freq/Channel



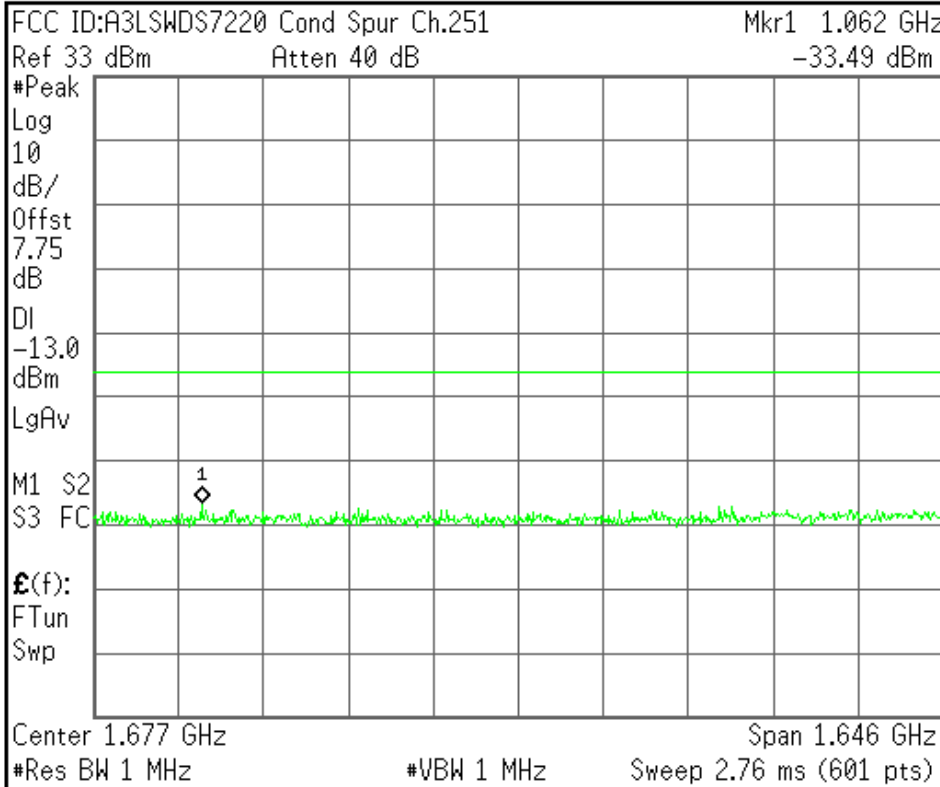
Center Freq 426.900000 MHz
Start Freq 10.00000000 MHz
Stop Freq 843.800000 MHz
CF Step 83.3800000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



Center Freq
1.67690000 GHz

Start Freq
853.800000 MHz

Stop Freq
2.50000000 GHz

CF Step
164.620000 MHz
Auto Man

Freq Offset
0.00000000 Hz

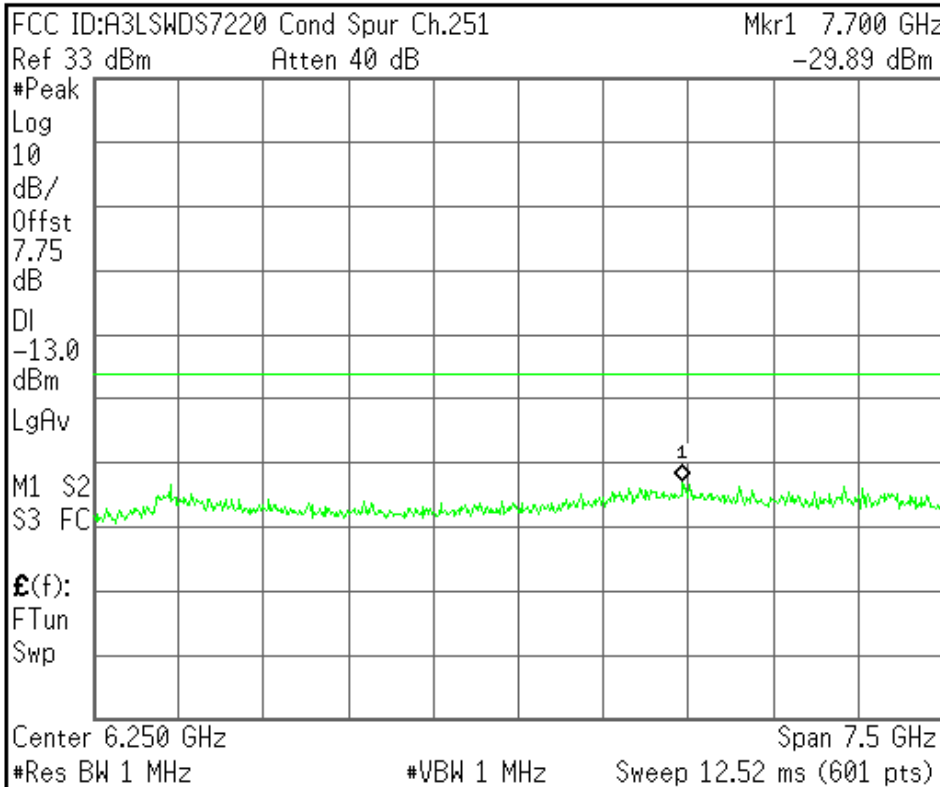
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
6.25000000 GHz

Start Freq
2.50000000 GHz

Stop Freq
10.00000000 GHz

CF Step
750.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

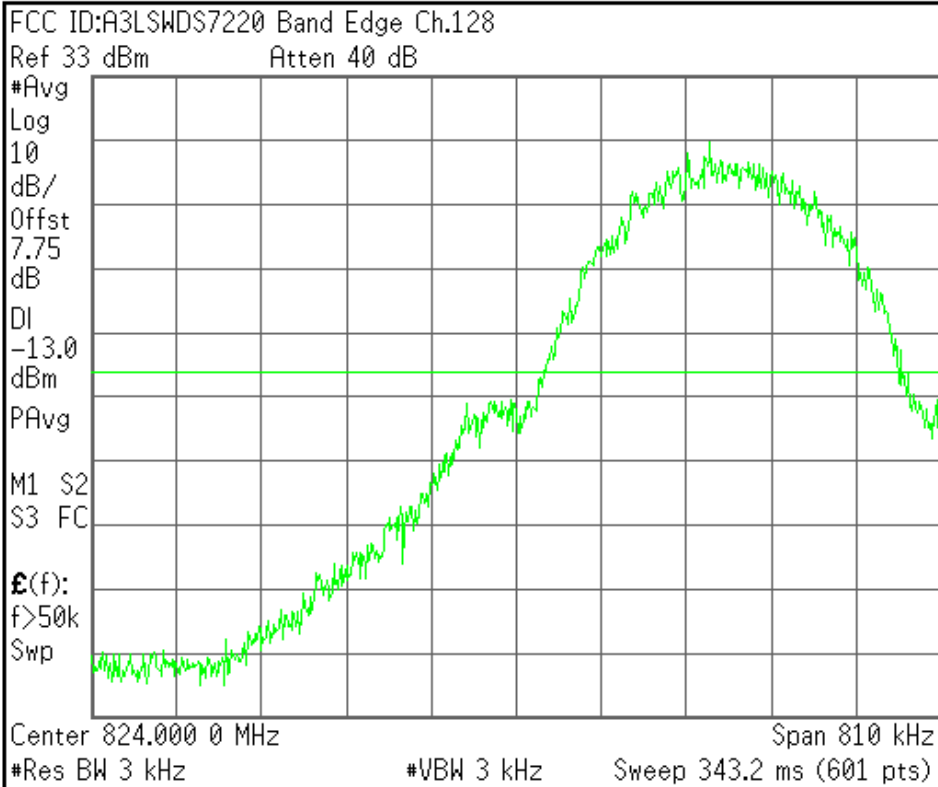
Signal Track
On Off

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

Agilent

R T

Freq/Channel



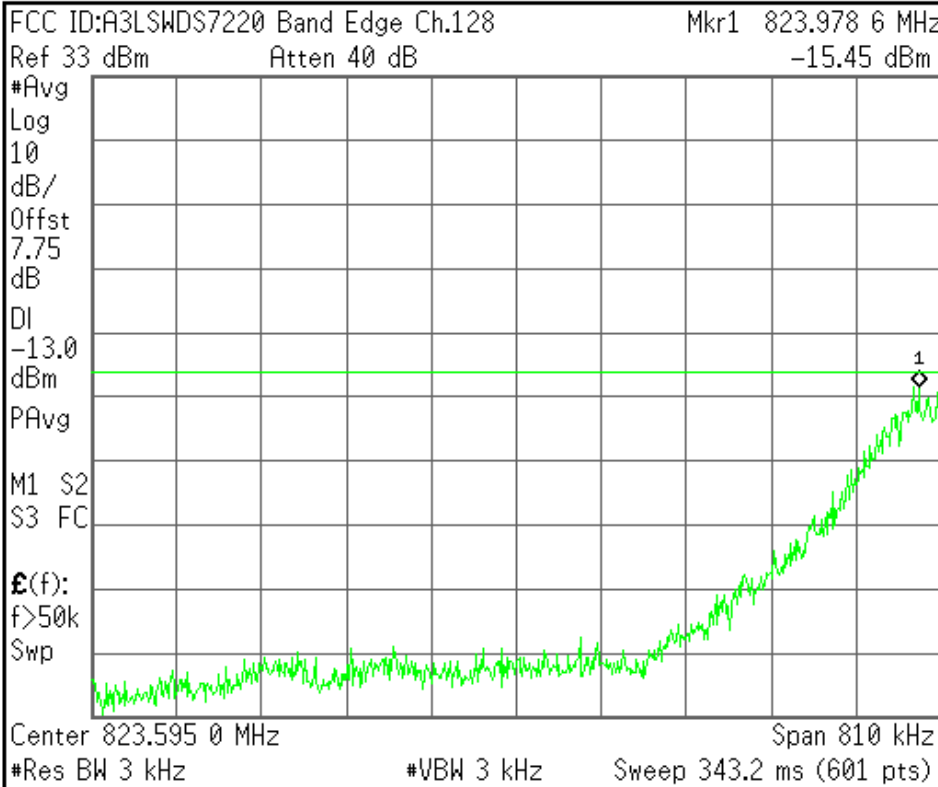
Center Freq 824.000000 MHz
Start Freq 823.595000 MHz
Stop Freq 824.405000 MHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



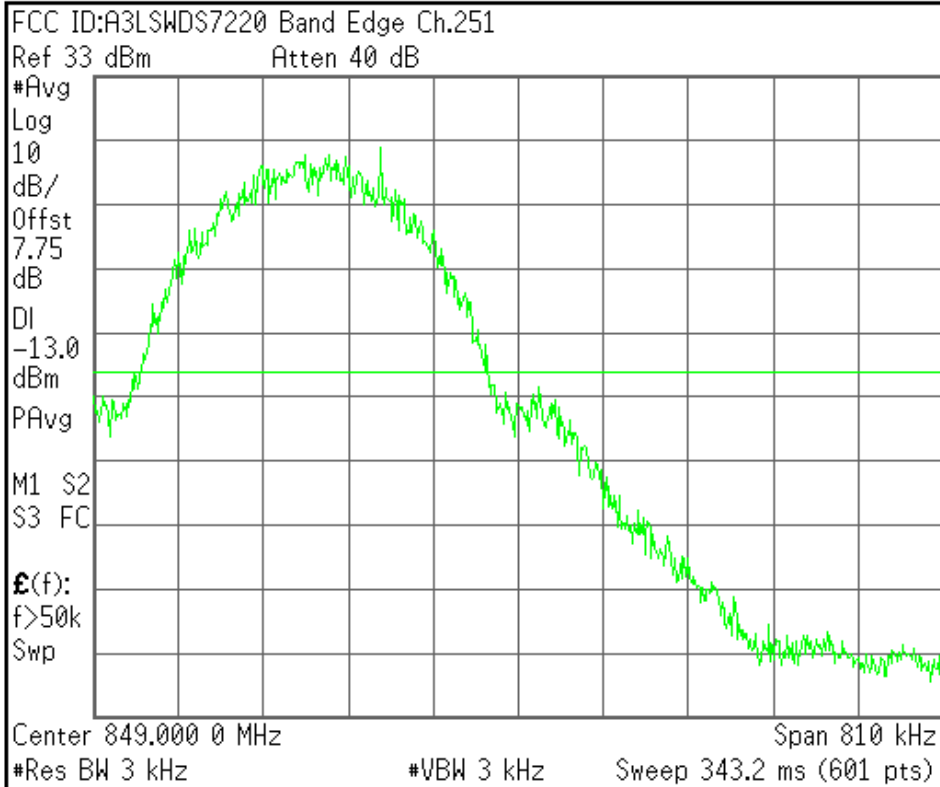
Center Freq 823.595000 MHz
Start Freq 823.190000 MHz
Stop Freq 824.000000 MHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



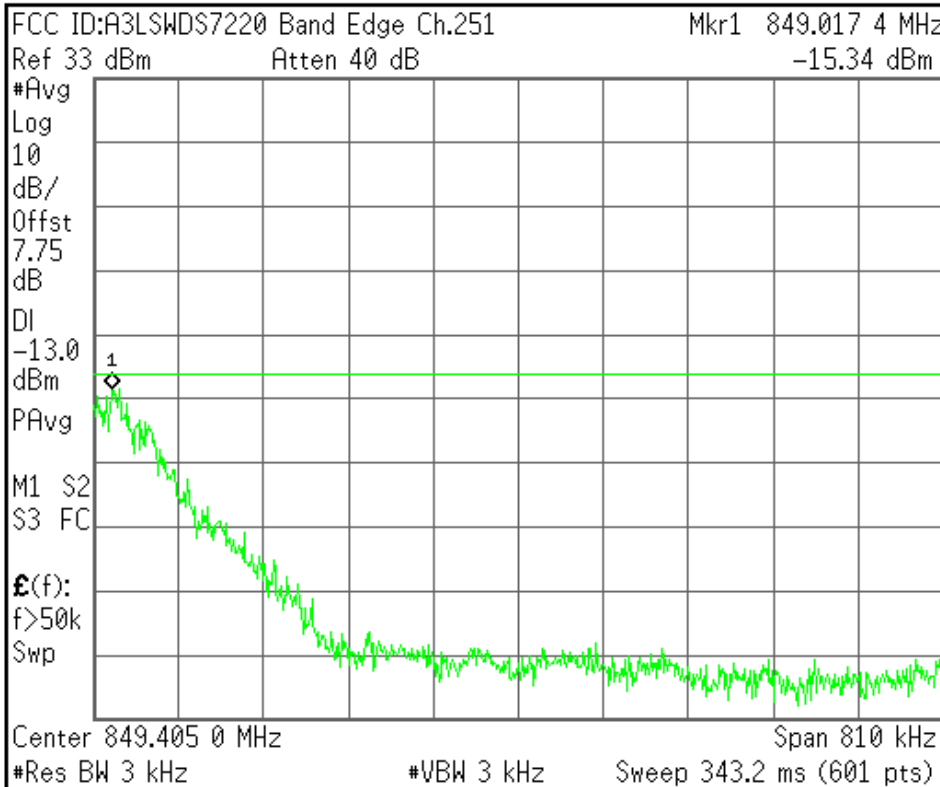
Center Freq 849.000000 MHz
Start Freq 848.595000 MHz
Stop Freq 849.405000 MHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



