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FCC CFR47 PART 22 & 24 SUBPART CERTIFICATION REPORT

Model Tested: SPH-A900G
FCC ID (Requested): A3LSPHA900G
Report No: FE-004-R1
Job No: FE-004
Date issued: January 18, 2007

- Abstract -

All measurement reported here in accordance with FCC Rules, 47CFR
Part2, Part22, Part24

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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: A3LSPHA900G
- Quantity: Quantity production is planned
- Emission Designators: 1M28F9W(CDMA), 1M29F9W(PCS CDMA)
- Tx Freq. Range: 824.70-848.31MHz (CDMA)
1851.25-1908.75MHz (PCS CDMA)
- Rx Freq. Range: 869.70-893.31MHz (CDMA)
1931.25-1988.75MHz (PCS CDMA)
- Max. Power Rating: 0.449 W ERP CDMA (26.52dBm)
0.418 W EIRP PCS (26.21dBm)
- FCC Classification(s): Licensed Portable Tx Held to Ear (PCE)
- Equipment (EUT) Type: Dual-Band CDMA Phone with Bluetooth
- Modulation(s): CDMA
- Frequency Tolerance: $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s): §24(E), §22(H), §2.
- Dates of Test: January 09 - 10, 2007
- Place of Test: SAMSUNG Lab,
- Test Report S/N: FE-004-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 wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The substitution antenna will replace the EUT antenna it the same position and in vertical polarization. The frequency of the signal generator shall be set to the frequencies that were measured on the EUT. The test antenna shall be raised and lowered, if necessary, to ensure that the maximum signal is still being received. The signal generator, output level, shall be adjusted until an equal or a known related level to what was measured from the EUT is obtained in the spectrum analyzer. This level was recorded.

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

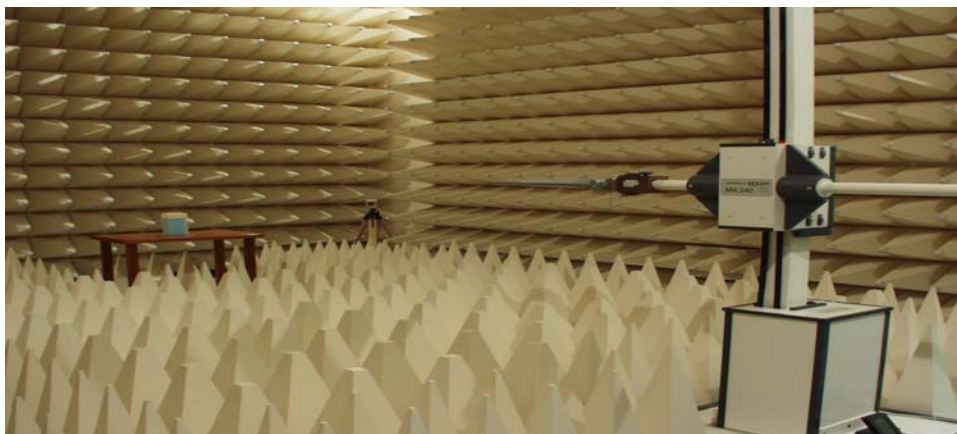


Figure2. Photograph of 3m Fully-Anechoic Chamber

3. MEASURING INSTRUMENT CALIBRATION

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

- End of page –

4. TEST EQUIPMENT LIST

Name Of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/010	2007-10-01
	E4440A(3Hz~26.5GHz)	MY41000236	2007-04-14
	E4440A(3Hz~26.5GHz)	MY41000233	2007-07-21
Signal Generator	SMIQ03B	83824/021	2007-12-08
Network Analyzer	8753E	JP38160590	2007-06-26
Power Sensor	8485A	3318A19924	2007-09-24
Power Meter	E4419B	GB41293846	2007-09-06
Amplifier	5S1G4	304866	2007-10-19
Pre-Amplifier	8449B	3008A00691	2008-01-02
Communication test set	8960	GB42230535	2008-01-02
	8960	GB42360886	2007-07-03
	CMU200	109162	2007-10-17
Antenna Master	MA240	240/618	Not Required
Controller	HD100	100/756	Not Required
Environmental Chamber	SH-241	92000548	2007-11-16
	SH-241	92000549	2007-11-16
Horn Antenna	HF906	360306/011	2007-03-31
Dipole Antenna	3121C-DB4	9007-588	2007-05-29
Receive Antenna	HL040	353255/020	2007-04-25
Power Supply	E3640A	MY40003594	2007-06-28
	E3640A	MY40003595	2007-05-19
Divider	11636B	51946	Not Required
	11636B	51942	Not Required
High Pass Filter	WHK1.0/15G-10SS	1	Not Required
	WHK/3.5/18G-10SS	4	Not Required
Shielded Fully Anechoic Chamber	CHAMBER	ANT0001	Not Required

5. DESCRIPTION OF TESTS

5.1 Output Power Variation

Test Condition to measure the Output Power

This device was tested under all R.C.s and S.O.s and worst case is reported with RC3/SO55, with “All Up” power control bits.

The following procedures were followed according to FCC “SAR Measurement Procedures for 3G Devices”, May 2006.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 5-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH0 and demodulation of RC 3,4 or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH0 data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 5-2 was applied.
5. FCHs were configured at full rate for maximum SAR with “All Up” power control bits.

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23MHz	-104
Pilot Ec/Ior	dB	-7
Traffic Ec/Ior	dB	-7.4

Table 5-1
Parameters for Max. Power for RC1

Parameter	Units	Value
$\hat{I}_{or}$	dBm/1.23MHz	-86
Pilot Ec/Ior	dB	-7
Traffic Ec/Ior	dB	-7.4

Table 5-2
Parameters for Max. Power for RC1

Band	Channel	CDMA2000 RC	1x EV-DO	SO2	SO55	TDSO SO32
Cellular	1013	RC1	-	24.50	24.50	-
		RC3	24.21	24.47	24.46	24.46
	384	RC1	-	24.80	24.80	-
		RC3	24.47	24.77	24.77	24.77
	777	RC1	-	24.57	24.57	-
		RC3	24.15	24.54	24.54	24.54
PCS	25	RC1	-	24.77	24.77	-
		RC3	24.032	24.78	24.80	24.79
	600	RC1	-	24.56	24.56	-
		RC3	24.001	24.54	24.55	24.55
	1175	RC1	-	24.47	24.46	-
		RC3	23.839	24.45	24.47	24.44

Table 5-3
Maximum Power Output Table for SPH-A900G

5.2 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

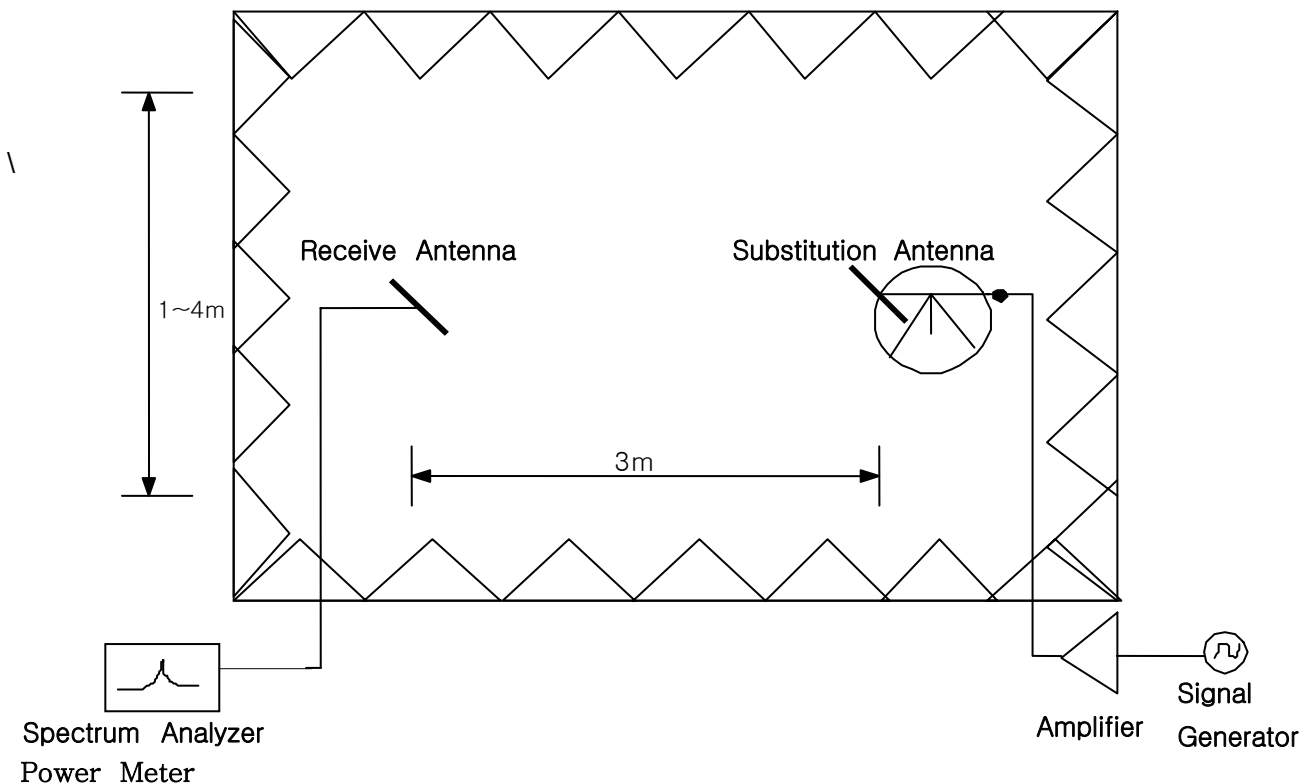


Figure 3. Diagram of ERP/EIRP test Set-up

The EUT was placed on a Non-conducted turntable 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA & PCS 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 is recorded.

5.3 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

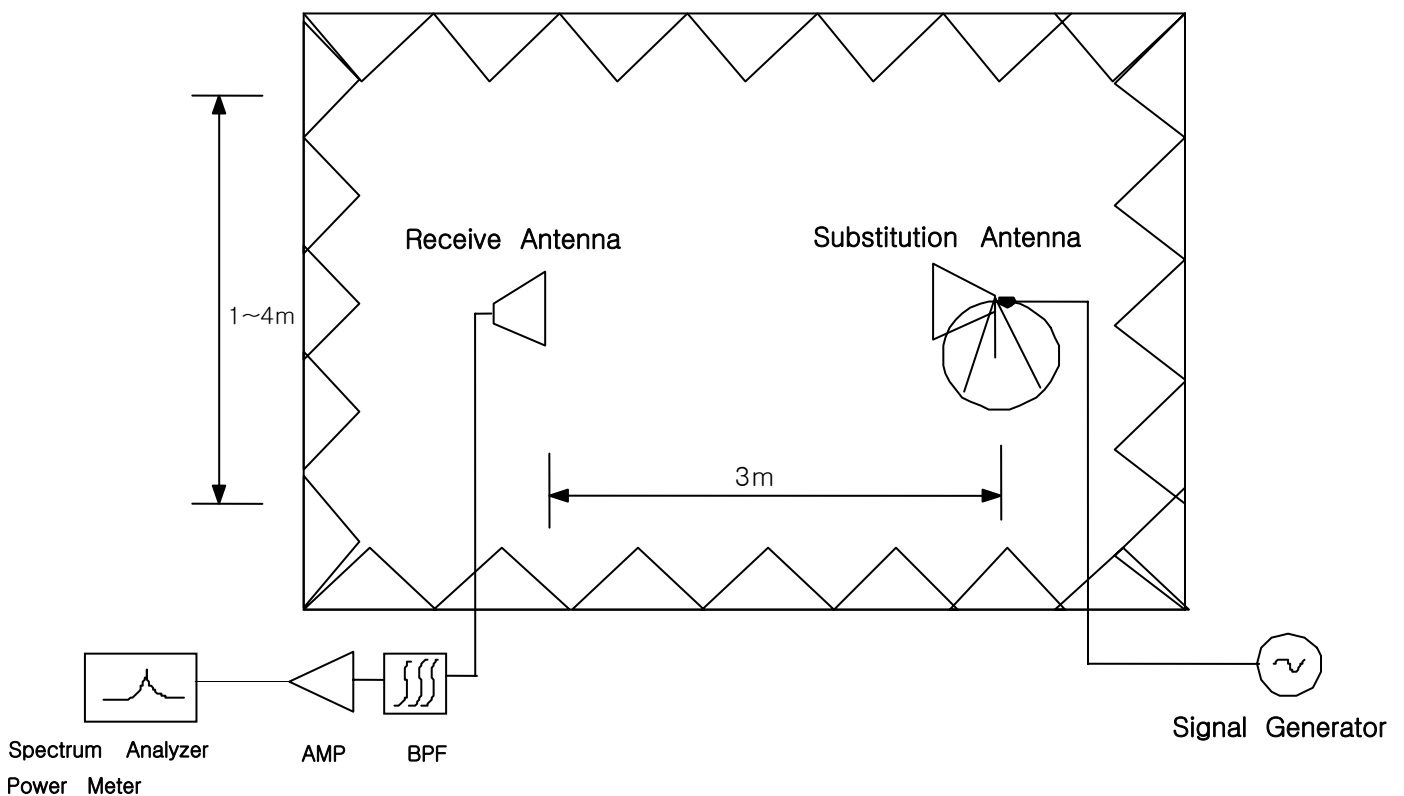


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

The EUT was placed on a Non-conducted turntable 3-meters from the receive antenna. The receive antenna height and turntable rotation 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 600 PCS Mode 2nd Harmonic(3760MHz)

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 3760MHz. 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 $25.5\text{dBm} - (-24.8) = 50.3\text{dBc}$.