Center Freq 849.405000 MHz
Start Freq 849.000000 MHz
Stop Freq 849.810000 MHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

GSM1900

Agilent

R T

Ch Freq 1.8502 GHz **Trig** Free

Occupied Bandwidth

FCC ID:A3LSWDS7220 0BW Ch.512
Ref 30 dBm Atten 40 dB

Center 1.850 200 GHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
246.5026 kHz	x dB	-26.00 dB
Transmit Freq Error	234.601 Hz	
x dB Bandwidth	317.016 kHz	

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

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

Agilent

R T

Ch Freq 1.88 GHz **Trig** Free

Occupied Bandwidth

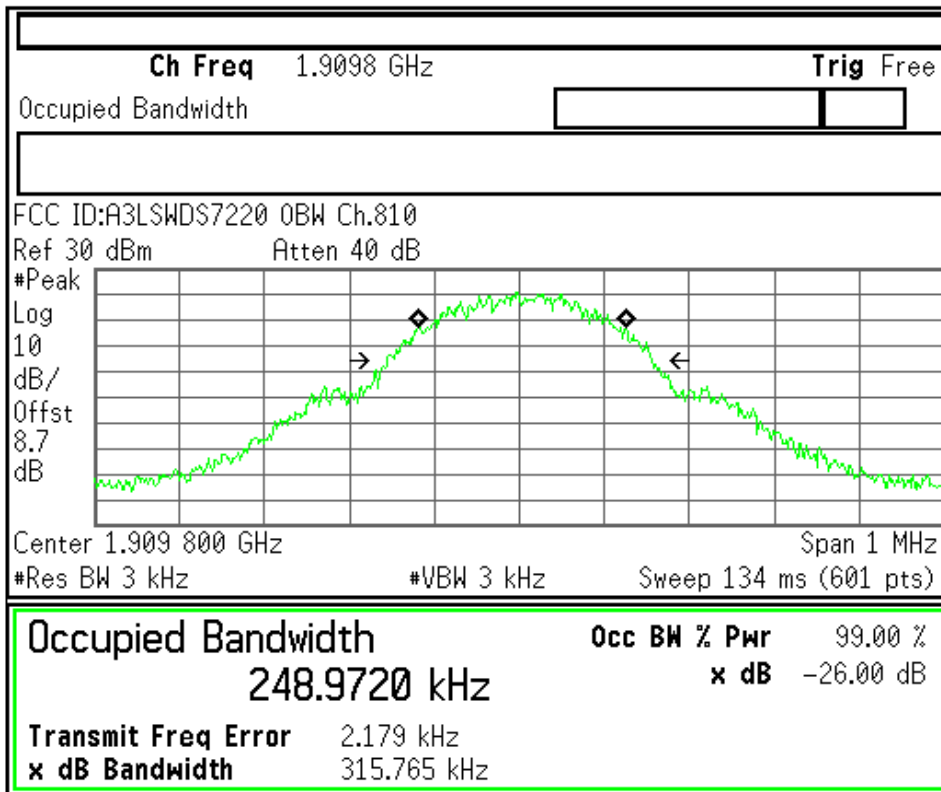
FCC ID:A3LSWDS7220 0BW Ch.661
Ref 30 dBm Atten 40 dB

Center 1.880 000 GHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
245.4011 kHz	x dB	-26.00 dB
Transmit Freq Error	-437.792 Hz	
x dB Bandwidth	299.844 kHz	

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

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



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

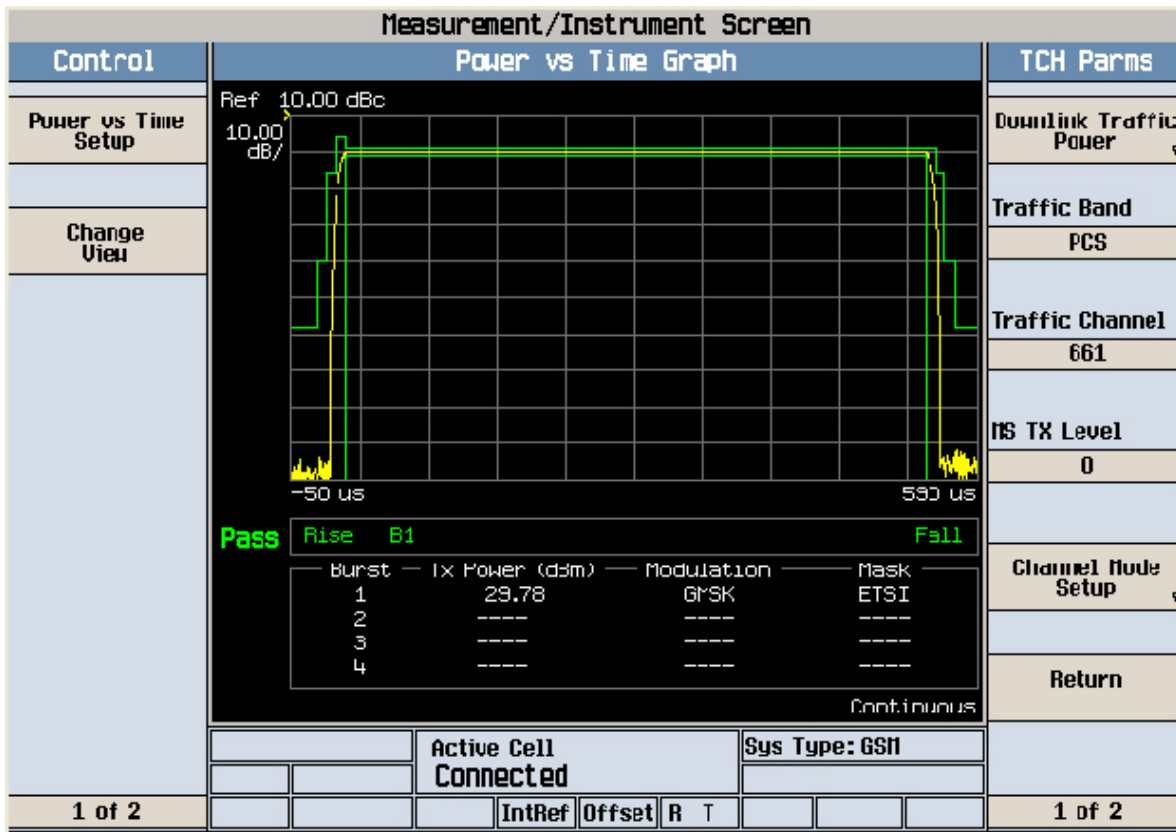
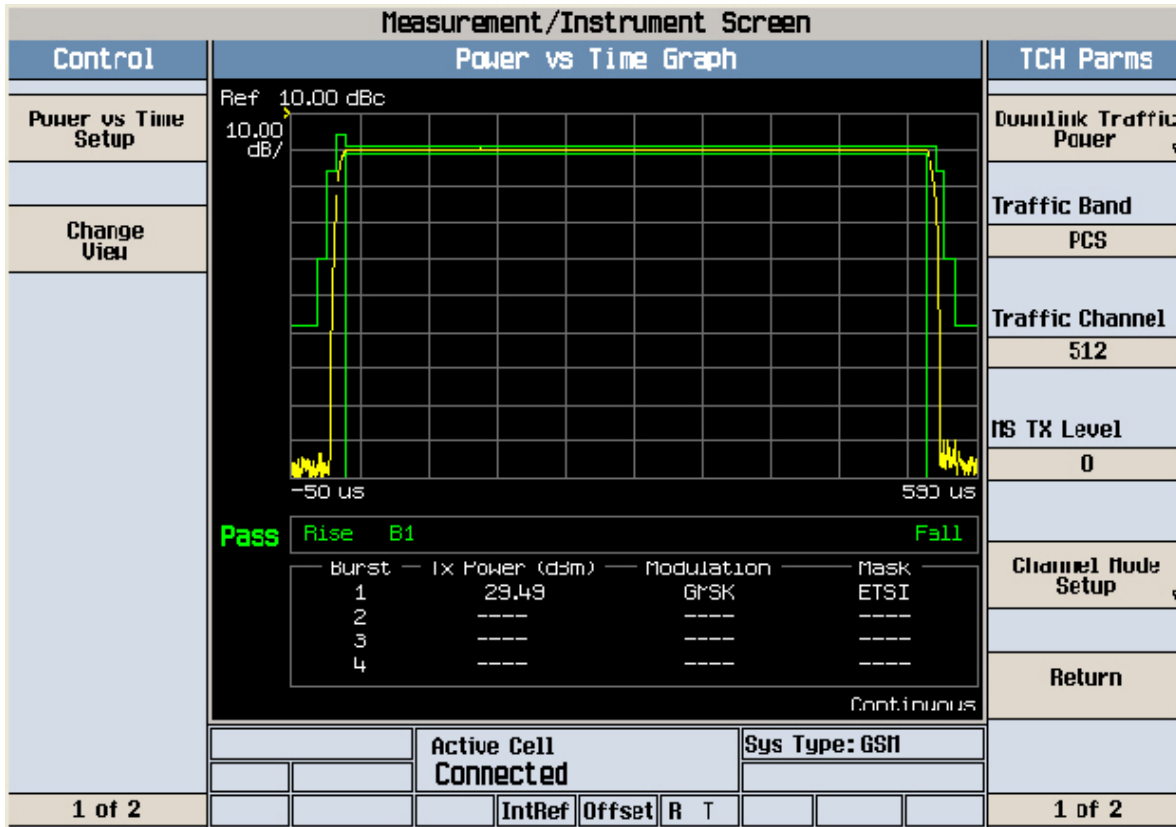
File Operation Status, C:\TEMP.GIF file saved

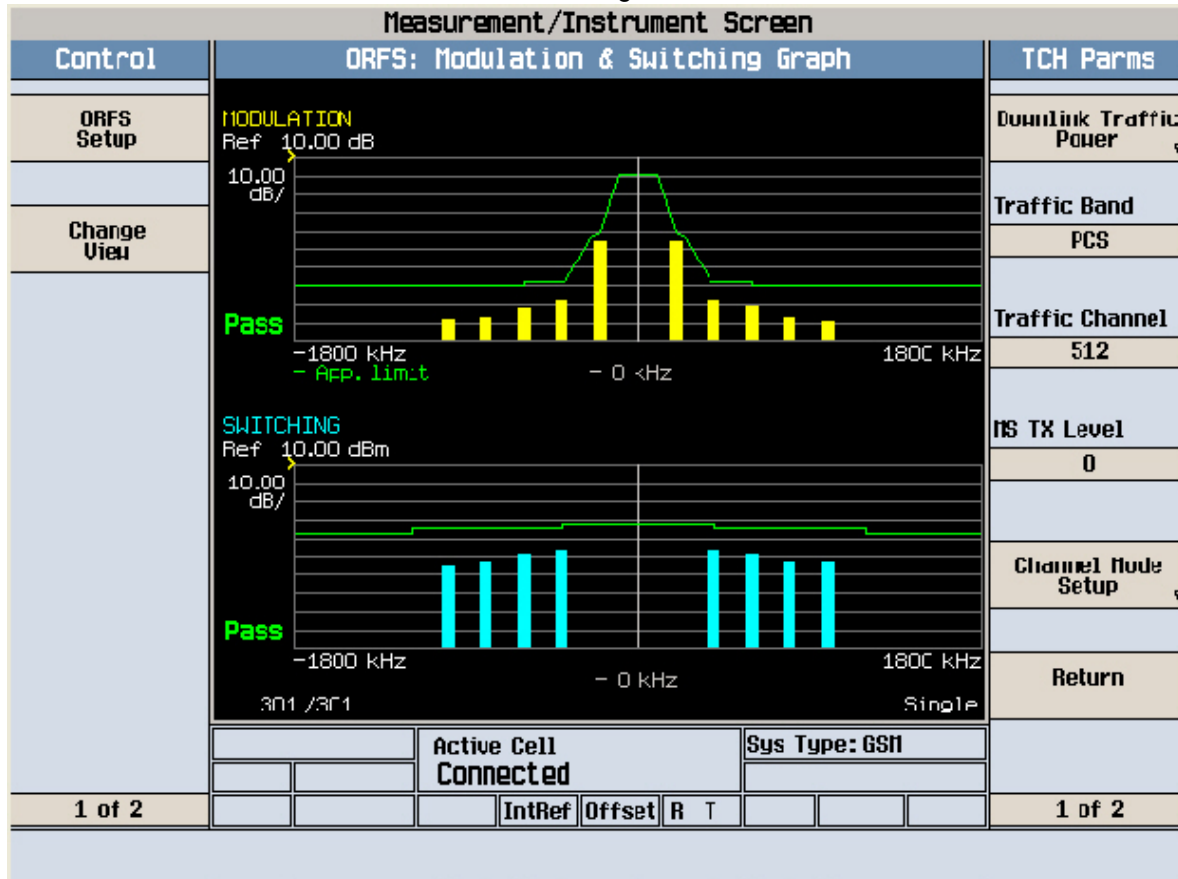
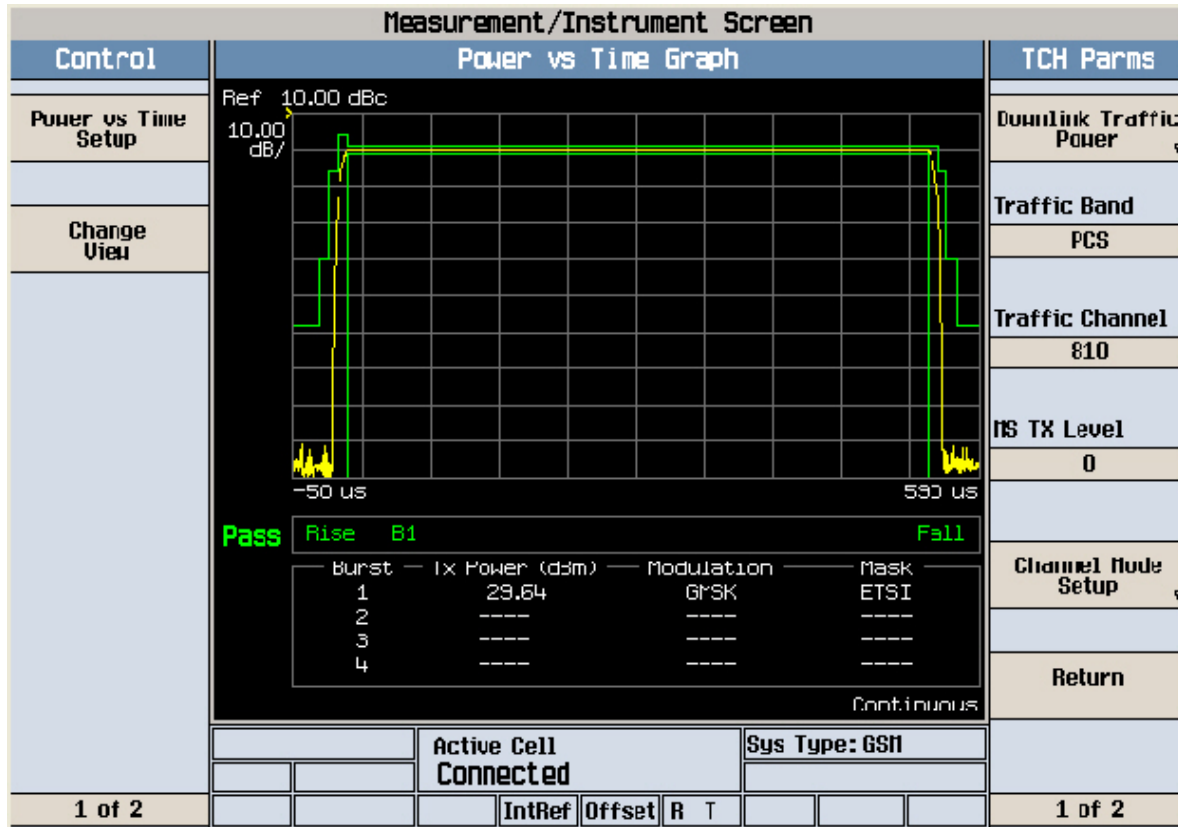
FCC ID : A3LSWDS7220 Transmit Power 512CH

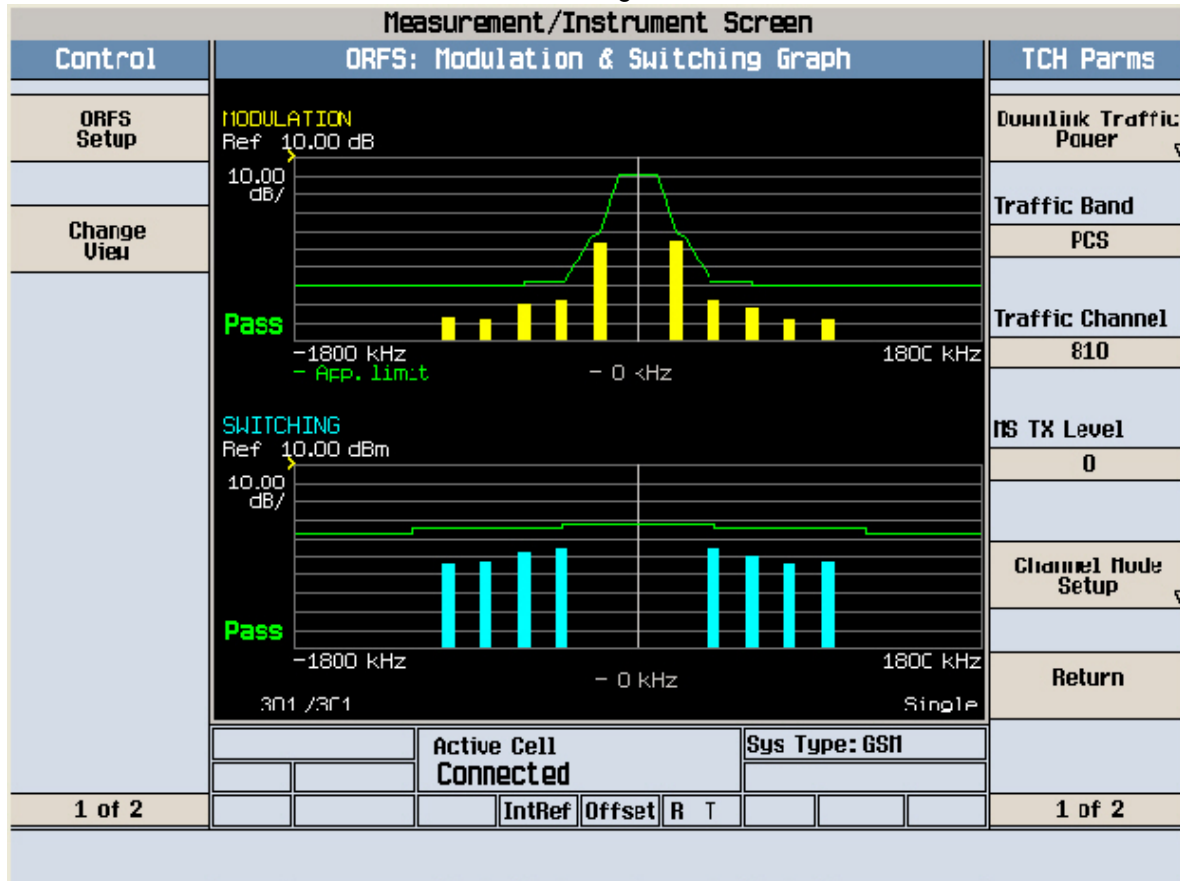
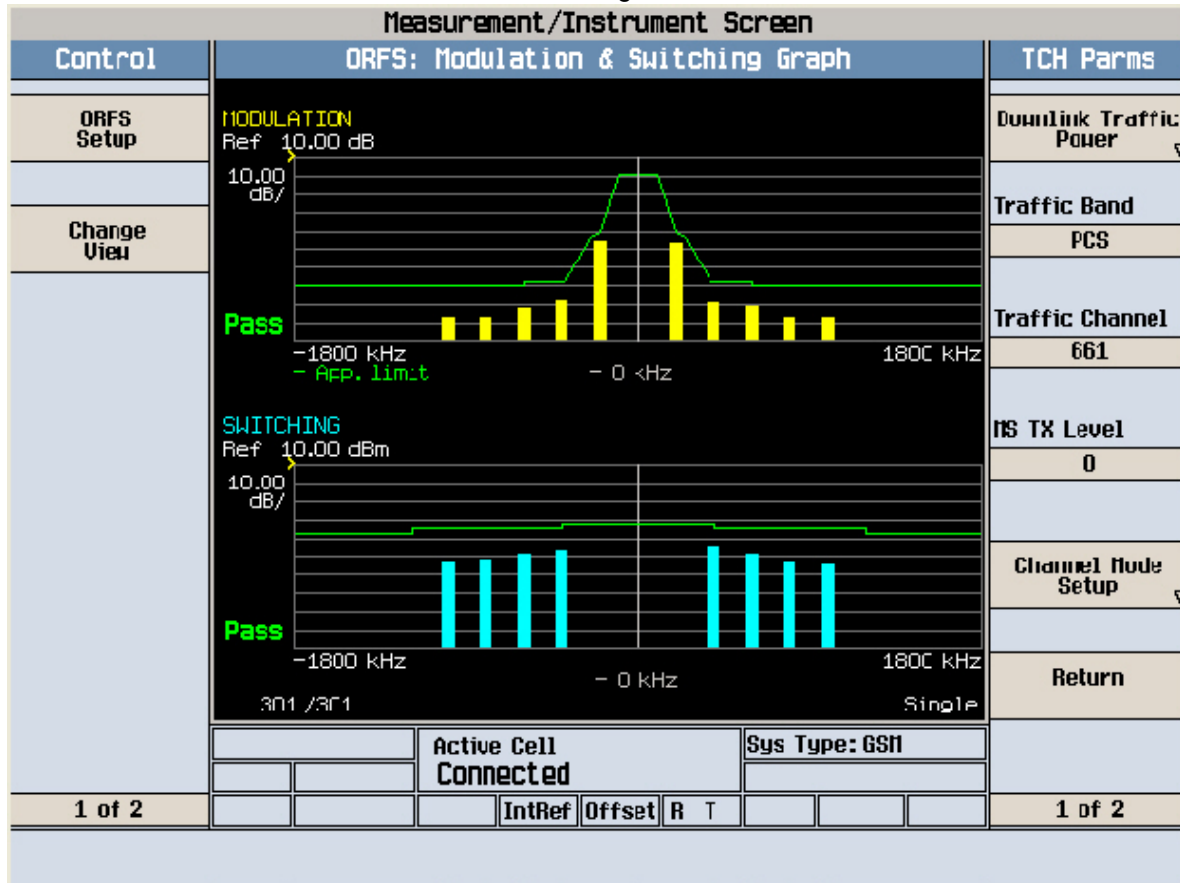
Measurement/Instrument Screen										
Control	Transmit Power						TCH Parms			
Transmit Power Setup					Burst 1	Burst 2	Burst 3	Burst 4	Downlink Traffic Power	
	Burst Power				29.49	----	----	----	Traffic Band	PCS
Estimated Carrier Power				29.49	----	----	----	Traffic Channel	512	
Single										
Snap Window Positions	Phase & Frequency Error									
			Peak Phase °	RMS Phase °	Frequency Hz		MS TX Level			
	Minimum		2.92	1.05	-65.41		0			
	Maximum		5.59	1.72	-36.17		Channel Mode Setup			
	Average		4.14	1.46	-56.82		Return			
Pass/Fail		Pass	Pass	Pass						
50 / 50 Single										
			Active Cell Connected			Sys Type: GSM				
1 of 2		IntRef	Offset	R T	1 of 2					

Measurement/Instrument Screen										
Control	Transmit Power							TCH Parms		
Transmit Power Setup					Burst 1	Burst 2	Burst 3	Burst 4	Downlink Traffic Power	
	Burst Power				29.78	----	----	----	Traffic Band	PCS
Swap Window Positions	Estimated Carrier Power				29.78	----	----	----	Traffic Channel	661
	Single							MS TX Level	0	Channel Mode Setup
Phase & Frequency Error										
		Peak Phase °		RMS Phase °		Frequency Hz				
Minimum		2.94		1.01		-66.49				
Maximum		4.83		1.75		-43.79				
Average		4.05		1.40		-56.38				
Pass/Fail		Pass		Pass		Pass				
50 / 50							Single			
			Active Cell Connected				Sys Type: GSM			
1 of 2				IntRef	Offset	R	T	1 of 2		

Measurement/Instrument Screen										
Control	Transmit Power							TCH Parms		
Transmit Power Setup					Burst 1	Burst 2	Burst 3	Burst 4	Downlink Traffic Power	
	Burst Power				29.65	----	----	----	Traffic Band	PCS
Swap Window Positions	Estimated Carrier Power				29.65	----	----	----	Traffic Channel	810
	Single							MS TX Level	0	Channel Mode Setup
Phase & Frequency Error										
		Peak Phase °		RMS Phase °		Frequency Hz				
Minimum		2.62		0.95		-58.21				
Maximum		4.91		1.53		-22.43				
Average		3.67		1.24		-50.81				
Pass/Fail		Pass		Pass		Pass				
50 / 50							Single			
			Active Cell Connected				Sys Type: GSM			
1 of 2				IntRef	Offset	R	T	1 of 2		



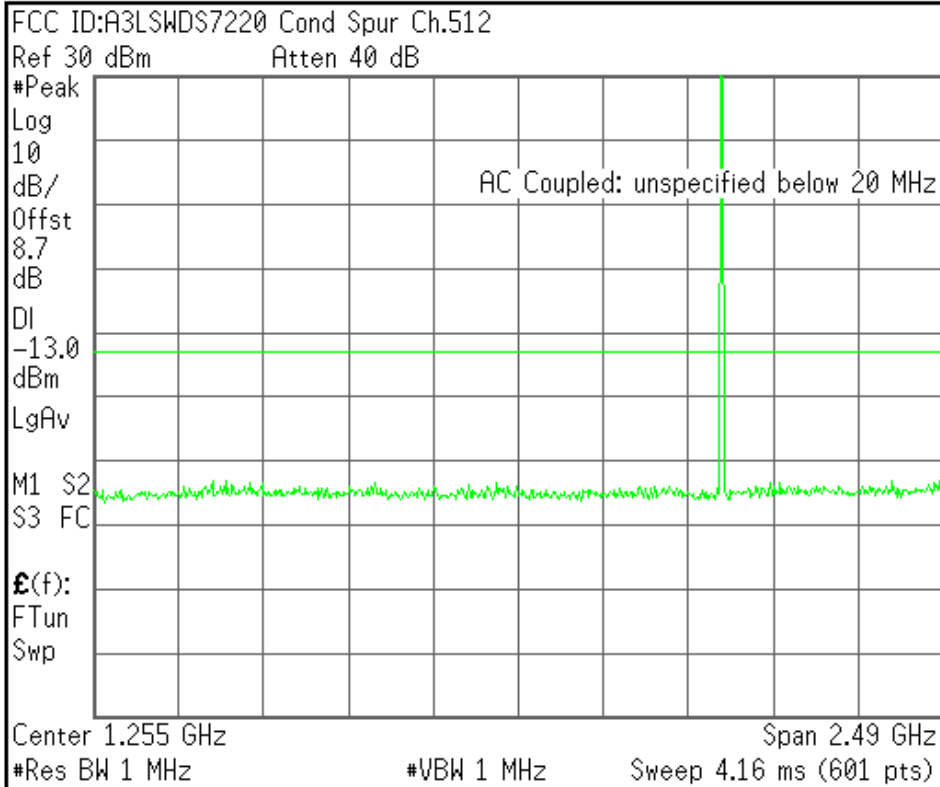




Agilent

R T

Freq/Channel



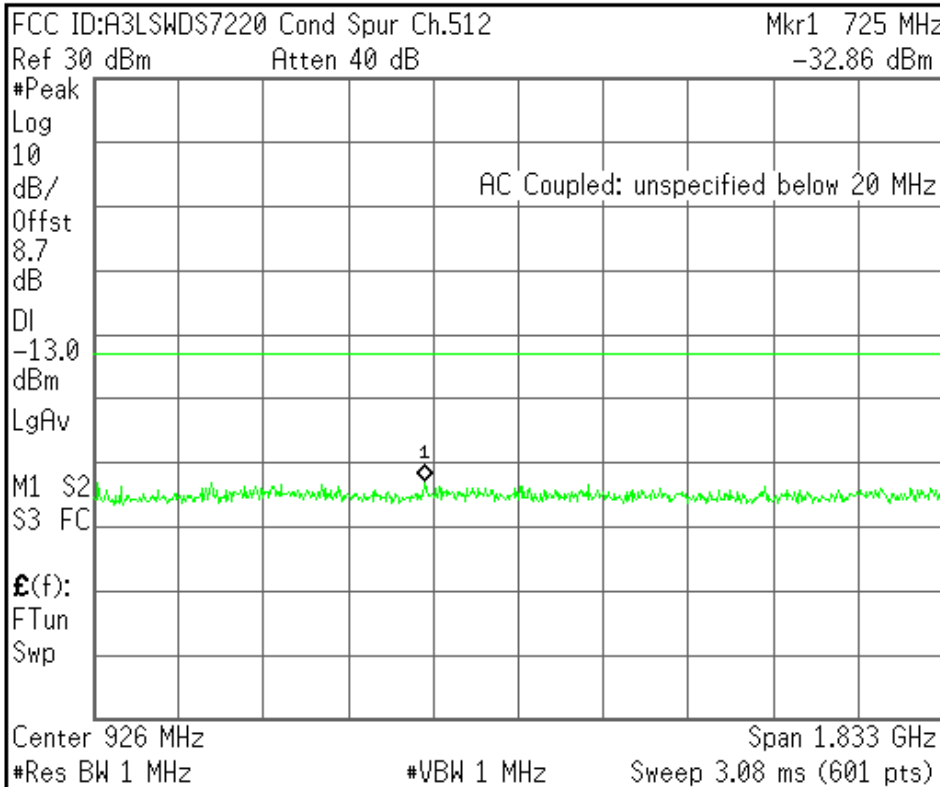
Center Freq 1.25500000 GHz
Start Freq 10.00000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.0000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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R T