- End of page -

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 Emissions 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.

– End of page –

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 -13 dBm, calculation shown below.

$$43 + 10\log(0.333 \text{ W}) = 38.22\text{dB}$$

$$25.22 \text{ dBm} - 38.22 \text{ dB} = -13 \text{ dBm}$$

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 -13 dBm 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. (PCS Mode : 10MHz to 20GHz). A display line was placed at -13 dBm 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 ($\pm 2.5\text{ppm}$) of the center frequency.

Time Period and Procedure:

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

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

– End of page –

6. TEST DATA

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

Supply Voltage : 3.7VDC

Modulation : CDMA

■ Reference level

Frequency (MHz)	Output (dBm)	Polarization	P/M (dBm)	Ant gain (dBd)	Ref level (dBm)
824.70	25.00	H	-13.92	0.00	-13.92
		V	-12.06	0.00	-12.06
836.52	25.00	H	-13.92	0.00	-13.92
		V	-12.06	0.00	-12.06
848.31	25.00	H	-13.92	0.00	-13.92
		V	-12.06	0.00	-12.06

■ Result

Frequency (MHz)	From EUT Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.70	-13.11	H1	183	25.81	0.381	Standard
836.52	-12.40	H1	187	26.52	0.449	Standard
848.31	-13.95	H1	185	24.97	0.314	Standard

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

Radiated measurements at 3 meters by Substitution Method

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

Supply Voltage : 3.7VDC

Modulation : PCS

■ Reference level

Frequency (MHz)	Output (dBm)	Polarization	P/M (dBm)	Ant gain (dBi)	Ref level (dBm)
1851.25	26.00	H	-13.27	8.13	-21.40
		V	-13.74	8.13	-21.87
1880.00	25.50	H	-14.98	8.11	-23.09
		V	-15.48	8.11	-23.59
1908.75	25.50	H	-14.93	8.33	-23.26
		V	-14.60	8.33	-22.93

■ Result

Frequency (MHz)	From EUT Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1851.25	-21.19	H1	287	26.21	0.418	Standard
1880.00	-22.92	H1	280	25.67	0.369	Standard
1908.75	-23.02	H1	272	25.74	0.375	Standard

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

Radiated measurements at 3 meters by Substitution Method

6.3 Cellular CDMA Radiated Spurious & Harmonic measurement

Field Strength of SPURIOUS Radiation

Operating Frequency : 824.70 MHz(Low), 836.52MHz(Middle), 848.31MHz(High)

Measured Output Power : 26.52 dBm = 0.449 W

Modulation Signal : CDMA

$$\text{Limit : } 43 + 10\log_{10}(P) = 39.52 \text{ dBc}$$

■Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
1013	2	1649.40	-55.81	H1	71.99
	3	2474.10	-61.94	H1	74.01
	4	3298.80	-64	V	71.00
	5	4123.50	-68.07	H2	72.79
	6	4948.20	-	-	-
	7	5772.90	-	-	-
384	2	1673.04	-52.81	H1	68.70
	3	2509.56	-62.19	H1	73.75
	4	3346.08	-61.97	H2	70.04
	5	4182.68	-67.81	H1	73.17
	6	5019.12	-	-	-
	7	5855.64	-	-	-
777	2	1696.62	-57.47	H1	72.73
	3	2544.93	-60.52	H1	72.09
	4	3393.24	-60.14	V	67.24
	5	4241.55	-68	V	72.75
	6	5089.86	-	-	-
	7	5938.17	-	-	-

Radiated Spurious Emission measurements at 3 meters by Substitution Method

6.4 PCS CDMA Radiated Spurious & Harmonic measurement

Field Strength of SPURIOUS Radiation

Operating Frequency : 1851.25 MHz(Low), 1880.00 MHz(Middle), 1908.75MHz(High)

Measured Output Power : 26.21 dBm = 0.418 W

Modulation Signal : PCS

$$\text{Limit : } 43 + 10\log_{10}(P) = 39.21 \text{ dBc}$$

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
25	2	3702.50	-40.15	H1	42.88
	3	5553.75	-61.54	H2	59.28
	4	7405.55	-61.37	H1	55.84
	5	9256.25	-63.44	H1	53.51
	6	11107.50	-67.92	H1	52.49
	7	12958.75	-	-	-
600	2	3760.00	-42.5	H2	45.72
	3	5640.00	-62.54	H2	60.98
	4	7520.00	-65.12	H2	59.28
	5	9400.00	-67.96	H1	58.27
	6	11280.00	-67.82	H2	52.69
	7	13160.00	-	-	-
1175	2	3817.50	-44.33	H1	47.15
	3	5726.25	-62	H2	59.41
	4	7635.00	-58.52	H2	52.94
	5	9543.75	-63.57	H2	53.61
	6	11452.50	-68.25	H1	52.39
	7	13361.25	-	-	-

Radiated Spurious Emission measurements at 3 meters by Substitution Method

6.5 CDMA Radiated Spurious & Harmonic Conversion Table

Date : January 10, 2007

Test Engineer : SH ONG

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Rx Cable loss + HPF Insertion loss + Attenuator
- ④ Pre-Amp gain
- ⑤ Air loss
- ⑥ Tested Level from EUT
- ⑦ = ⑥ + ⑤ + ③ - ④
- ⑧ = ERP + 2.14 - ⑦

CH	Har	Frequency (MHz)	① Tx CL (dB)	② Horn Gain (dB)	Tx Level @ (S/G 0dBm)	⑥ Tested Level EUT : H (dBm)	⑥ Tested Level EUT : V (dBm)	⑦ Amplitude of Emission EUT : H (dBm)	⑦ Amplitude of Emission EUT : V (dBm)	⑧ Result EUT : H (dBc)	⑧ Result EUT : V (dBc)
1013	2	1649.40	7.26	8.03	0.77	-55.81	-60.40	-43.33	-48.35	71.99	77.01
	3	2474.10	9.20	9.55	0.35	-61.94	-62.68	-45.35	-45.55	74.01	74.21
	4	3298.80	10.36	9.64	-0.72	-64.73	-64.00	-43.91	-42.34	72.57	71.00
	5	4123.50	11.93	10.67	-1.26	-68.07	-68.37	-44.13	-44.28	72.79	72.94
	6	4948.20	13.21	11.05	-2.16	-	-	-	-	-	-
	7	5772.90	14.81	11.23	-3.58	-	-	-	-	-	-
384	2	1673.04	7.31	8.03	0.72	-52.81	-56.89	-40.04	-44.29	68.70	72.95
	3	2509.56	9.28	9.55	0.27	-62.19	-63.93	-45.09	-46.42	73.75	75.08
	4	3346.08	10.42	9.64	-0.78	-61.97	-64.19	-41.38	-43.28	70.04	71.94
	5	4182.68	12.29	10.67	-1.62	-67.81	-68.11	-44.51	-44.57	73.17	73.23
	6	5019.12	13.86	11.05	-2.81	-	-	-	-	-	-
	7	5855.64	14.64	11.23	-3.41	-	-	-	-	-	-
777	2	1696.62	7.38	8.03	0.65	-57.47	-59.86	-44.07	-46.36	72.73	75.02
	3	2544.93	9.35	9.55	0.20	-60.52	-61.36	-43.43	-43.72	72.09	72.38
	4	3393.24	10.51	9.64	-0.87	-62.40	-60.14	-41.79	-38.58	70.45	67.24
	5	4241.55	12.25	10.67	-1.58	-68.03	-68.00	-44.85	-44.09	73.51	72.75
	6	5089.86	13.96	11.05	-2.91	-	-	-	-	-	-
	7	5938.17	14.89	11.23	-3.66	-	-	-	-	-	-

6.6 PCS Radiated Spurious & Harmonic Conversion Table

Date : January 10, 2007

Test Engineer : SH ONG

- ① Tx Cable loss
- ② Tx Horn Ant Gain
- ③ Rx Cable loss + HPF Insertion loss + Attenuator
- ④ Pre-Amp gain
- ⑤ Air loss
- ⑥ Tested Level from EUT
- ⑦ = ⑥ + ⑤ + ③ - ④
- ⑧ = EIRP - ⑦

CH	Har	Frequency (MHz)	① Tx CL (dB)	② Horn Gain (dB)	Tx Level @ (S/G 10dBm)	⑥ Tested Level EUT : H (dBm)	⑥ Tested Level EUT : V (dBm)	⑦ Amplitude of Emission EUT : H (dBm)	⑦ Amplitude of Emission EUT : V (dBm)	⑧ Result EUT : H (dBc)	⑧ Result EUT : V (dBc)
25	2	3702.50	10.99	9.73	8.74	-40.15	-46.38	-16.67	-22.39	42.88	48.60
	3	5553.75	14.49	11.15	6.66	-61.54	-62.86	-33.07	-34.96	59.28	61.17
	4	7405.00	17.52	11.44	3.92	-61.37	-62.79	-29.63	-31.82	55.84	58.03
	5	9256.25	20.07	12.17	2.10	-63.44	-63.20	-27.30	-27.45	53.51	53.66
	6	11107.50	22.01	13.66	1.65	-67.92	-68.29	-26.28	-26.71	52.49	52.92
	7	12958.75	23.86	13.27	-0.59	-	-	-	-	-	-
600	2	3760.00	11.45	9.73	8.28	-42.50	-48.53	-19.51	-24.84	45.72	51.05
	3	5640.00	14.83	11.15	6.32	-62.54	-63.65	-34.77	-36.11	60.98	62.32
	4	7520.00	17.69	11.44	3.75	-65.12	-64.64	-33.07	-33.41	59.28	59.62
	5	9400.00	20.08	12.17	2.09	-67.96	-68.20	-32.06	-32.44	58.27	58.65
	6	11280.00	22.46	13.66	1.20	-67.82	-68.51	-26.48	-27.32	52.69	53.53
	7	13160.00	24.49	13.27	-1.22	-	-	-	-	-	-
1175	2	3817.50	11.60	9.73	8.13	-44.33	-49.15	-20.94	-25.16	47.15	51.37
	3	5726.25	14.68	11.15	6.47	-62.00	-62.71	-33.20	-34.46	59.41	60.67
	4	7635.00	18.09	11.44	3.35	-58.52	-62.31	-26.73	-31.37	52.94	57.58
	5	9543.75	20.84	12.17	1.33	-63.57	-63.94	-27.40	-28.24	53.61	54.45
	6	11452.50	22.28	13.66	1.38	-68.25	-68.50	-26.18	-26.80	52.39	53.01
	7	13361.25	24.23	13.27	-0.96	-	-	-	-	-	-

6.7 Frequency Stability

6.7.1 CDMA Frequency Stability Table

Operating Frequency : 836,520,000 Hz

Channel : 384

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)	9.14	836,520,009	0.000001	0.011
100%		-30	10.45	836,520,010	0.000001	0.012
100%		-20	-6.07	836,519,994	-0.000001	-0.007
100%		-10	10.13	836,520,010	0.000001	0.012
100%		0	23.82	836,520,024	0.000003	0.028
100%		+10	-5.80	836,519,994	-0.000001	-0.007
100%		+20	9.14	836,520,009	0.000001	0.011
100%		+30	-24.70	836,519,975	-0.000003	-0.030
100%		+40	11.40	836,520,011	0.000001	0.014
100%		+50	20.33	836,520,020	0.000002	0.024
100%		+60	10.07	836,520,010	0.000001	0.012
85%	3.25	+20	10.16	836,520,010	0.000001	0.012
115%	4.26	+20	18.07	836,520,018	0.000002	0.022
Batt. Endpoint	3.25	+20	10.16	836,520,010	0.000001	0.012

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 PCS Frequency Stability Table