Freq/Channel



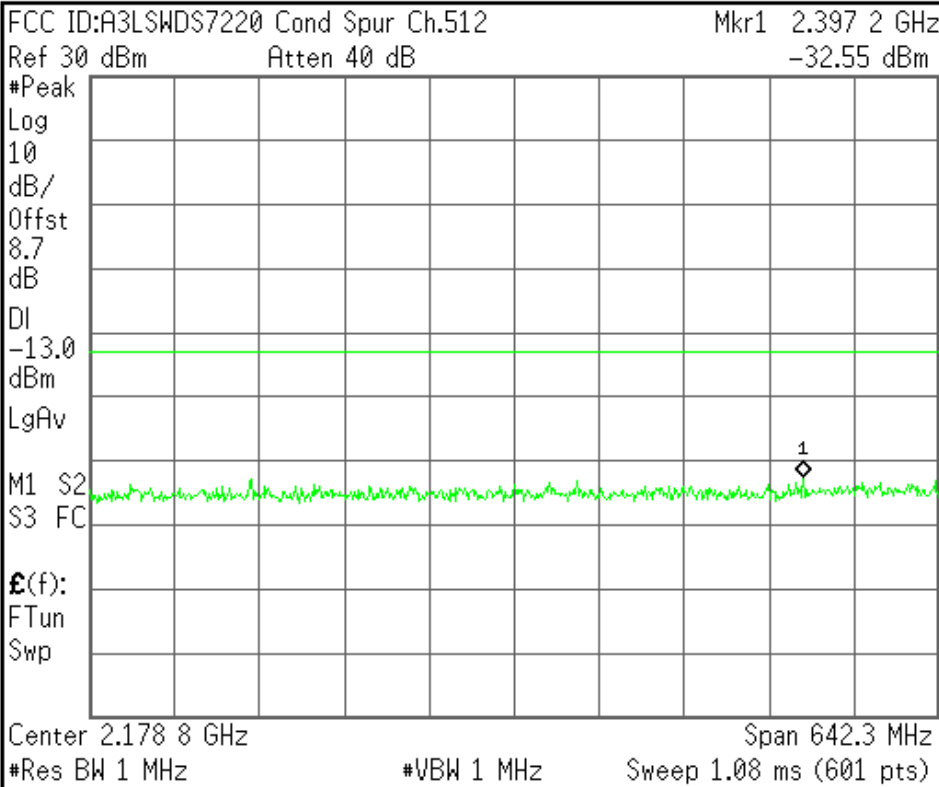
Center Freq 926.350000 MHz
Start Freq 10.00000000 MHz
Stop Freq 1.84270000 GHz
CF Step 183.270000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



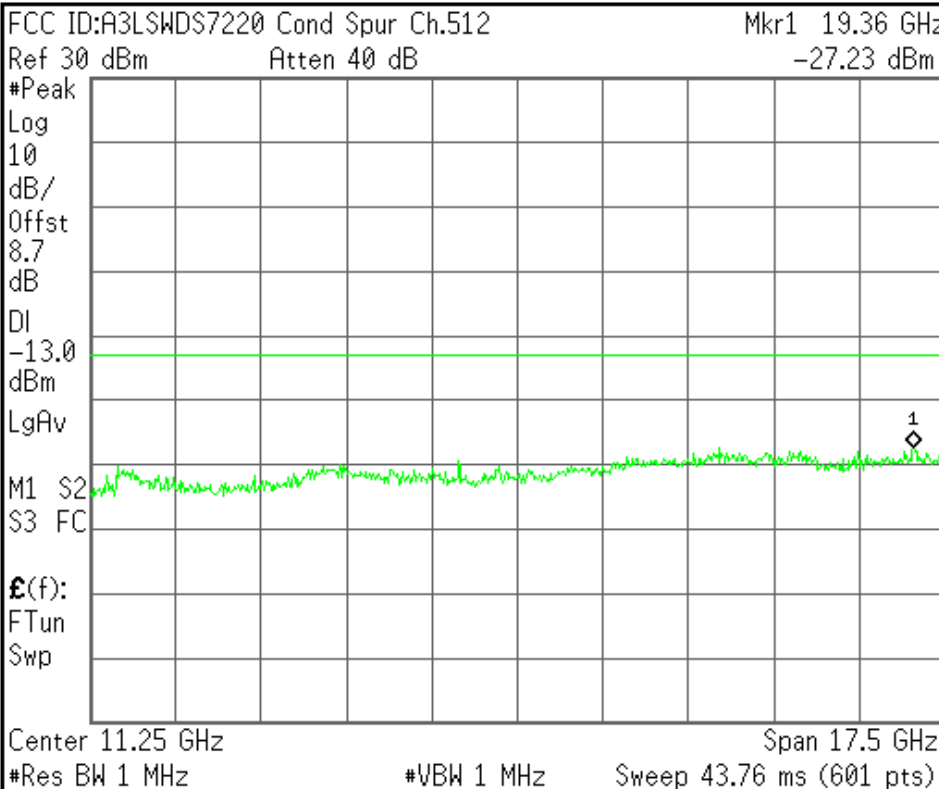
Center Freq 2.17885000 GHz
Start Freq 1.85770000 GHz
Stop Freq 2.50000000 GHz
CF Step 64.2300000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



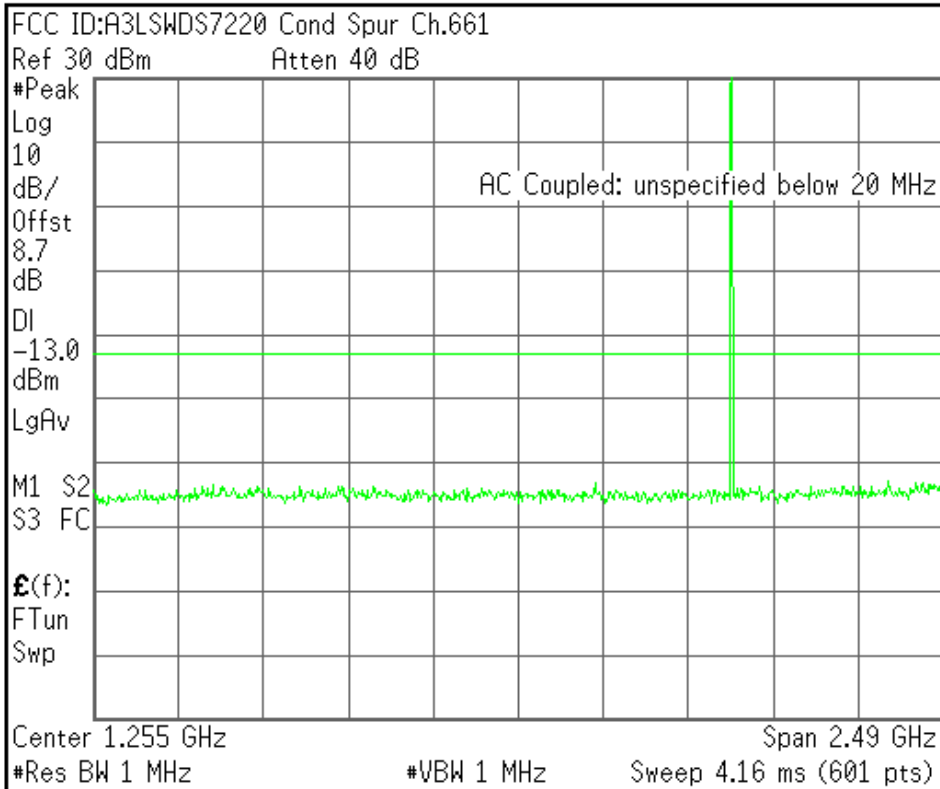
Center Freq 11.2500000 GHz
Start Freq 2.50000000 GHz
Stop Freq 20.0000000 GHz
CF Step 1.75000000 GHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



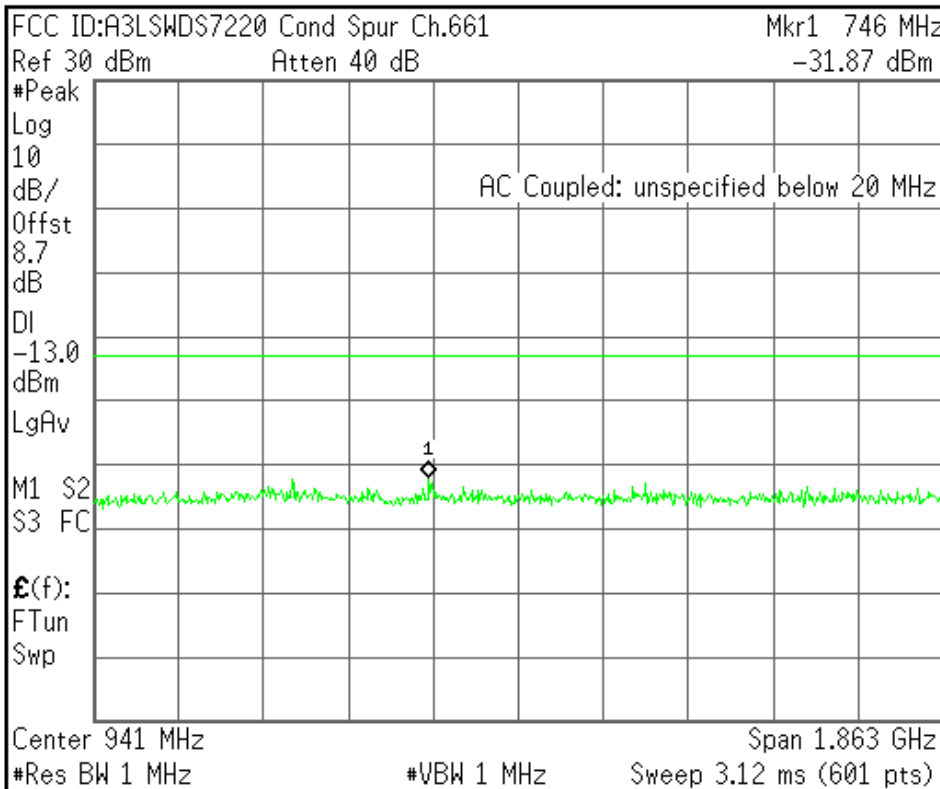
Center Freq 1.25500000 GHz
Start Freq 10.00000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.0000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



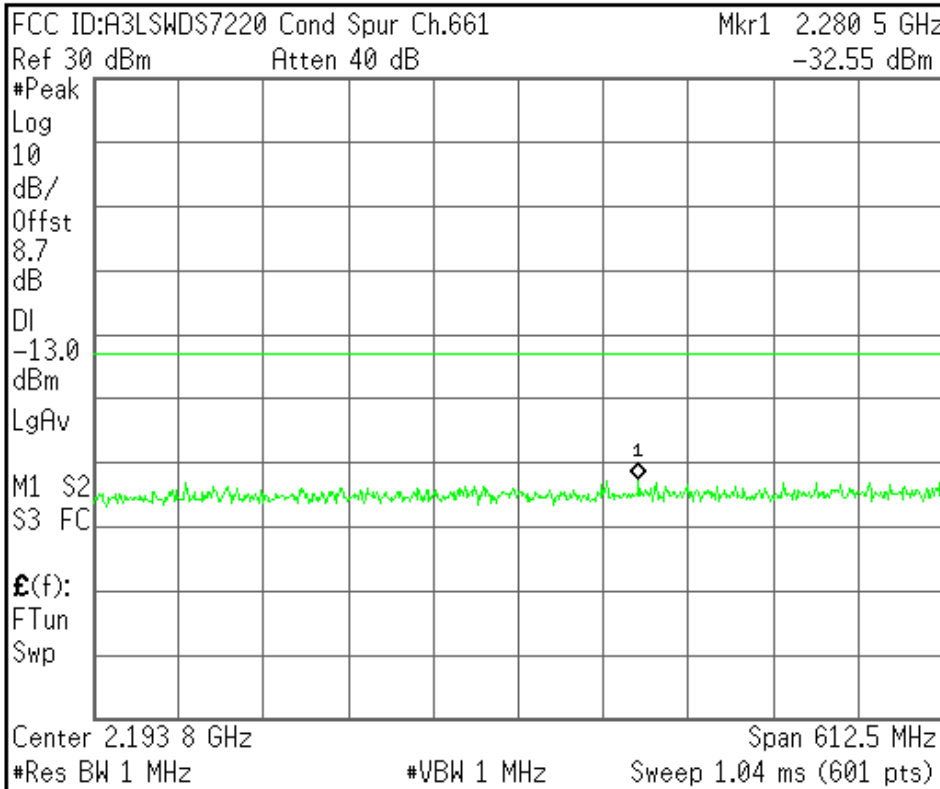
Center Freq 941.250000 MHz
Start Freq 10.00000000 MHz
Stop Freq 1.87250000 GHz
CF Step 186.250000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



Center Freq
2.19375000 GHz

Start Freq
1.88750000 GHz

Stop Freq
2.50000000 GHz

CF Step
61.2500000 MHz
Auto Man

Freq Offset
0.00000000 Hz

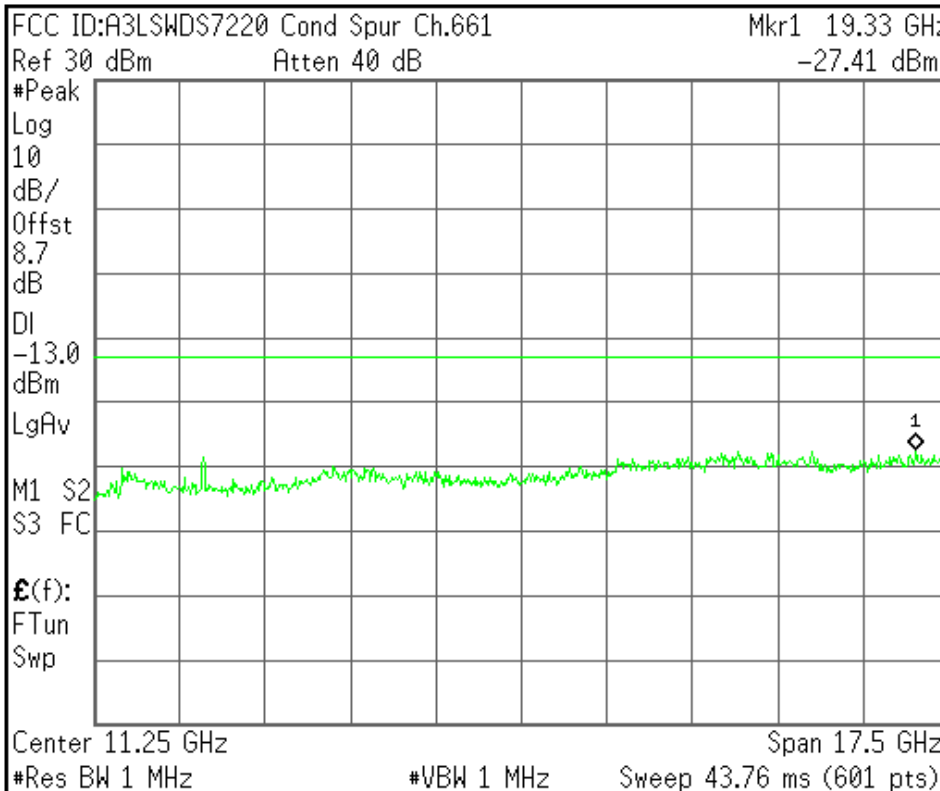
Signal Track
On Off

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

Agilent

R T

Freq/Channel



Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

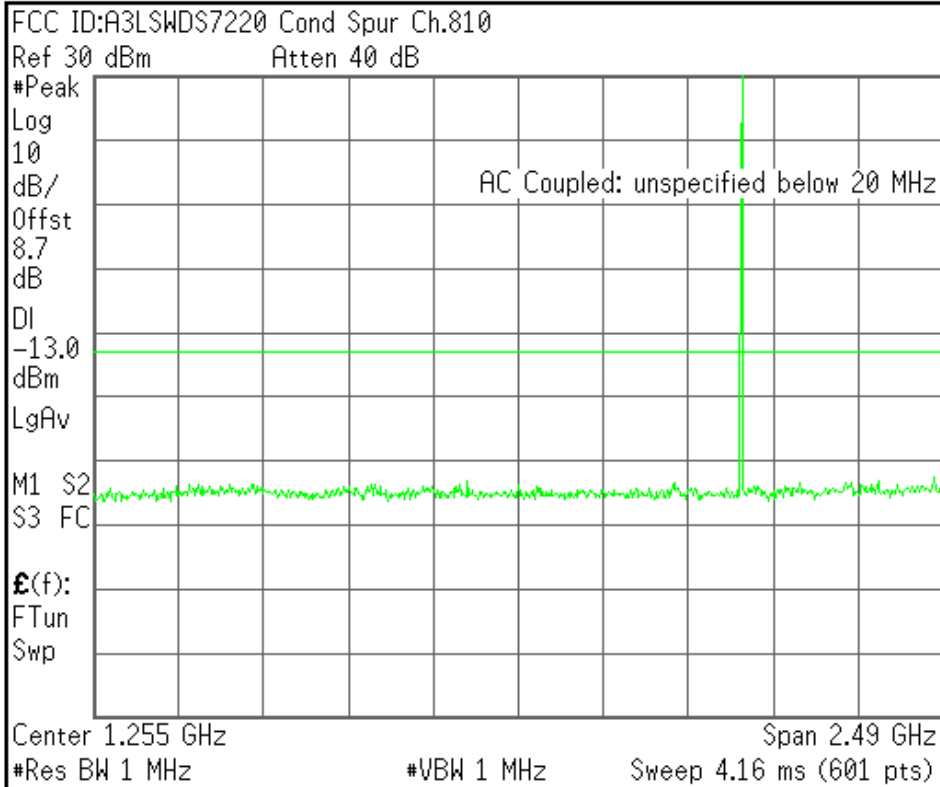
Signal Track
On Off

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

Agilent

R T

Freq/Channel



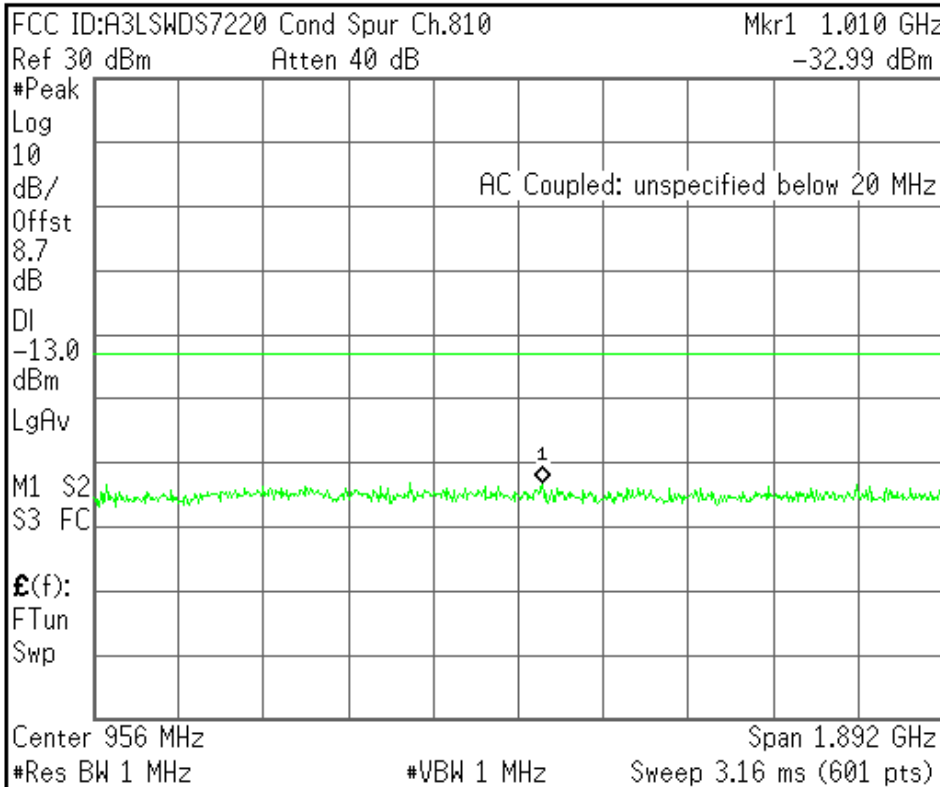
Center Freq 1.25500000 GHz
Start Freq 10.00000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.0000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



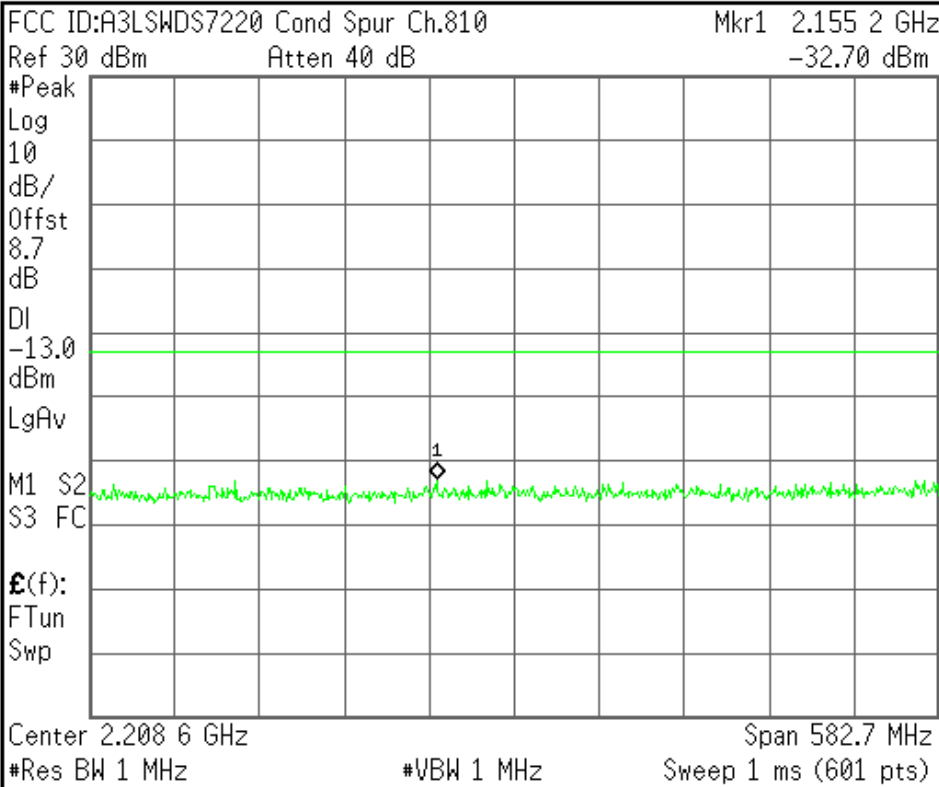
Center Freq 956.150000 MHz
Start Freq 10.00000000 MHz
Stop Freq 1.90230000 GHz
CF Step 189.2300000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



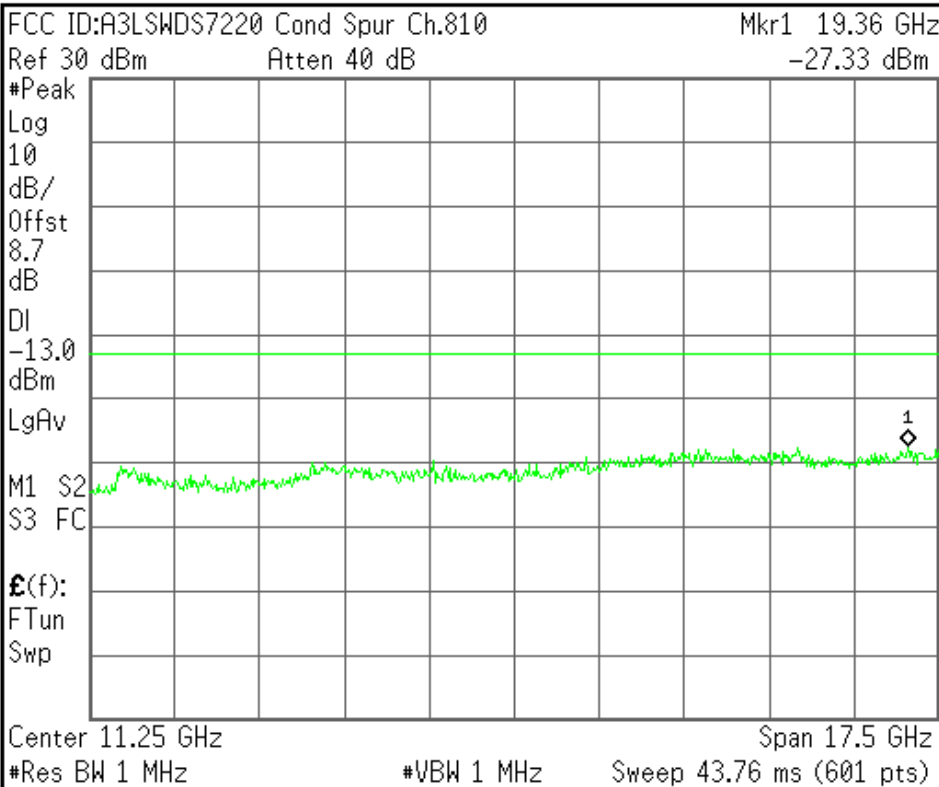
Center Freq 2.20865000 GHz
Start Freq 1.91730000 GHz
Stop Freq 2.50000000 GHz
CF Step 58.2700000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



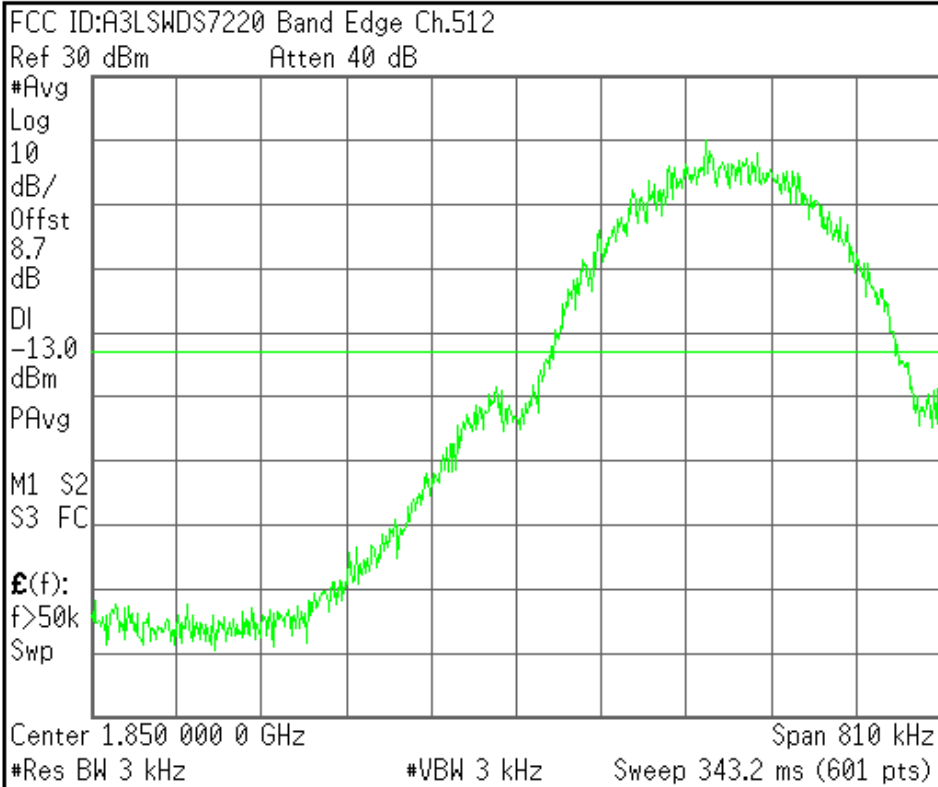
Center Freq 11.2500000 GHz
Start Freq 2.50000000 GHz
Stop Freq 20.0000000 GHz
CF Step 1.75000000 GHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