Operating Frequency : 1,880,000,000 Hz

Channel : 600

Reference Voltage : 3.7VDC

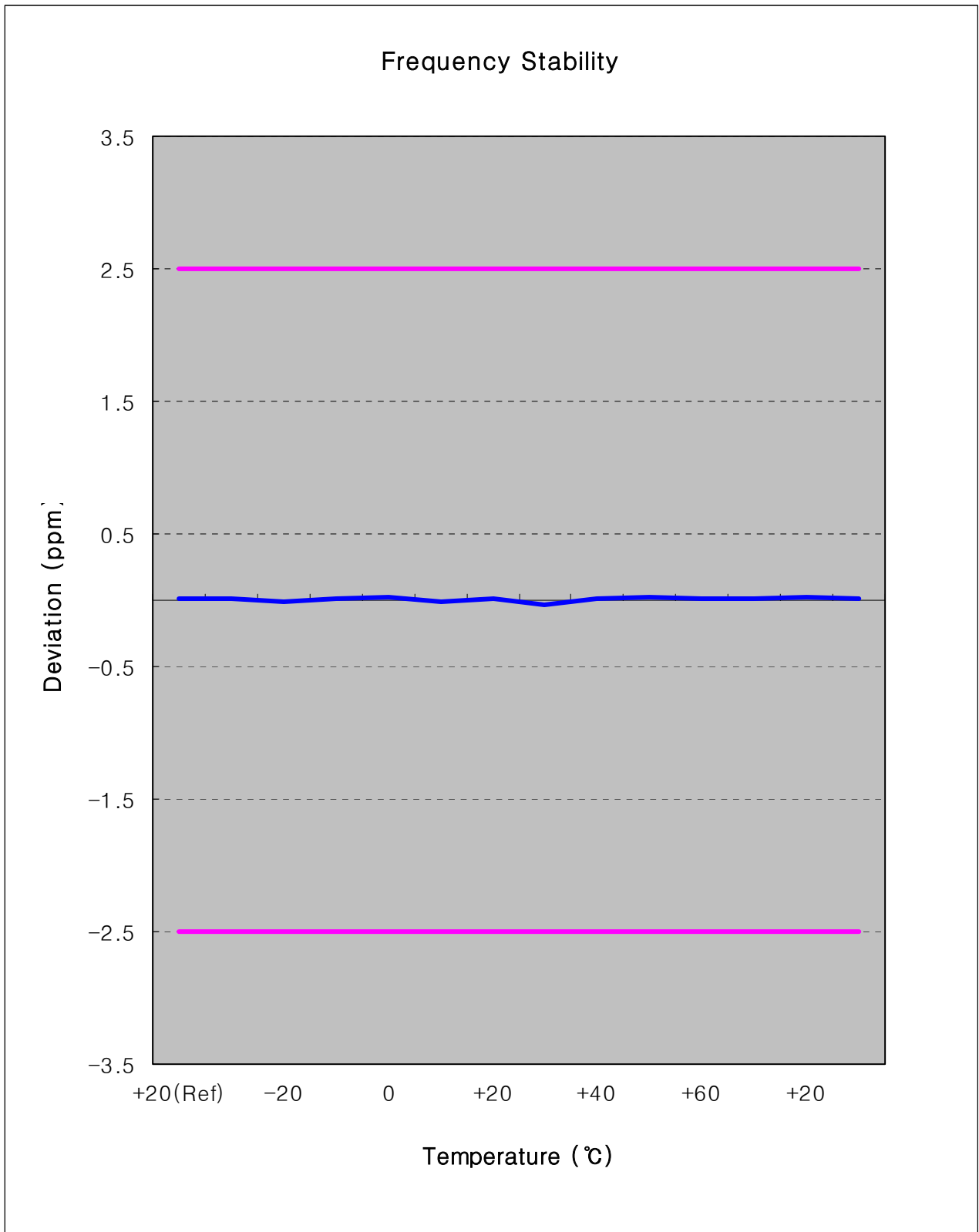
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-13.42	1,879,999,987	-0.000001	-0.007
100%		-30	-11.46	1,879,999,989	-0.000001	-0.006
100%		-20	-10.22	1,879,999,990	-0.000001	-0.005
100%		-10	6.03	1,880,000,006	0.000000	0.003
100%		0	21.06	1,880,000,021	0.000001	0.011
100%		+10	5.89	1,880,000,006	0.000000	0.003
100%		+20	-13.42	1,879,999,987	-0.000001	-0.007
100%		+30	41.97	1,880,000,042	0.000002	0.022
100%		+40	12.05	1,880,000,012	0.000001	0.006
100%		+50	9.65	1,880,000,010	0.000001	0.005
100%		+60	11.67	1,880,000,012	0.000001	0.006
85%	3.25	+20	9.20	1,880,000,009	0.000000	0.005
115%	4.26	+20	6.63	1,880,000,007	0.000000	0.004
Batt. Endpoint	3.25	+20	9	1,880,000,009	0.000000	0.005

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

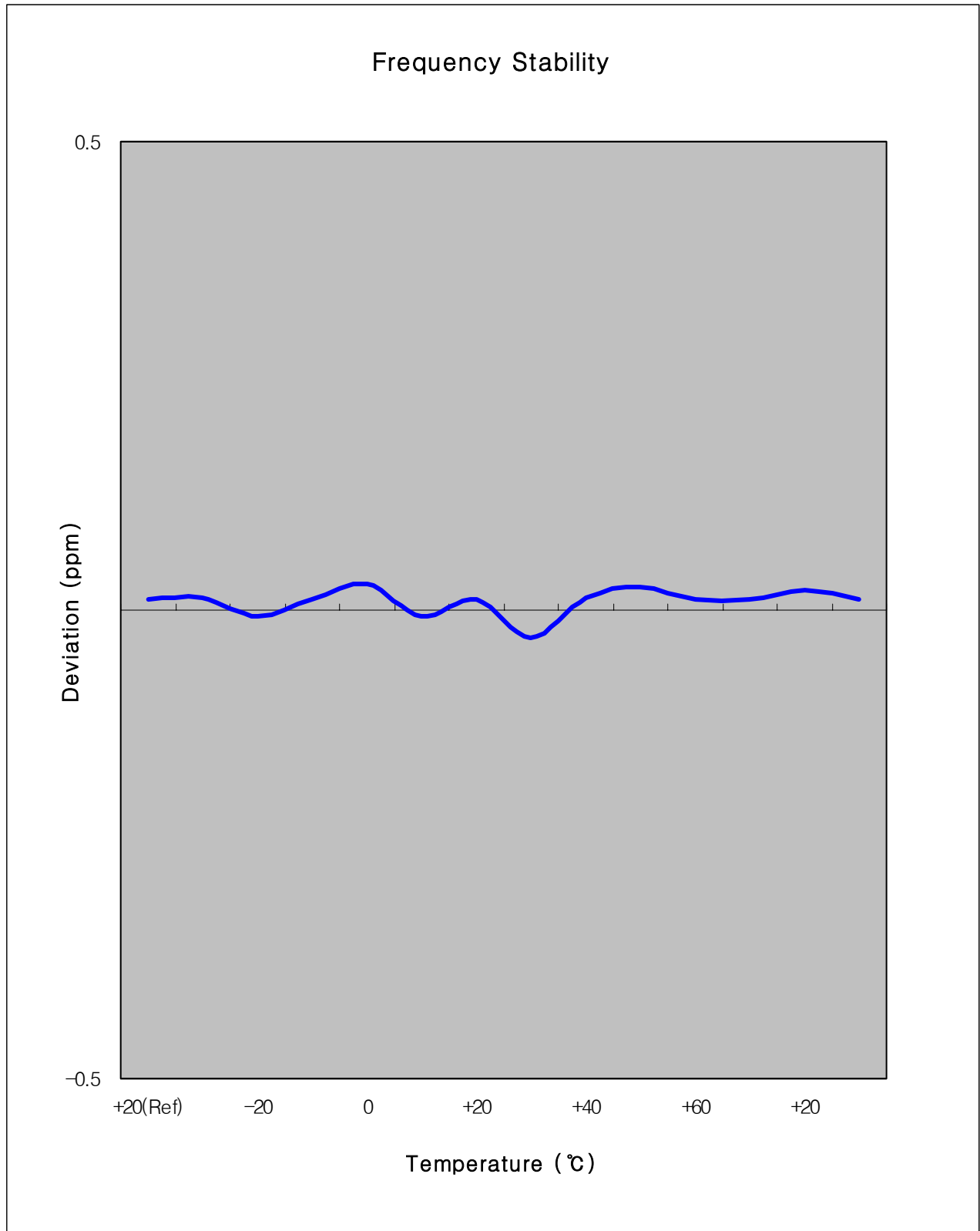
The EUT is tested down to the battery end point

6.7.3 CDMA Frequency Stability Graph



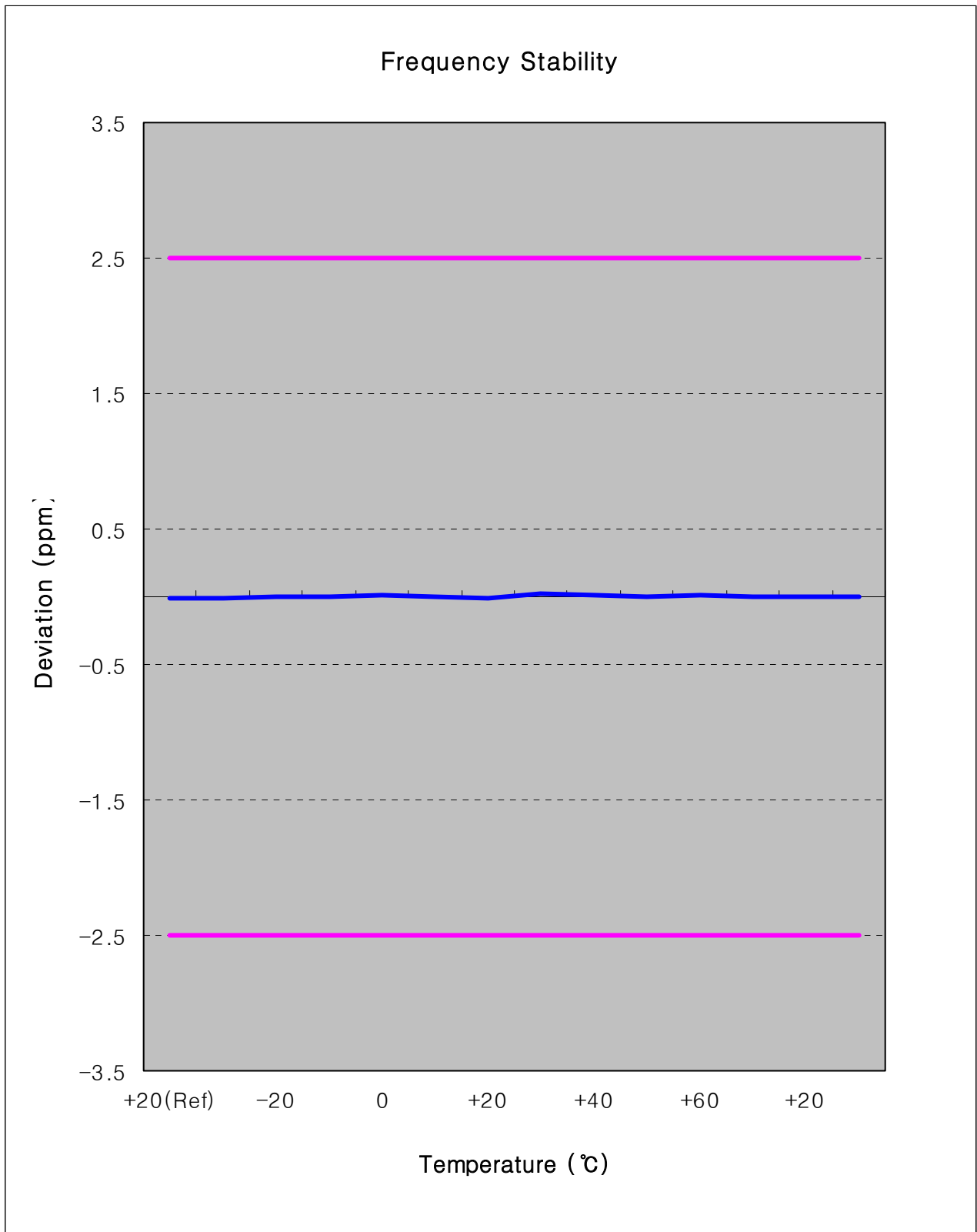
– End of page –

Zoom In



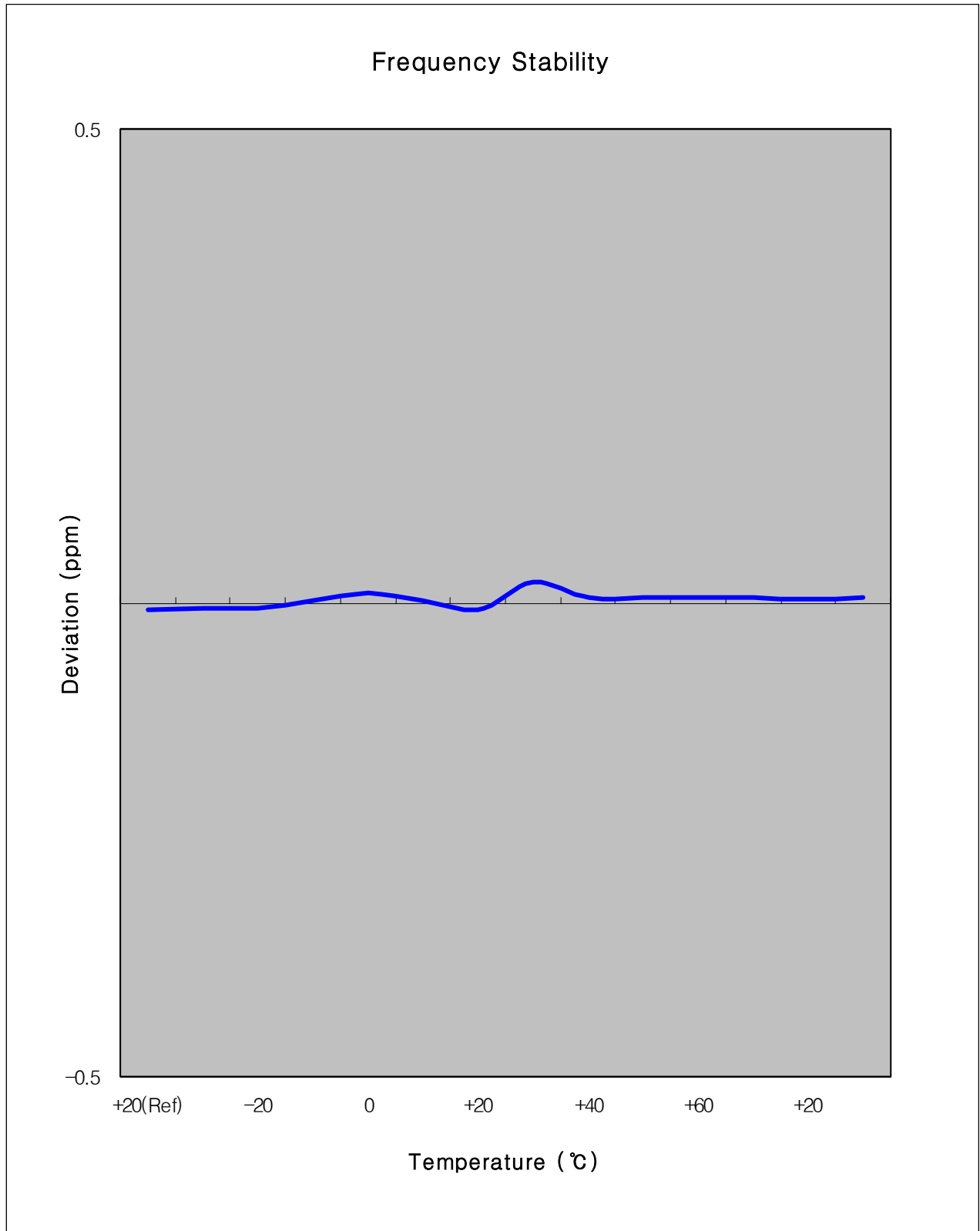
– End of page –

6.7.4 PCS Frequency Stability Graph



– End of page –

Zoom In



- End of page -

7. SAMPLE CALCULATION

7.1 Emission Designator

Emission Designator = 1M25F9W

Calculation : 2M + 2DK

CDMA BW = 1.25MHz

F = Frequency Modulation

9 = Composite Digital Info

W = Combination(Audio/Data)

(Measured at the 99.75% power bandwidth)

– End of page –



8. CONCLUSION

The data collected shows that the SAMSUNG Dual-Band CDMA Phone with Bluetooth
FCC ID : A3LSPHA900G complies with all the requirements of Parts 2, 22, 24 of the FCC Rules.