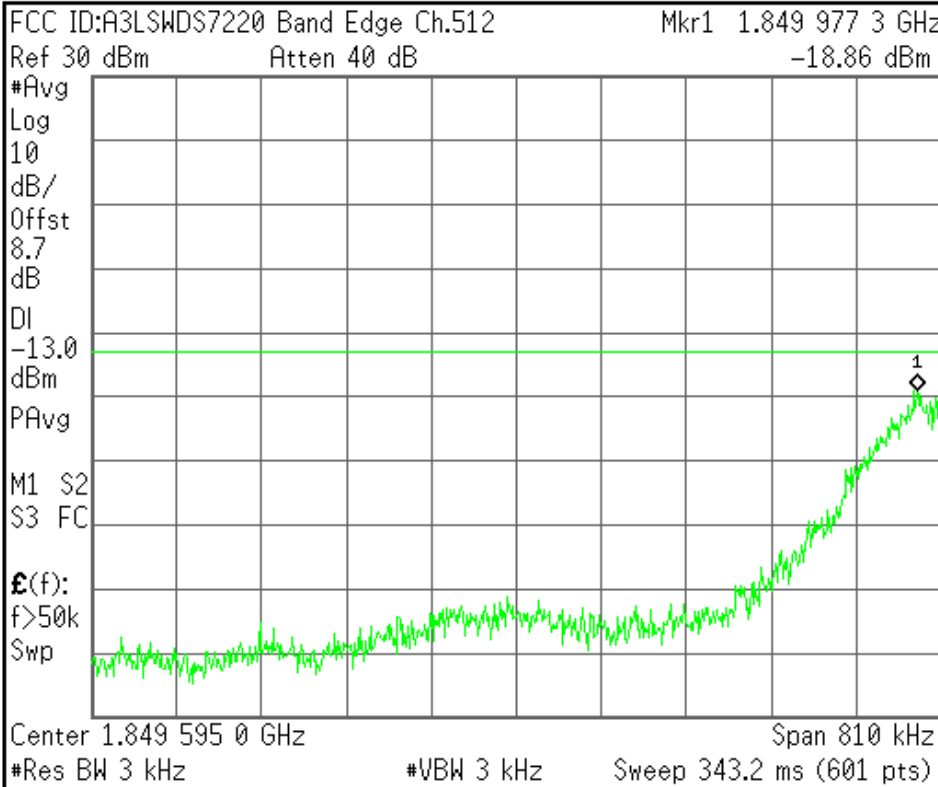
Center Freq 1.85000000 GHz
Start Freq 1.84959500 GHz
Stop Freq 1.85040500 GHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



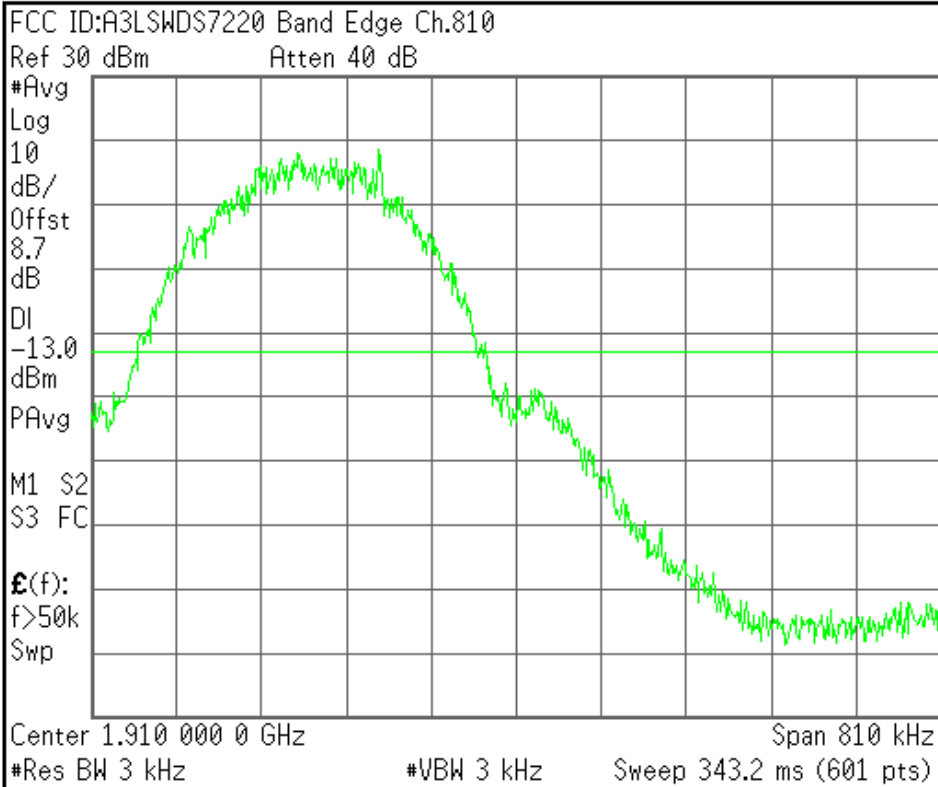
Center Freq 1.84959500 GHz
Start Freq 1.84919000 GHz
Stop Freq 1.85000000 GHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



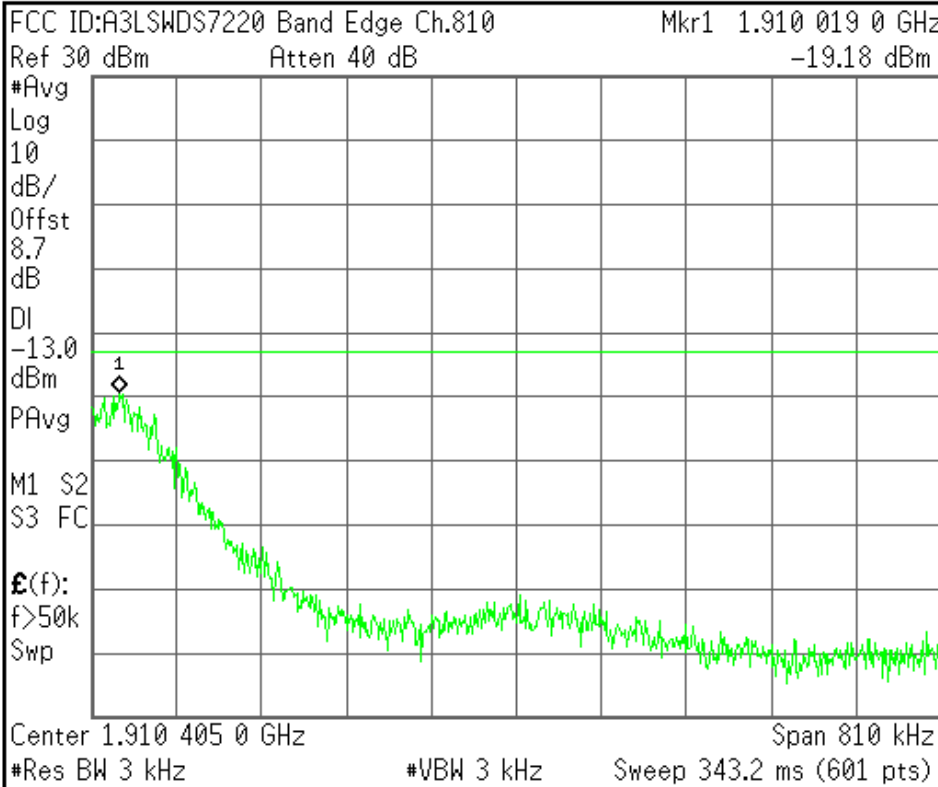
Center Freq 1.91000000 GHz
Start Freq 1.90959500 GHz
Stop Freq 1.91040500 GHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



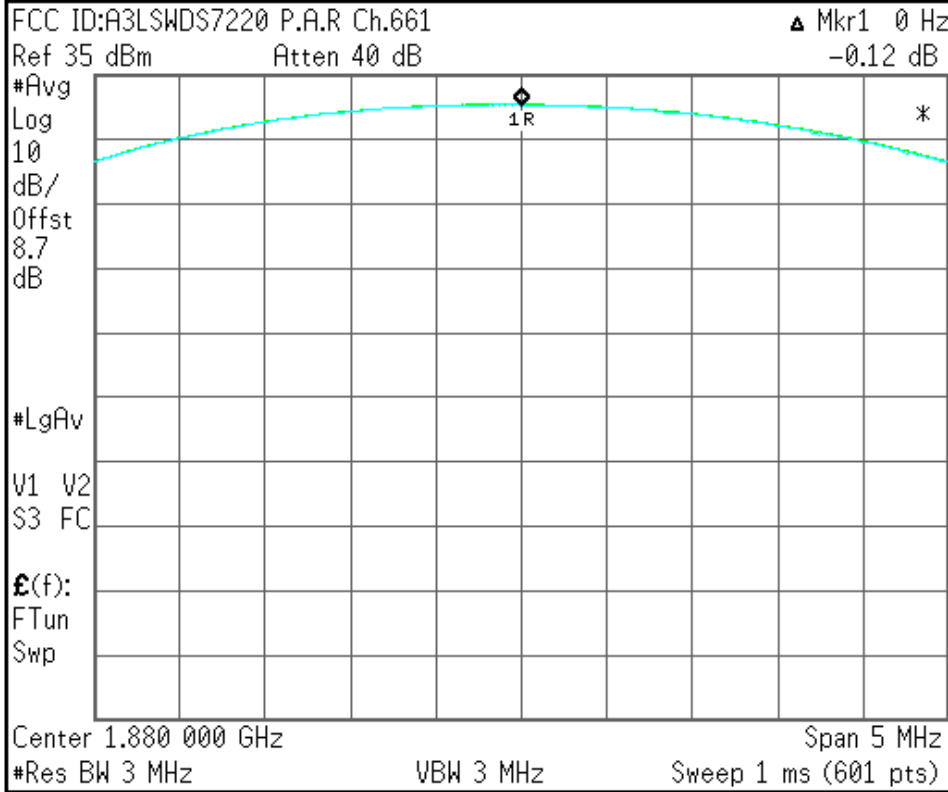
Center Freq 1.91040500 GHz
Start Freq 1.91000000 GHz
Stop Freq 1.91081000 GHz
CF Step 81.0000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



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

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EDGE850

Agilent

R T

Ch Freq 824.2 MHz Trig Free

Occupied Bandwidth

FCC ID:A3LSWDS7220 0BW Ch.128 EDGE
Ref 27 dBm Atten 30 dB

Center 824.200 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
243.9172 kHz	x dB	-26.00 dB
Transmit Freq Error	-158.689 Hz	
x dB Bandwidth	305.226 kHz	

Freq/Channel
Center Freq 824.200000 MHz
Start Freq 823.700000 MHz
Stop Freq 824.700000 MHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Ch Freq 836.6 MHz Trig Free

Occupied Bandwidth

FCC ID:A3LSWDS7220 0BW Ch.190 EDGE
Ref 27 dBm Atten 30 dB

Center 836.600 MHz Span 1 MHz
#Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

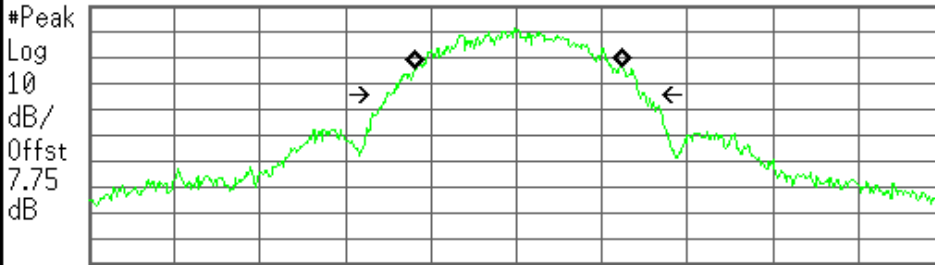
Occupied Bandwidth	Occ BW % Pwr	99.00 %
242.5904 kHz	x dB	-26.00 dB
Transmit Freq Error	97.292 Hz	
x dB Bandwidth	309.950 kHz	

Freq/Channel
Center Freq 836.600000 MHz
Start Freq 836.100000 MHz
Stop Freq 837.100000 MHz
CF Step 100.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Ch Freq 848.8 MHz Trig Free
 Occupied Bandwidth

FCC ID:A3LSWDS7220 0BW Ch.251 EDGE
 Ref 27 dBm Atten 30 dB



Center 848.800 MHz Span 1 MHz
 #Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
245.8922 kHz	x dB	-26.00 dB
Transmit Freq Error	2.355 kHz	
x dB Bandwidth	307.186 kHz	

Freq/Channel

Center Freq
848.800000 MHz

Start Freq
848.300000 MHz

Stop Freq
849.300000 MHz

CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

FCC ID : A3LSWDS7220 Transmit Power 128CH EDGE

Control		EGPRS Transmit Power				PDTCB Params	
EGPRS Transmit Power Setup		EPK Burst Power		EPK Est Carrier Power		Downlink Traffic Power	
		Minimum	Maximum	Minimum	Maximum	Traffic Band	
		25.42 dBm	26.64 dBm	26.08 dBm	26.11 dBm	GS1850	
		Average	Std Dev	Average	Std Dev	Traffic Channel	
		26.05 dBm	0.25 dBm	26.10 dBm	0.01 dBm	128	
		200 / 200		Single		HS TX Level	
		Active Cell Transferring				Modulation Coding Scheme	
		Sys Type: EGPRS				Return	
1 of 2		IntRef	Offset	R T		1 of 2	