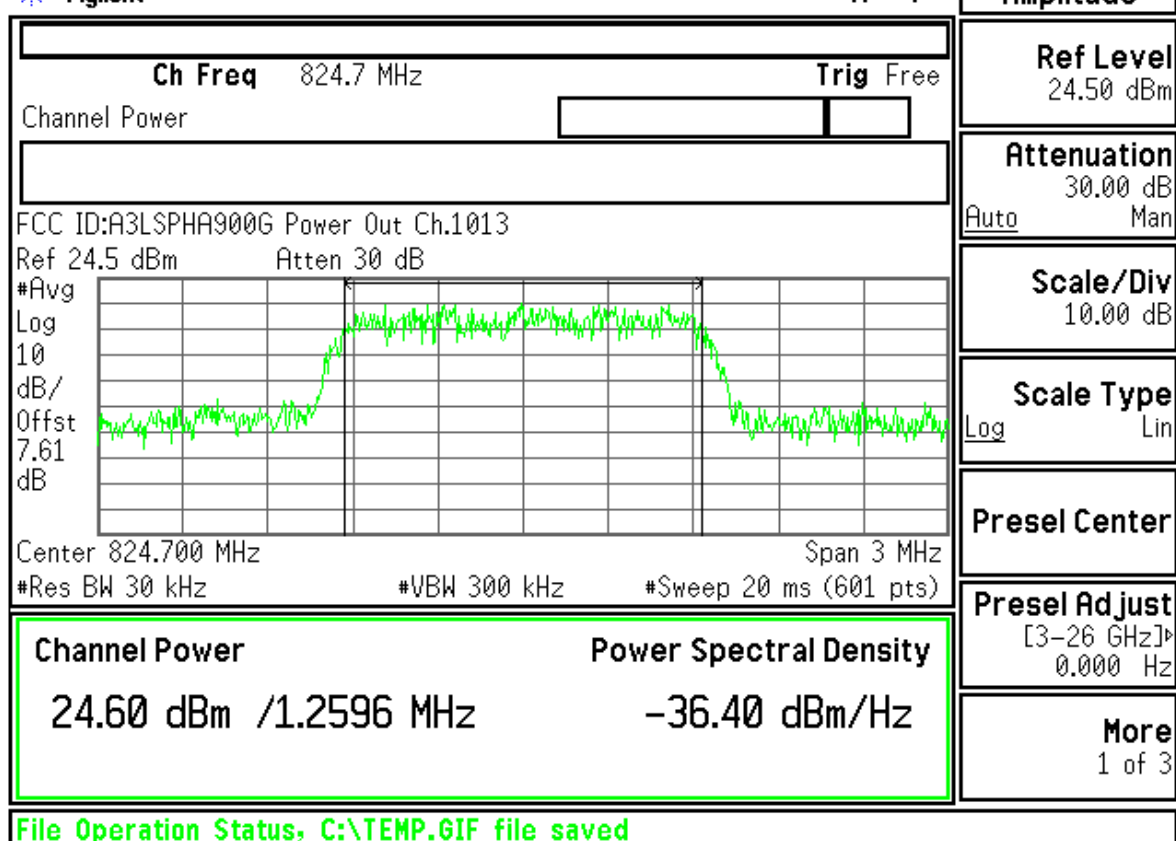
- End of page -

9. TEST PLOTS

A3LSPHA900GCDMA

 Agilent

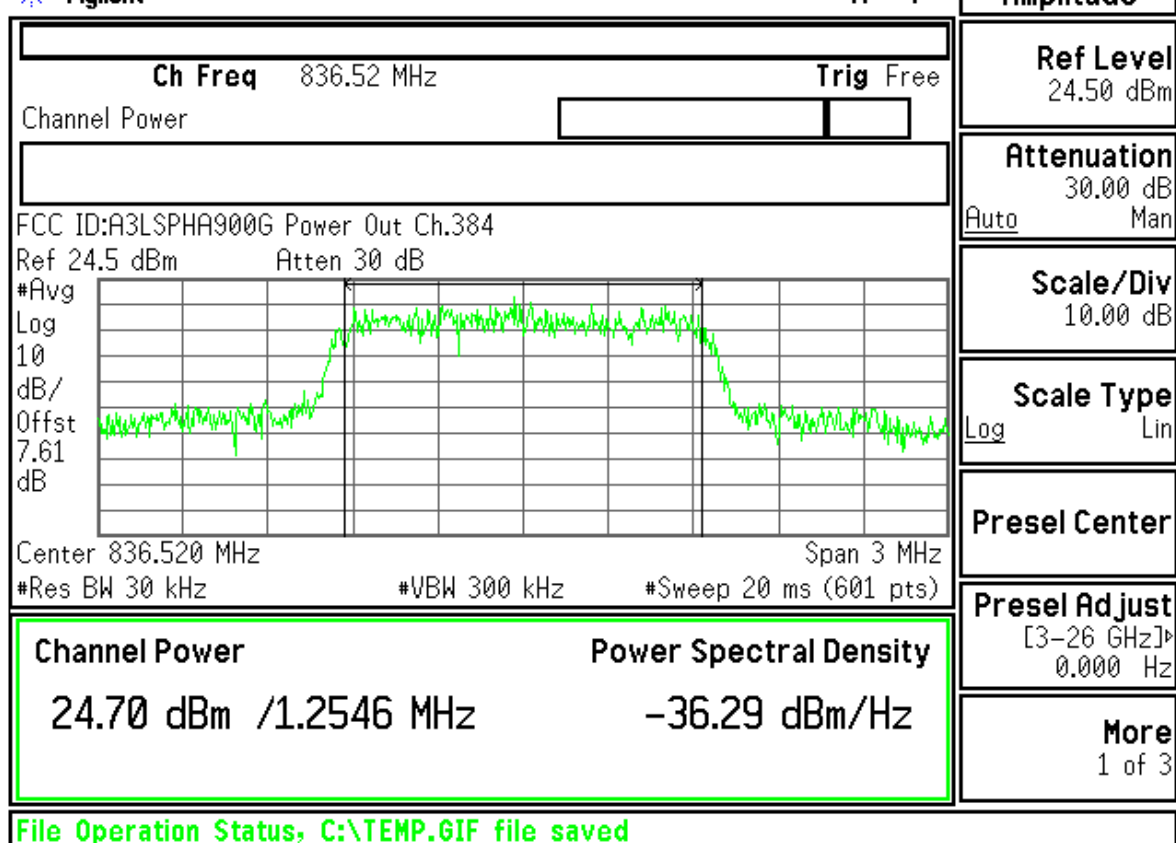
R T



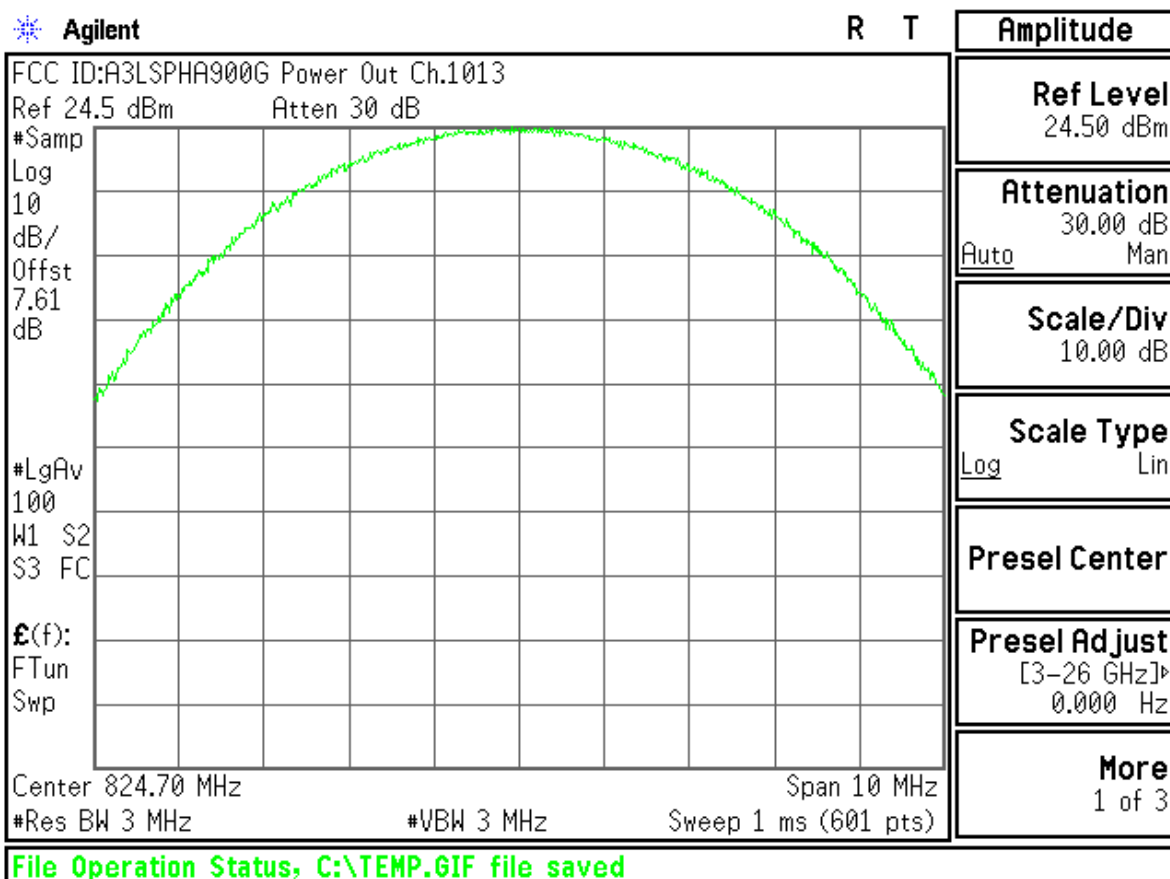
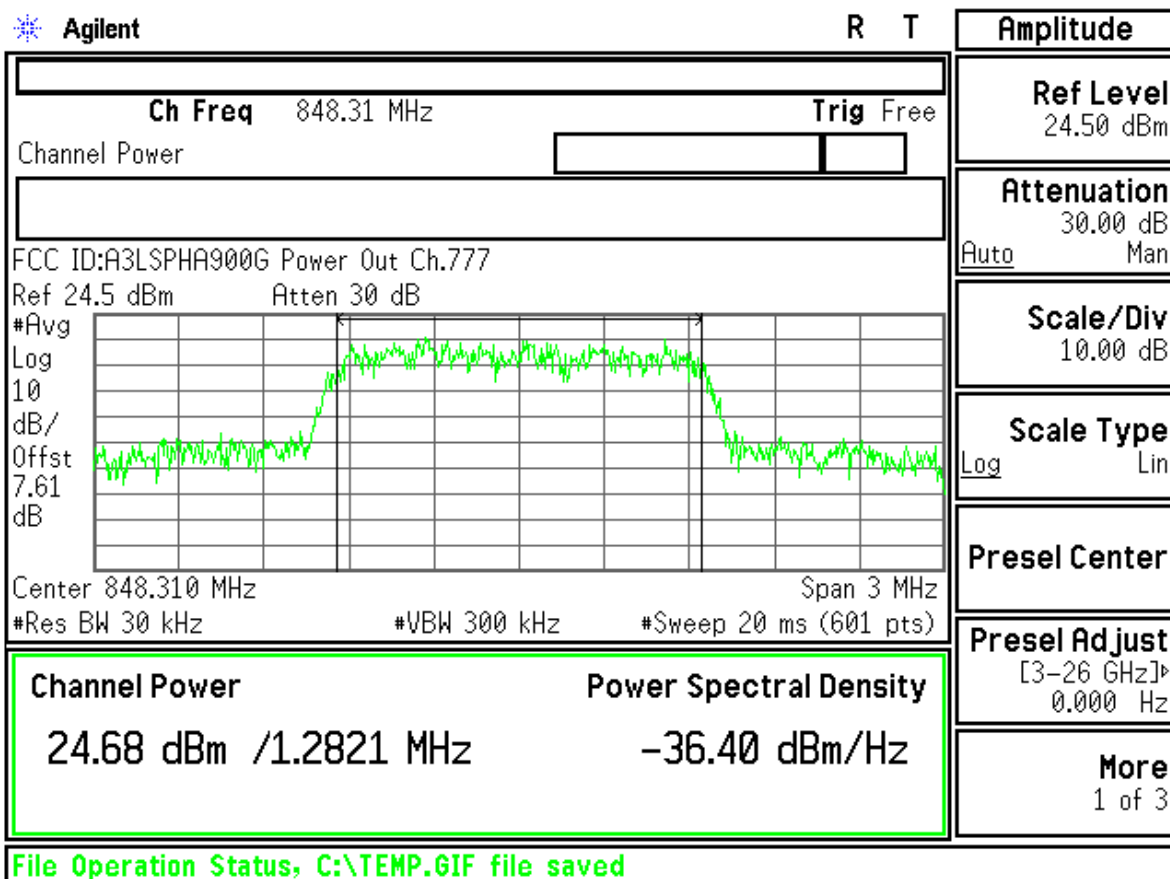
Amplitude
Ref Level 24.50 dBm
Attenuation 30.00 dB Auto Man
Scale/Div 10.00 dB
Scale Type Log Lin
Presel Center
Presel Adjust [3-26 GHz]▶ 0.000 Hz
More 1 of 3

 Agilent

R T



Amplitude
Ref Level 24.50 dBm
Attenuation 30.00 dB Auto Man
Scale/Div 10.00 dB
Scale Type Log Lin
Presel Center
Presel Adjust [3-26 GHz]▶ 0.000 Hz
More 1 of 3



Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Power Out Ch.384

Ref 24.5 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

7.61

dB

#LgAv

100

W1 S2

S3 FC

E(f):

FTun

Swp

Center 836.52 MHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Power Out Ch.777

Ref 24.5 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

7.61

dB

#LgAv

100

W1 S2

S3 FC

E(f):

FTun

Swp

Center 848.31 MHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

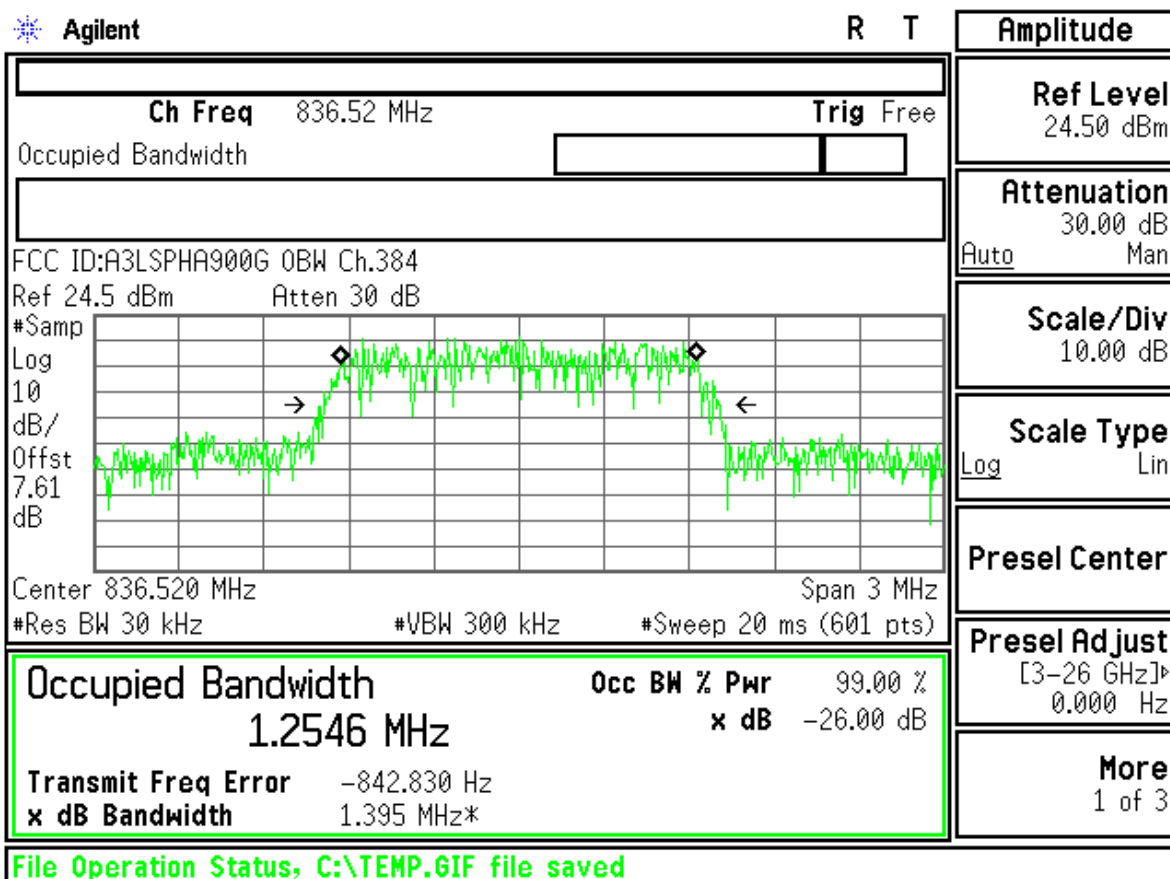
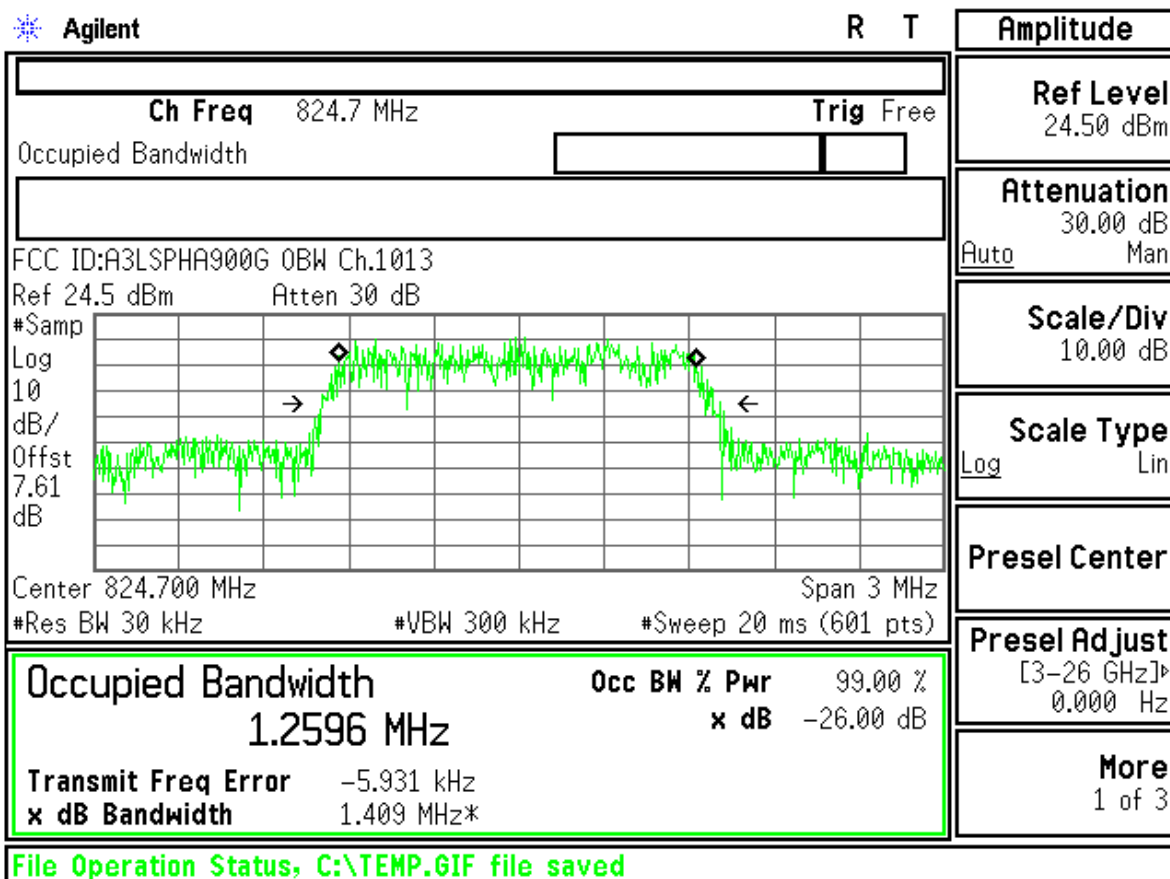
[3-26 GHz]

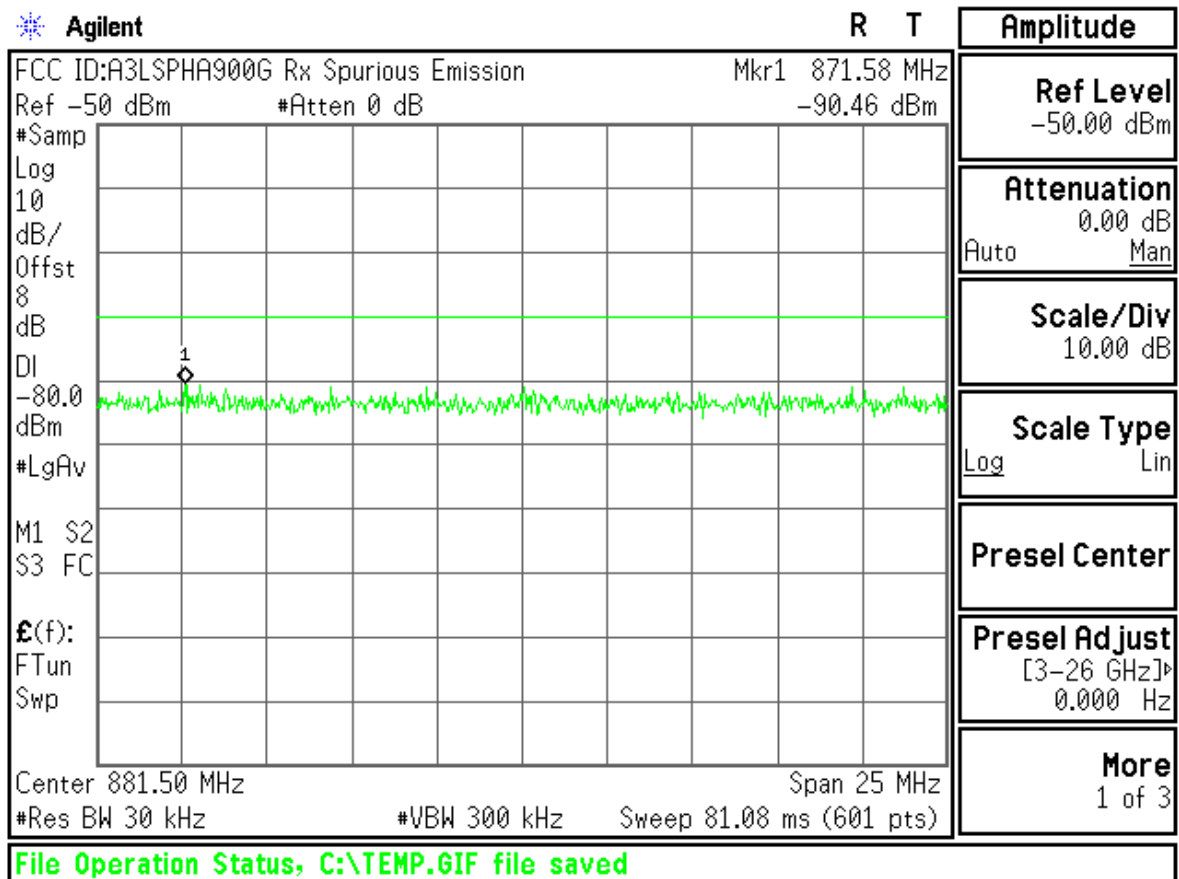
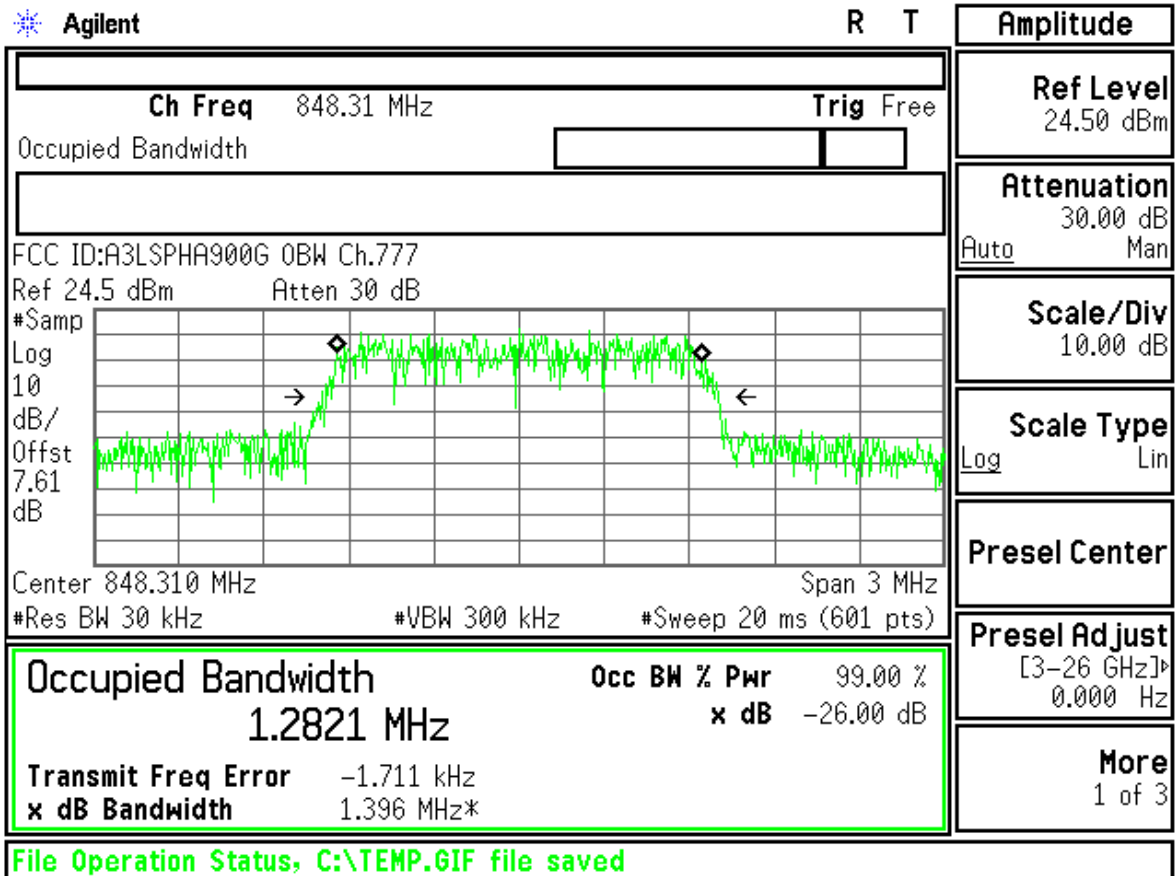
0.000 Hz