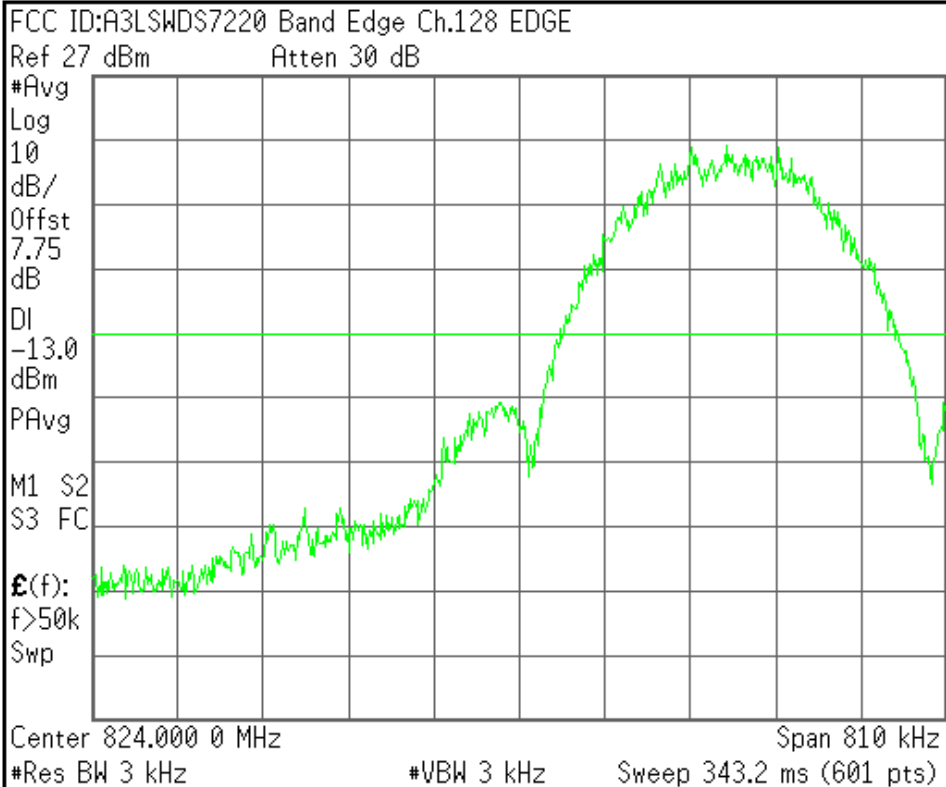
Measurement/Instrument Screen									
Control		EGPRS Transmit Power						PDTCH Params	
EGPRS Transmit Power Setup ▾		EPSK Burst Power			EPSK Est Carrier Power			Downlink Traffic Power ▾	
		Minimum	Maximum	Minimum	Maximum			Traffic Band	
		25.30 dBm	26.63 dBm	26.06 dBm	26.09 dBm			GSM850	
		Average	Std Dev	Average	Std Dev			Traffic Channel	
		26.00 dBm	0.24 dBm	26.07 dBm	0.01 dBm			190	
		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

Measurement/Instrument Screen									
Control		EGPRS Transmit Power						PDTCH Params	
EGPRS Transmit Power Setup ▾		EPSK Burst Power			EPSK Est Carrier Power			Downlink Traffic Power ▾	
		Minimum	Maximum	Minimum	Maximum			Traffic Band	
		25.27 dBm	26.60 dBm	26.00 dBm	26.02 dBm			GSM850	
		Average	Std Dev	Average	Std Dev			Traffic Channel	
		25.97 dBm	0.24 dBm	26.01 dBm	0.00 dBm			251	
		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

Agilent

R T

Freq/Channel



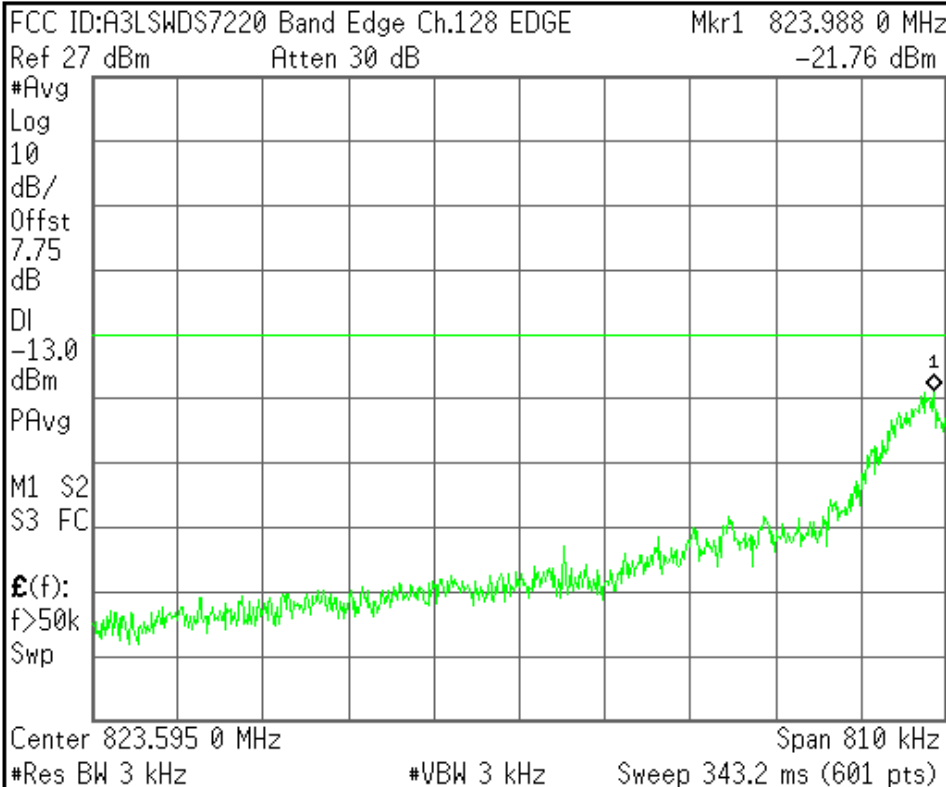
Center Freq	824.000000 MHz
Start Freq	823.595000 MHz
Stop Freq	824.405000 MHz
CF Step	81.0000000 kHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

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

Agilent

R T

Freq/Channel



Center Freq	823.595000 MHz
Start Freq	823.190000 MHz
Stop Freq	824.000000 MHz
CF Step	81.0000000 kHz Auto Man
Freq Offset	0.00000000 Hz
Signal Track	On Off

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

Agilent

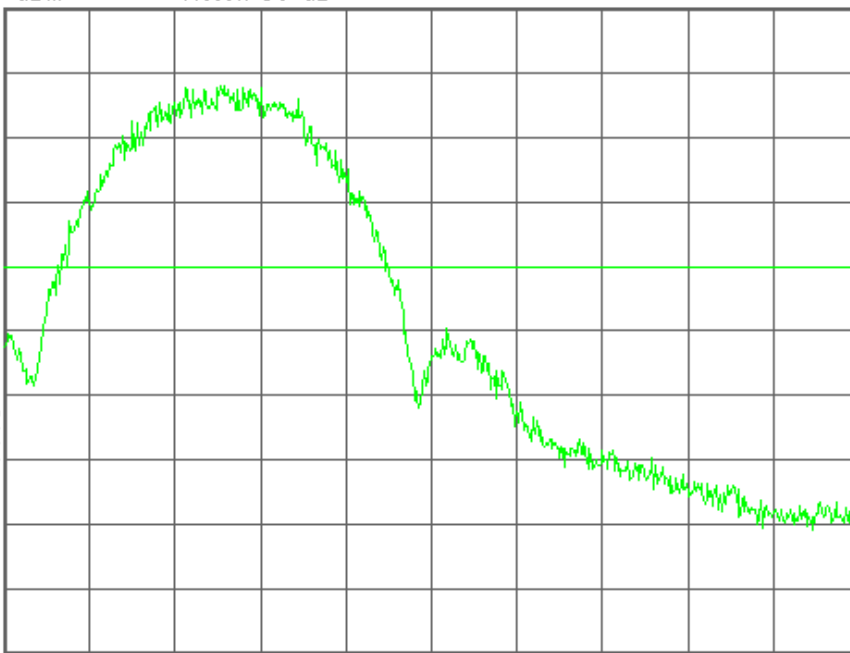
R T

Freq/Channel

FCC ID:A3LSWDS7220 Band Edge Ch.251 EDGE

Ref 27 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
7.75
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
E(f):
f>50k
Swp



Center 849.000 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.000000 MHz

Start Freq
848.595000 MHz

Stop Freq
849.405000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

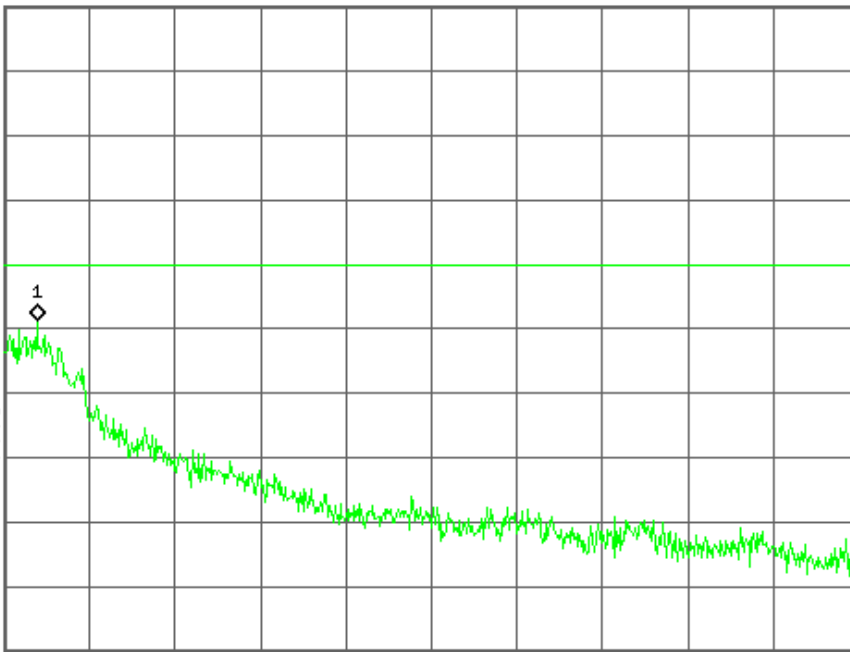
FCC ID:A3LSWDS7220 Band Edge Ch.251 EDGE

Mkr1 849.030 8 MHz

Ref 27 dBm Atten 30 dB

-21.81 dBm

#Avg
Log
10
dB/
Offst
7.75
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
E(f):
f>50k
Swp



Center 849.405 0 MHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
849.405000 MHz

Start Freq
849.000000 MHz

Stop Freq
849.810000 MHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

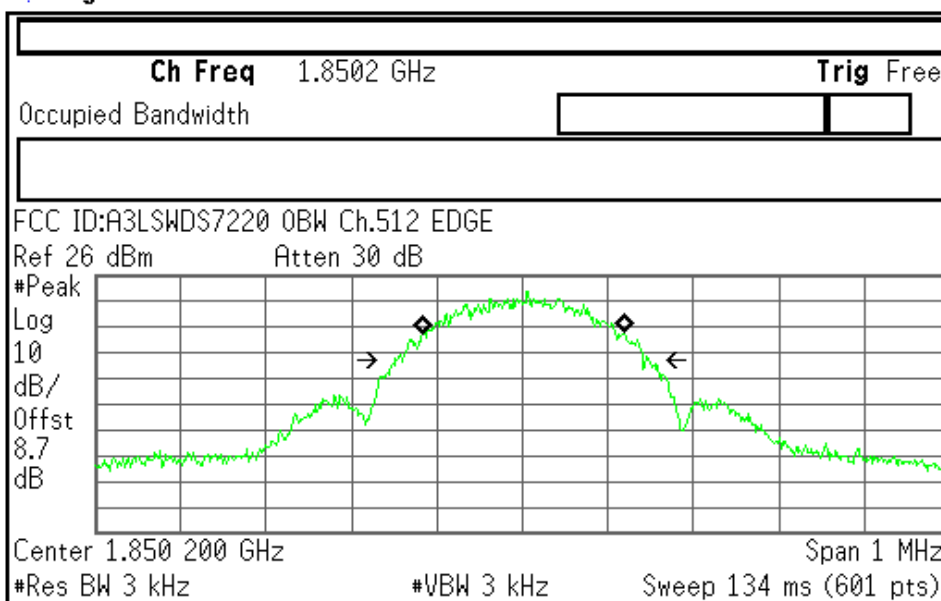
Signal Track
On Off

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

EDGE1900

Agilent

R T



Occupied Bandwidth	Occ BW % Pwr	99.00 %
240.1166 kHz	x dB	-26.00 dB
Transmit Freq Error	1.291 kHz	
x dB Bandwidth	299.330 kHz	

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

Freq/Channel

Center Freq
1.85020000 GHz

Start Freq
1.84970000 GHz

Stop Freq
1.85070000 GHz

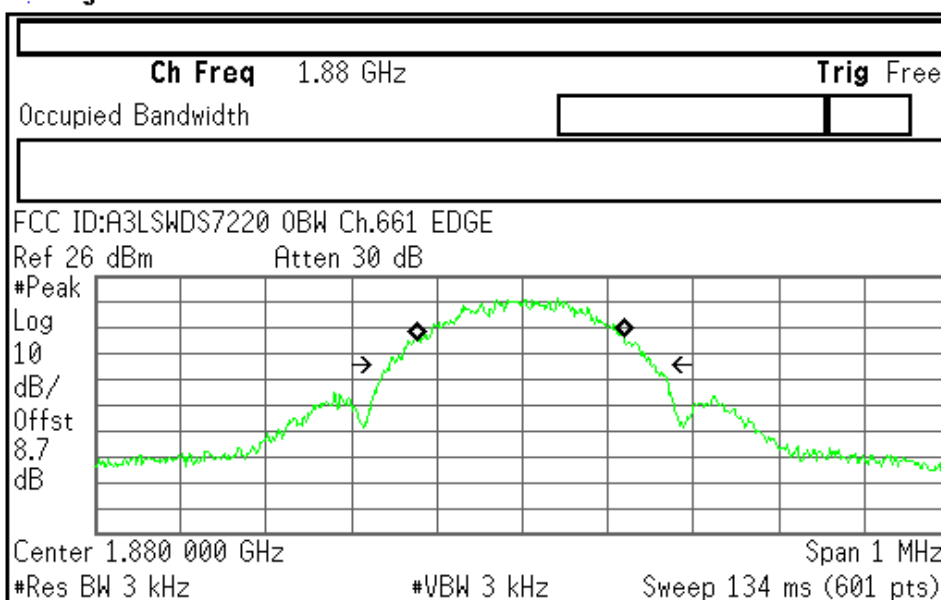
CF Step
100.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Agilent

R T



Occupied Bandwidth	Occ BW % Pwr	99.00 %
244.2895 kHz	x dB	-26.00 dB
Transmit Freq Error	-1.975 kHz	
x dB Bandwidth	312.448 kHz	