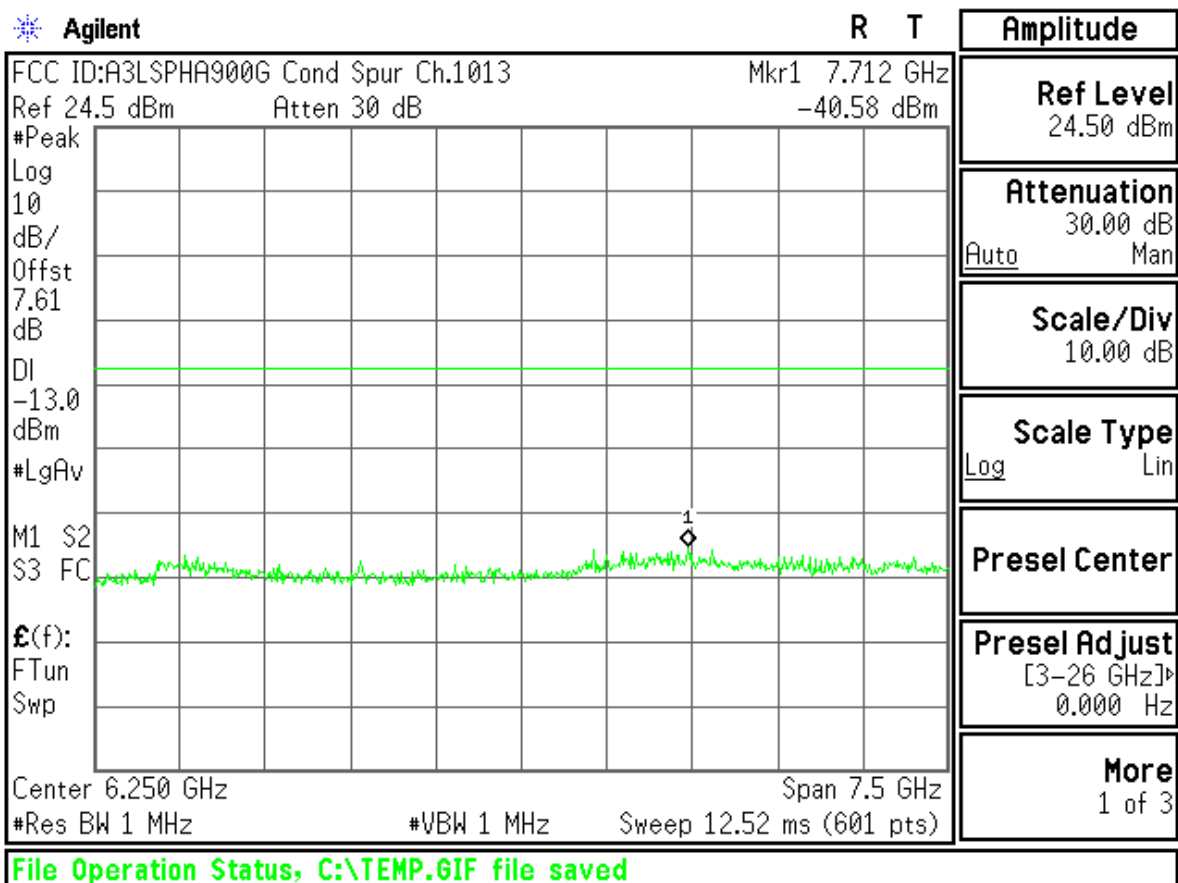
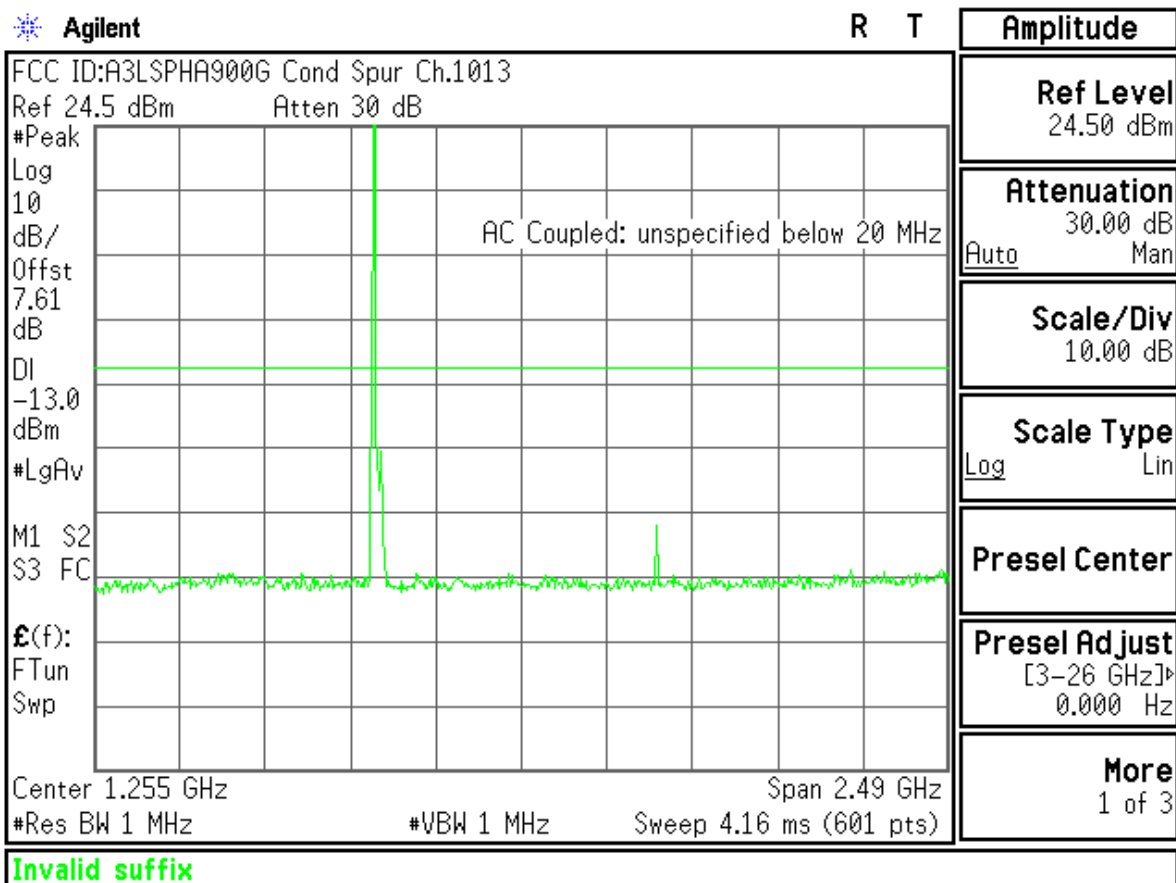
More

1 of 3

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







Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.384

Ref 24.5 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

£(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]P

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.384

Mkr1 7.762 GHz

Ref 24.5 dBm

Atten 30 dB

-40.74 dBm

#Peak

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

£(f):

FTun

Swp

1

Center 6.250 GHz

Span 7.5 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 12.52 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]P

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.777

Ref 24.5 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓔ(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.777

Ref 24.5 dBm

Atten 30 dB

Mkr1 7.725 GHz

-41.77 dBm

#Peak

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓔ(f):

FTun

Swp

1

Center 6.250 GHz

Span 7.5 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 12.52 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Band Edge Ch.1013

Mkr1 824.000 MHz

Ref 24.5 dBm

Atten 30 dB

-18.021 dBm

#Samp

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

100

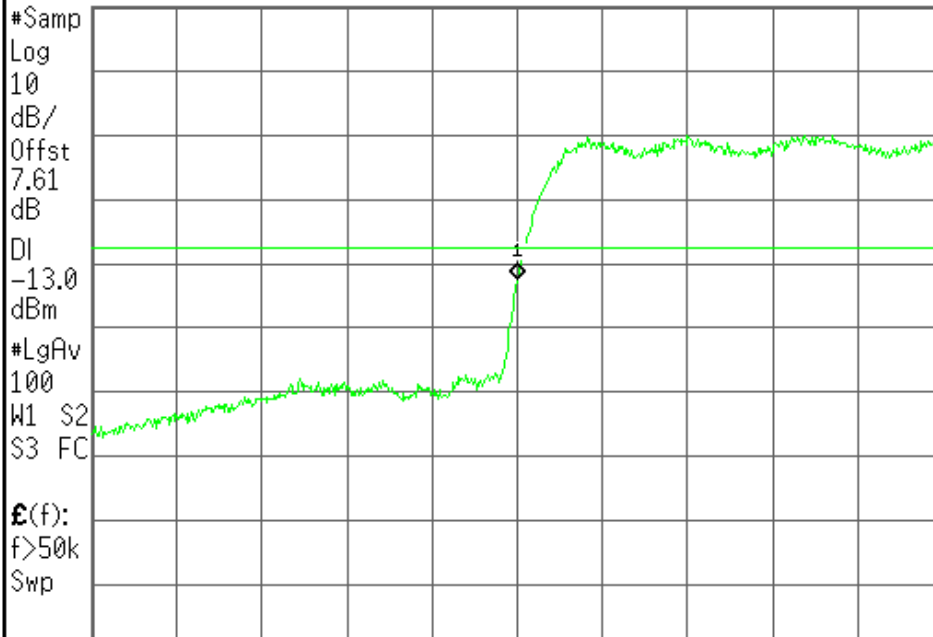
W1 S2

S3 FC

£(f):

f>50k

Swp



Center 824.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]P

0.000 Hz

More

1 of 3

Invalid suffix

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Band Edge Ch.777

Mkr1 849.000 MHz

Ref 24.5 dBm

Atten 30 dB

-14.416 dBm

#Samp

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

100

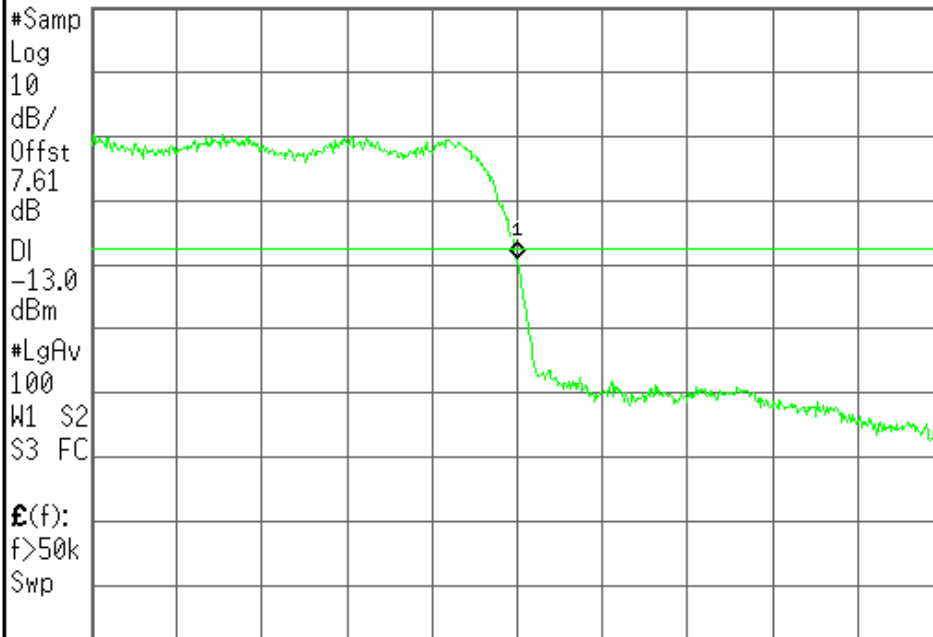
W1 S2

S3 FC

£(f):

f>50k

Swp



Center 849.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]P

0.000 Hz

More

1 of 3

Invalid suffix

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G 4MHz Span Ch.1013

Mkr1 822.980 MHz

Ref 24.5 dBm

Atten 30 dB

-32.070 dBm

#Samp

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

100

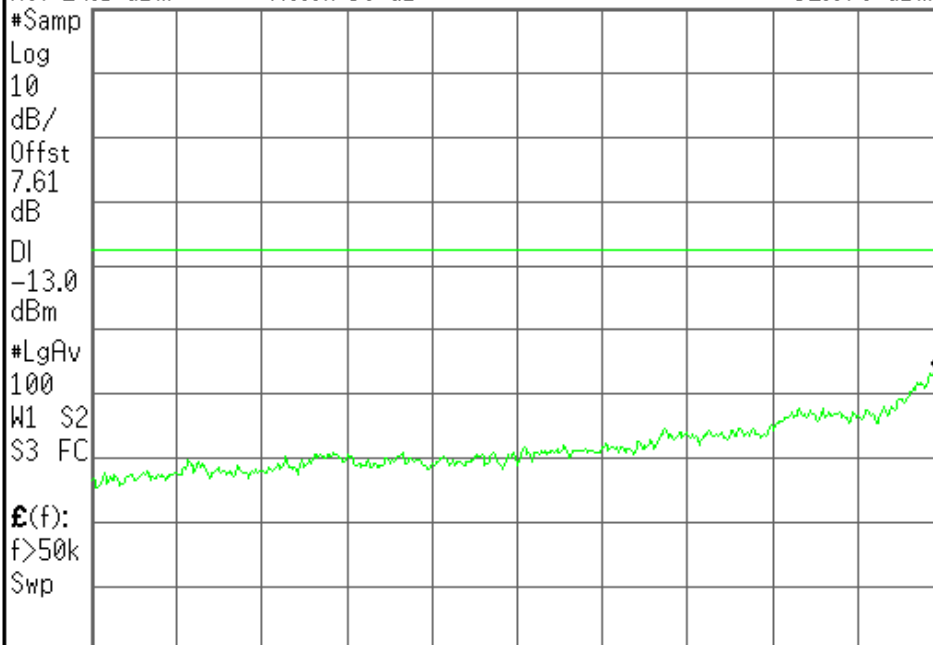
W1 S2

S3 FC

$E(f)$:

f>50k

Swp



Center 821.000 MHz

Span 4 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 1.56 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G 4MHz Span Ch.777