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

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

Ch Freq 1.9098 GHz Trig Free Occupied Bandwidth 		Freq/Channel Center Freq 1.90980000 GHz
FCC ID:A3LSWDS7220 0BW Ch.810 EDGE Ref 26 dBm Atten 30 dB		Start Freq 1.90930000 GHz
		Stop Freq 1.91030000 GHz
Center 1.909 800 GHz Span 1 MHz #Res BW 3 kHz #VBW 3 kHz Sweep 134 ms (601 pts)		CF Step 100.000000 kHz Auto Man
Occupied Bandwidth 241.6201 kHz Occ BW % Pwr 99.00 % Transmit Freq Error 2.316 kHz x dB -26.00 dB x dB Bandwidth 303.802 kHz		Freq Offset 0.00000000 Hz
Signal Track On Off		
File Operation Status, C:\TEMP.GIF file saved		

FCC ID : A3LSWDS7220 Transmit Power 512CH EDGE

Measurement/Instrument Screen						
Control	EGPRS Transmit Power				PDCH Parms	
EGPRS Transmit Power Setup	EPK Burst Power		EPK Est Carrier Power		Downlink Traffic Power	
	Minimum	Maximum	Minimum	Maximum	Traffic Band	
	24.46 dBm	25.94 dBm	25.32 dBm	25.34 dBm	PCS	
	Average	Std Dev	Average	Std Dev	Traffic Channel	
	25.26 dBm	0.24 dBm	25.33 dBm	0.00 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

Measurement/Instrument Screen									
Control		EGPRS Transmit Power						PDCH Parms	
EGPRS Transmit Power Setup ▾		EPK Burst Power			EPK Est Carrier Power			Downlink Traffic Power ▾	
		Minimum	Maximum	Minimum	Maximum			Traffic Band	
		24.22 dBm	25.66 dBm	25.09 dBm	25.10 dBm			PCS	
		Average	Std Dev	Average	Std Dev			Traffic Channel	
		25.03 dBm	0.25 dBm	25.10 dBm	0.00 dBm			661	
		200 /200			Single				
		Active Cell Transferring						NS TX Level ▾	
								Sys Type: EGPRS	
1 of 2				IntRef	Offset	R	T	1 of 2	

Measurement/Instrument Screen									
Control		EGPRS Transmit Power						PDCH Parms	
EGPRS Transmit Power Setup ▾		EPK Burst Power			EPK Est Carrier Power			Downlink Traffic Power ▾	
		Minimum	Maximum	Minimum	Maximum			Traffic Band	
		24.51 dBm	25.68 dBm	25.18 dBm	25.20 dBm			PCS	
		Average	Std Dev	Average	Std Dev			Traffic Channel	
		25.13 dBm	0.21 dBm	25.19 dBm	0.00 dBm			810	
		200 /200			Single				
		Active Cell Transferring						NS TX Level ▾	
								Sys Type: EGPRS	
1 of 2				IntRef	Offset	R	T	1 of 2	

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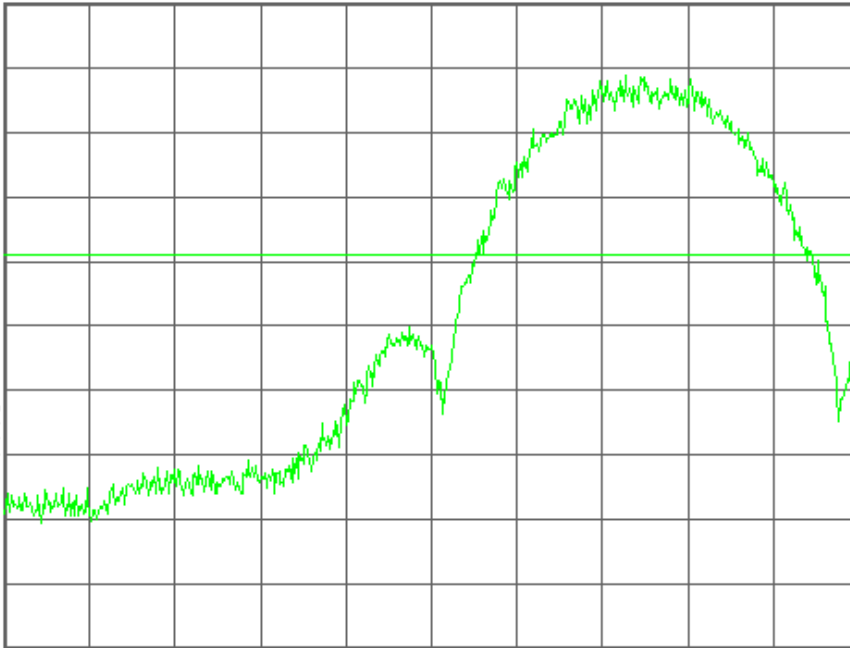
R T

Freq/Channel

FCC ID:A3LSWDS7220 Band Edge Ch.512 EDGE

Ref 26 dBm Atten 30 dB

#Avg
Log
10
dB/
Offst
8.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
E(f):
f>50k
Swp



Center 1.850 000 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

Freq/Channel

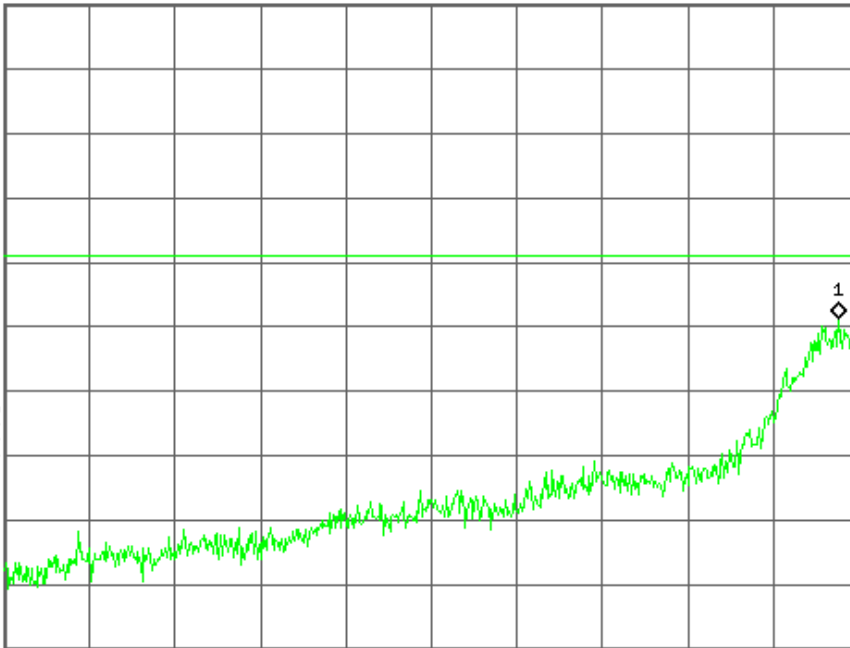
FCC ID:A3LSWDS7220 Band Edge Ch.512 EDGE

Mkr1 1.849 981 3 GHz

Ref 26 dBm Atten 30 dB

-22.64 dBm

#Avg
Log
10
dB/
Offst
8.7
dB
DI
-13.0
dBm
PAvg
M1 S2
S3 FC
E(f):
f>50k
Swp



Center 1.849 595 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.84959500 GHz

Start Freq
1.84919000 GHz

Stop Freq
1.85000000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

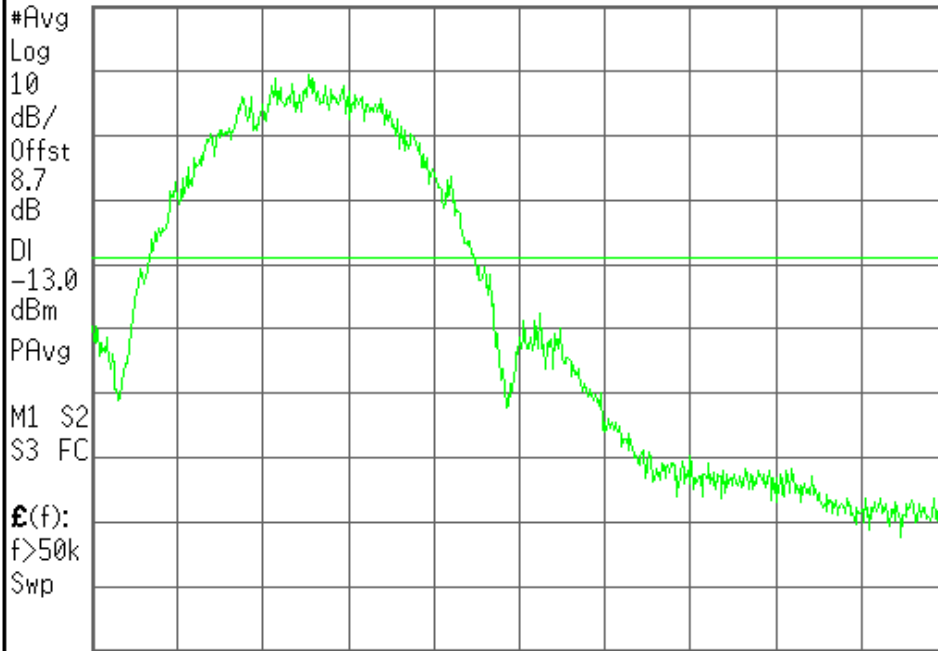
Agilent

R T

Freq/Channel

FCC ID:A3LSWDS7220 Band Edge Ch.810 EDGE

Ref 26 dBm Atten 30 dB



Center 1.910 000 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.91000000 GHz

Start Freq
1.90959500 GHz

Stop Freq
1.91040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Agilent

R T

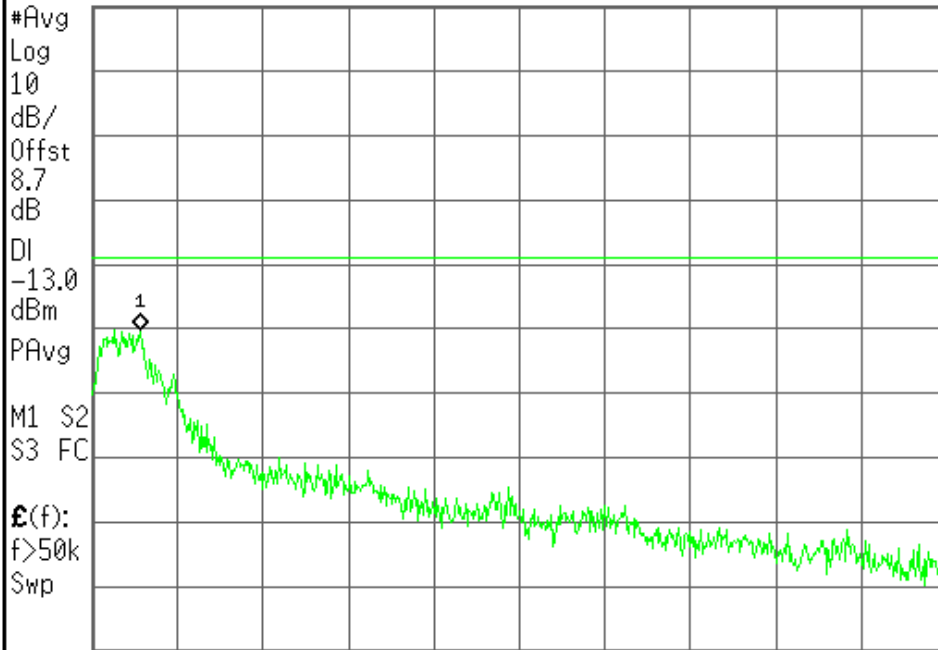
Freq/Channel

FCC ID:A3LSWDS7220 Band Edge Ch.810 EDGE

Mkr1 1.910 038 5 GHz

Ref 26 dBm Atten 30 dB

-24.06 dBm



Center 1.910 405 0 GHz

Span 810 kHz

#Res BW 3 kHz

#VBW 3 kHz

Sweep 343.2 ms (601 pts)

Center Freq
1.91040500 GHz

Start Freq
1.91000000 GHz

Stop Freq
1.91081000 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

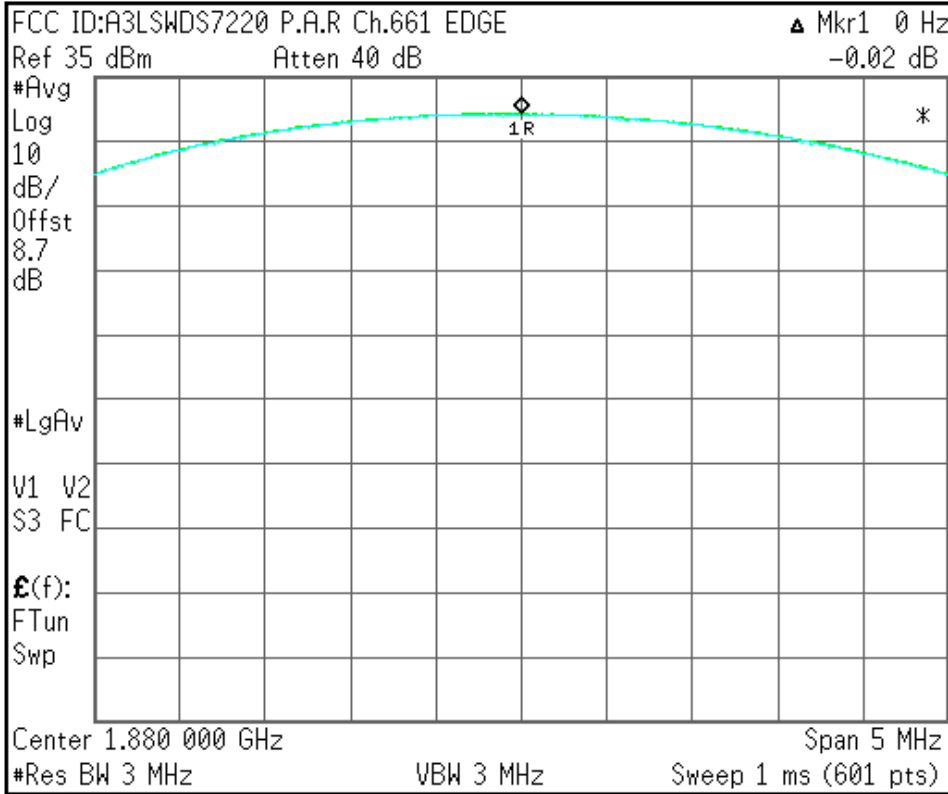
Signal Track
On Off

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

Agilent

R T

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

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