Mkr1 850.080 MHz

Ref 24.5 dBm

Atten 30 dB

-32.549 dBm

#Samp

Log

10

dB/

Offst

7.61

dB

DI

-13.0

dBm

#LgAv

100

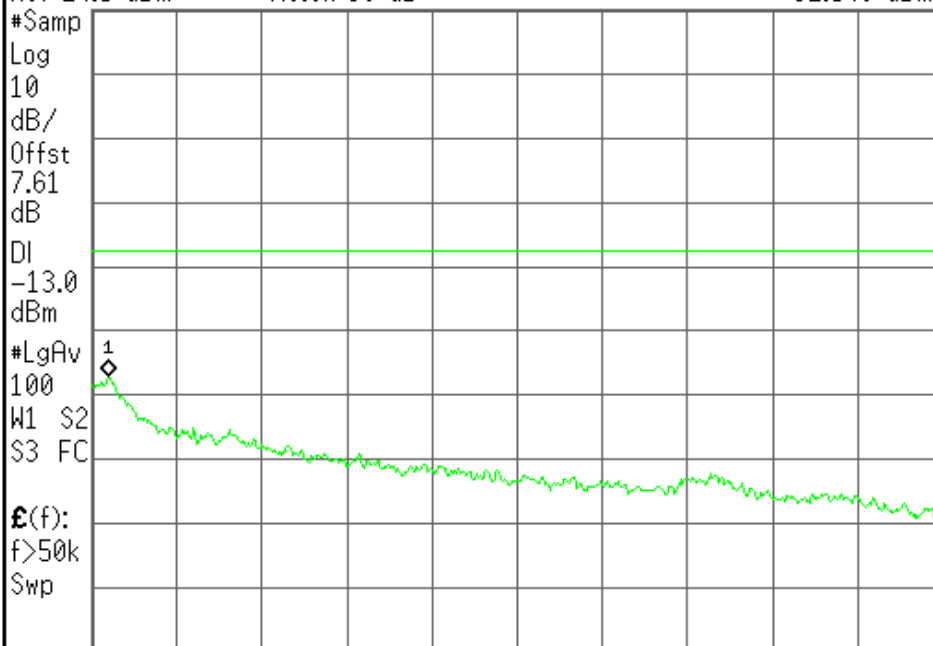
W1 S2

S3 FC

$E(f)$:

f>50k

Swp



Center 852.000 MHz

Span 4 MHz

#Res BW 100 kHz

#VBW 100 kHz

Sweep 1.56 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]

0.000 Hz

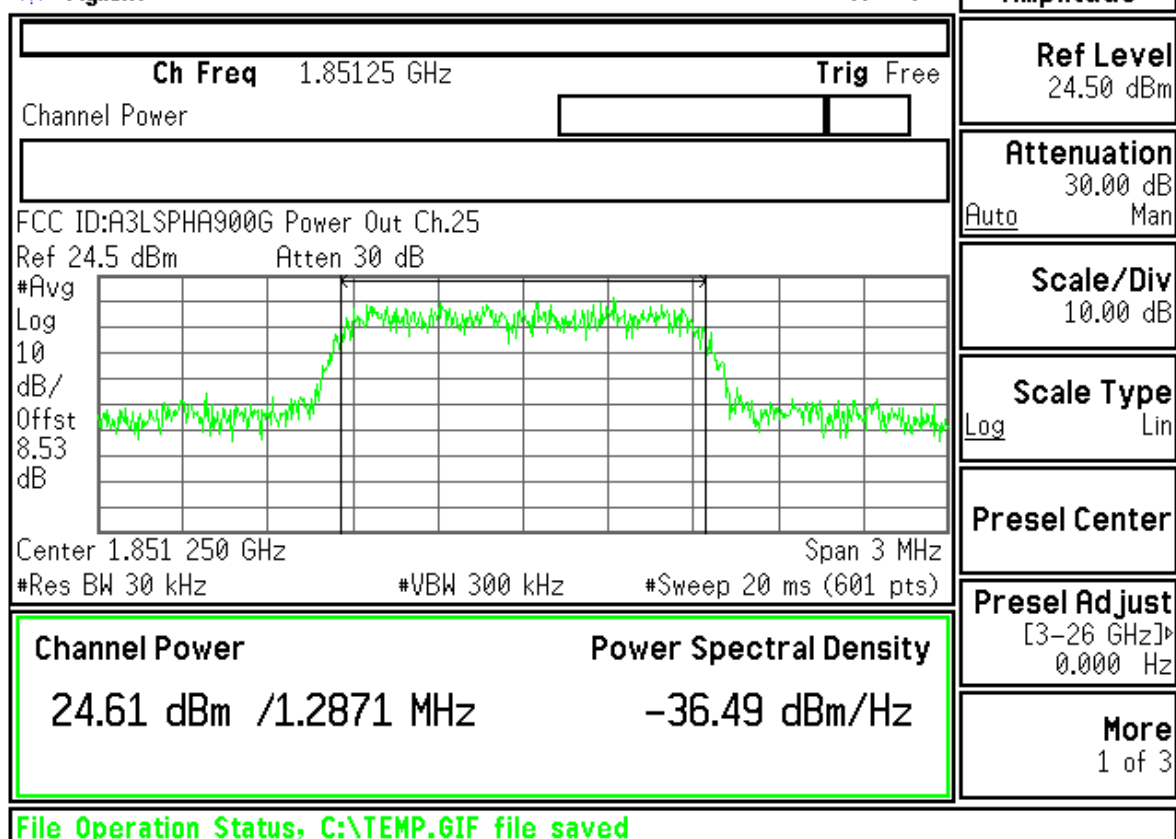
More

1 of 3

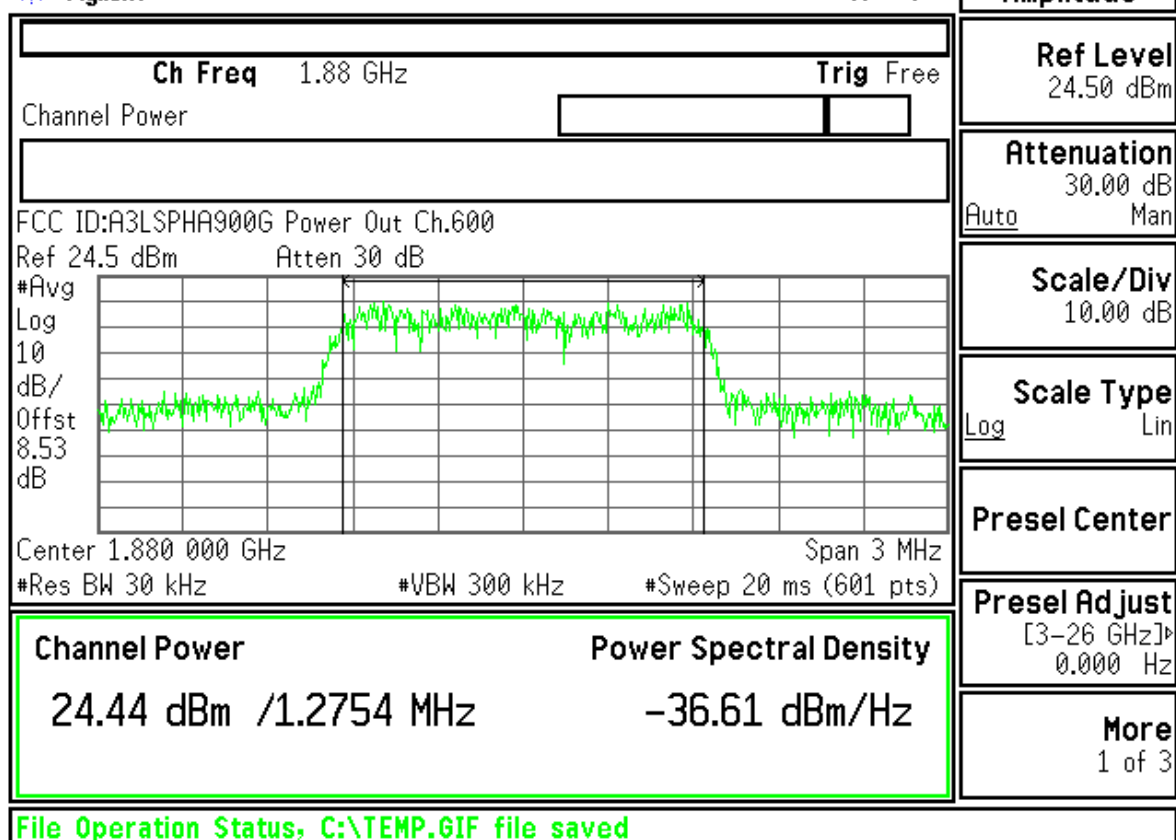
File Operation Status, C:\TEMP.GIF file saved

 Agilent

R T

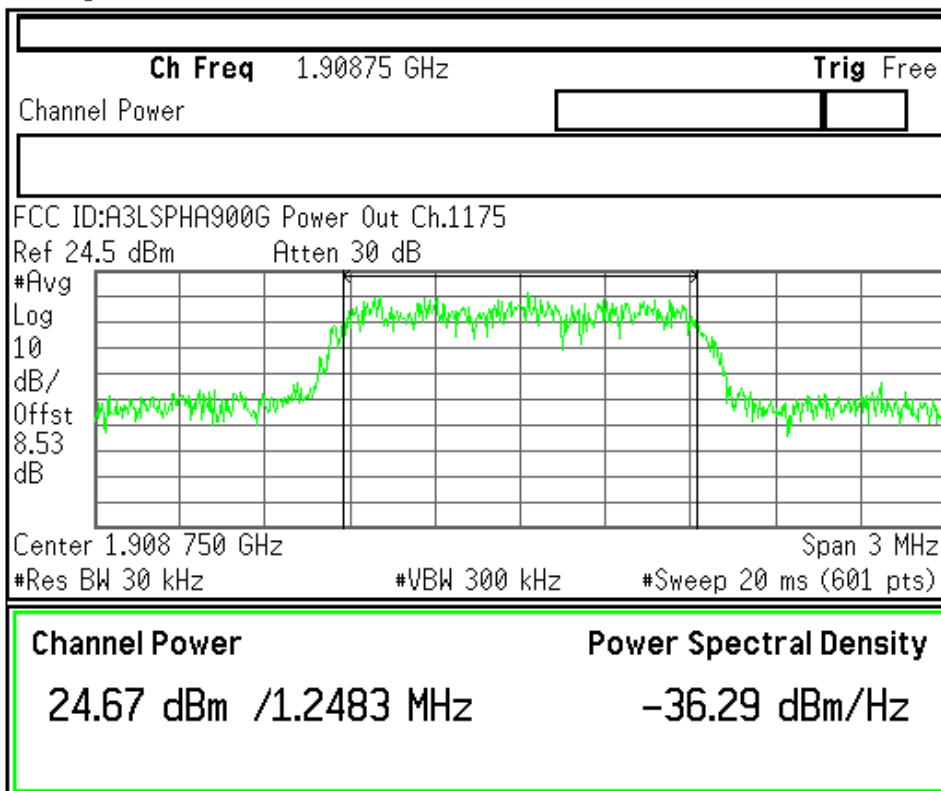

 Agilent

R T



Agilent

R T



Amplitude

Ref Level
24.50 dBm

Attenuation
30.00 dB
Auto Man

Scale/Div
10.00 dB

Scale Type
Log Lin

Presel Center

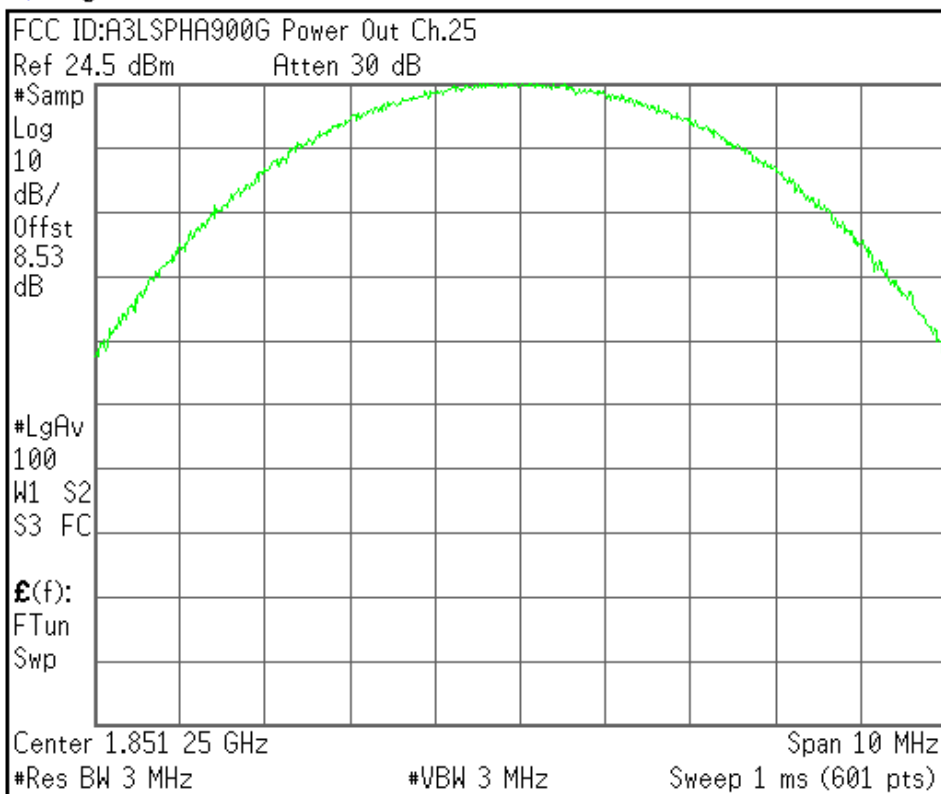
Presel Adjust
[3-26 GHz]P
0.000 Hz

More
1 of 3

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

Agilent

R T



Amplitude

Ref Level
24.50 dBm

Attenuation
30.00 dB
Auto Man

Scale/Div
10.00 dB

Scale Type
Log Lin

Presel Center

Presel Adjust
[3-26 GHz]P
0.000 Hz

More
1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Power Out Ch.600

Ref 24.5 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

8.53

dB

#LgAv

100

W1 S2

S3 FC

£(f):

FTun

Swp

Center 1.880 00 GHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Power Out Ch.1175

Ref 24.5 dBm

Atten 30 dB

#Samp

Log

10

dB/

Offst

8.53

dB

#LgAv

100

W1 S2

S3 FC

£(f):

FTun

Swp

Center 1.908 75 GHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

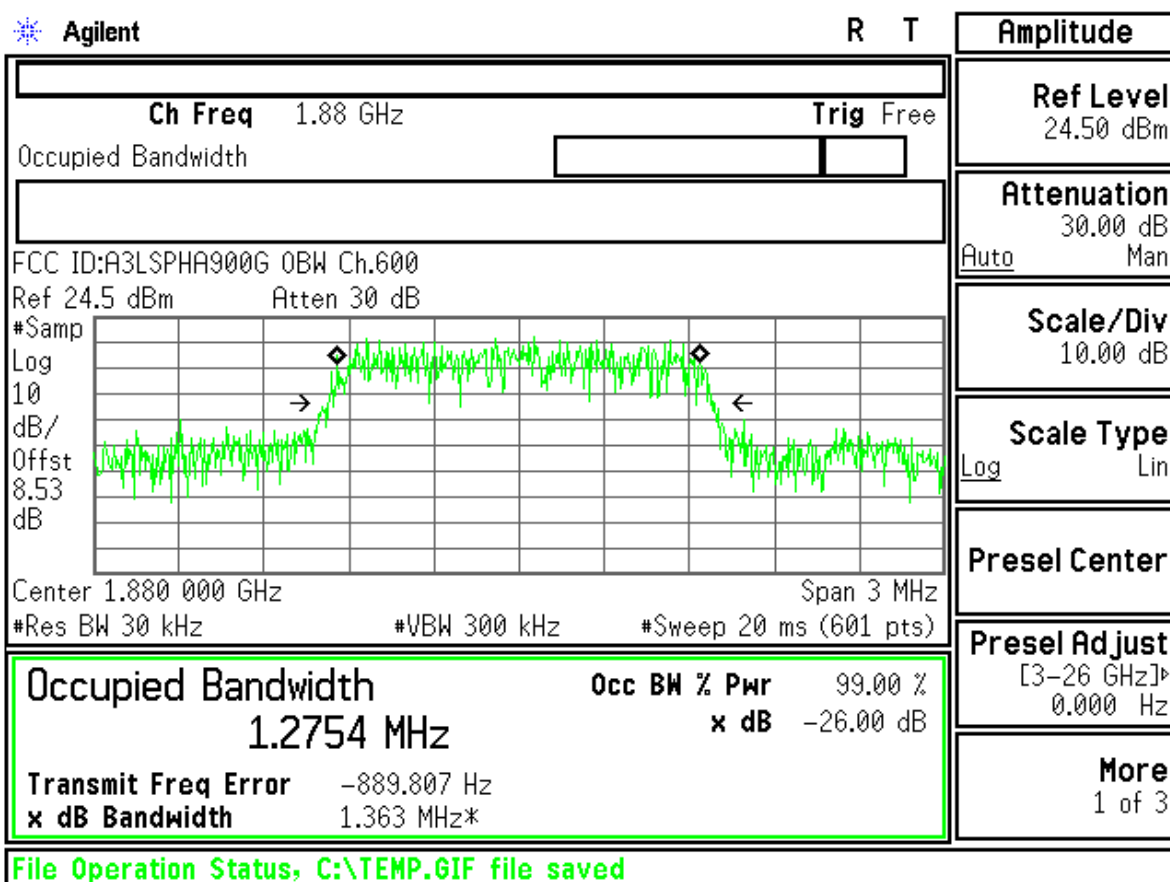
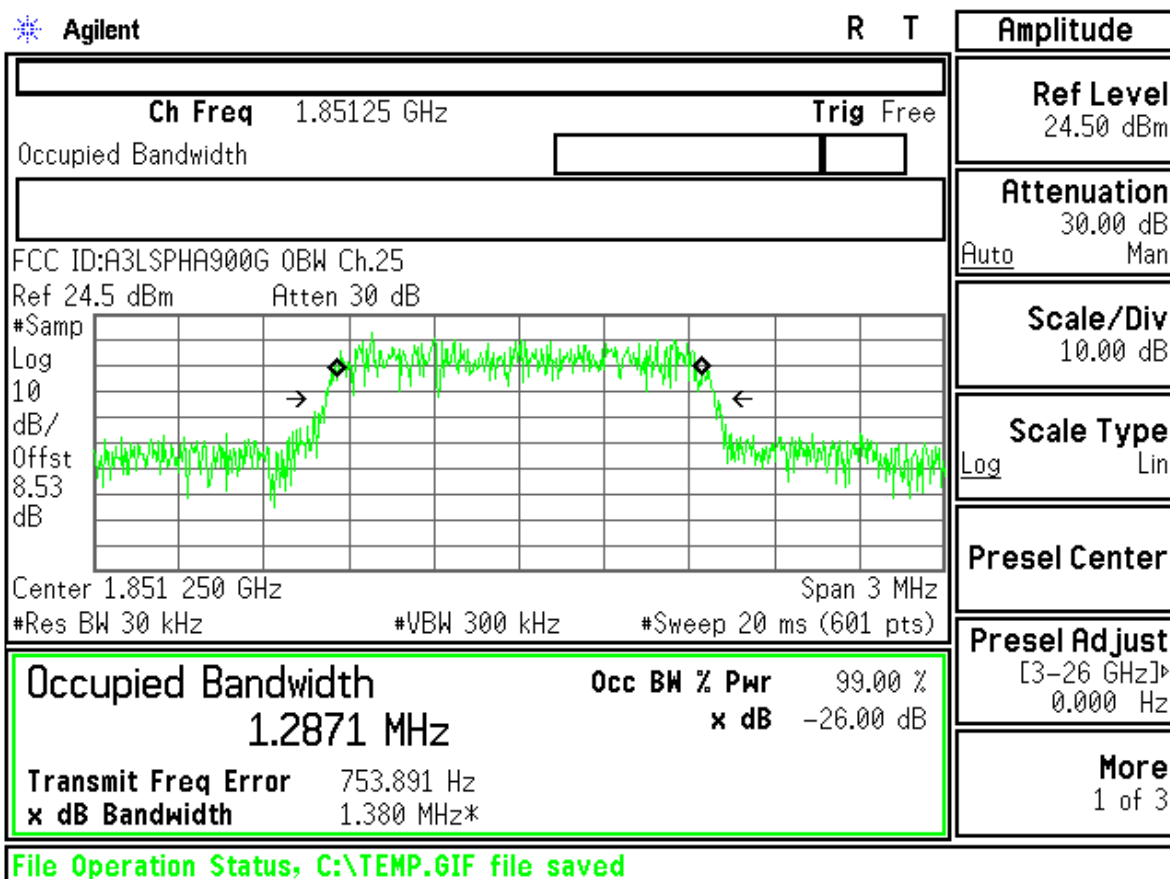
[3-26 GHz]▶

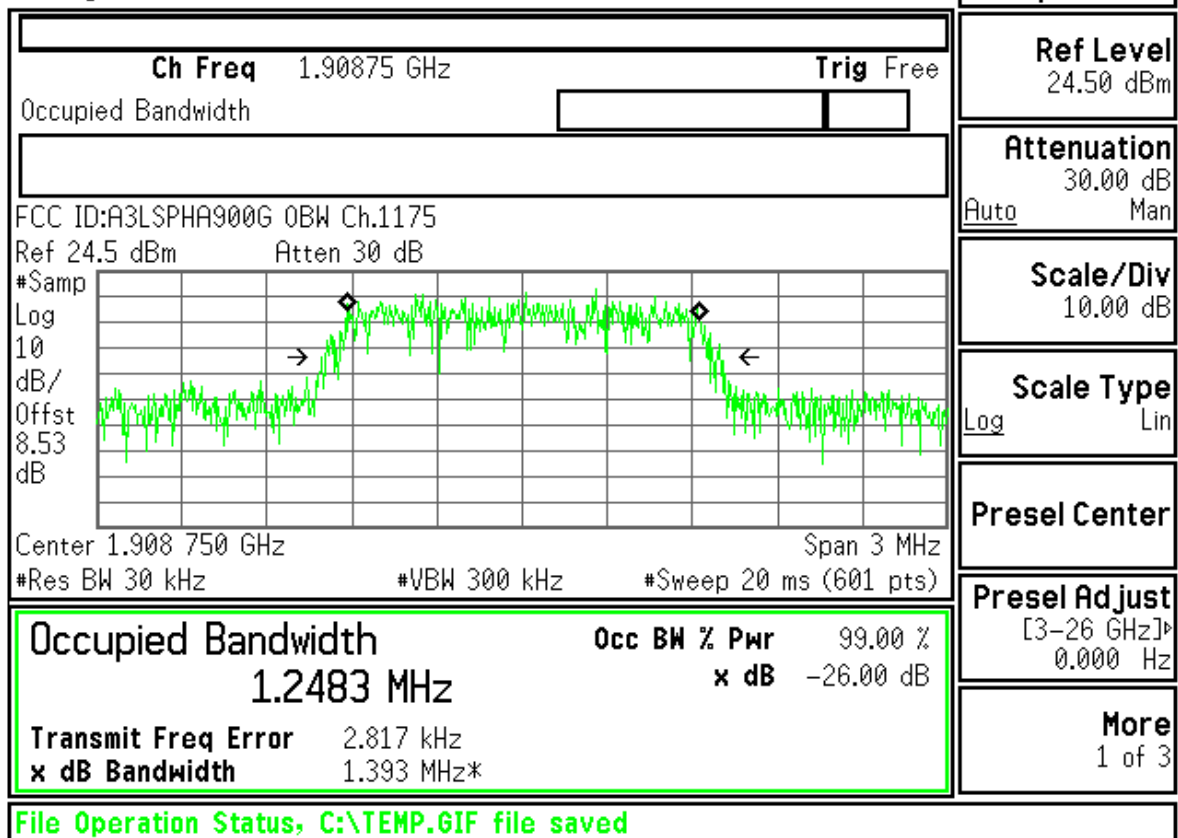
0.000 Hz

More

1 of 3

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





Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.25

Ref 24.5 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

8.53

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓕ(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.25

Ref 24.5 dBm

Atten 30 dB

Mkr1 3.70 GHz

-29.44 dBm

#Peak

Log

10

dB/

Offst

8.53

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓕ(f):

FTun

Swp

1

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

Center 11.25 GHz

Span 17.5 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 43.76 ms (601 pts)

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.600

Ref 24.5 dBm

Atten 30 dB

#Peak

Log

10

dB/

Offst

8.53

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓔ(f):

FTun

Swp

AC Coupled: unspecified below 20 MHz

Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

[3-26 GHz]▶

0.000 Hz

More

1 of 3

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

Agilent

R T

Amplitude

FCC ID:A3LSPHA900G Cond Spur Ch.600

Ref 24.5 dBm

Atten 30 dB

Mkr1 3.75 GHz

-28.82 dBm

#Peak

Log

10

dB/

Offst

8.53

dB

DI

-13.0

dBm

#LgAv

M1 S2

S3 FC

Ⓔ(f):

FTun

Swp

Center 11.25 GHz

Span 17.5 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 43.76 ms (601 pts)

Ref Level

24.50 dBm

Attenuation

30.00 dB

Auto

Man

Scale/Div

10.00 dB

Scale Type

Log

Lin

Presel Center

Presel Adjust

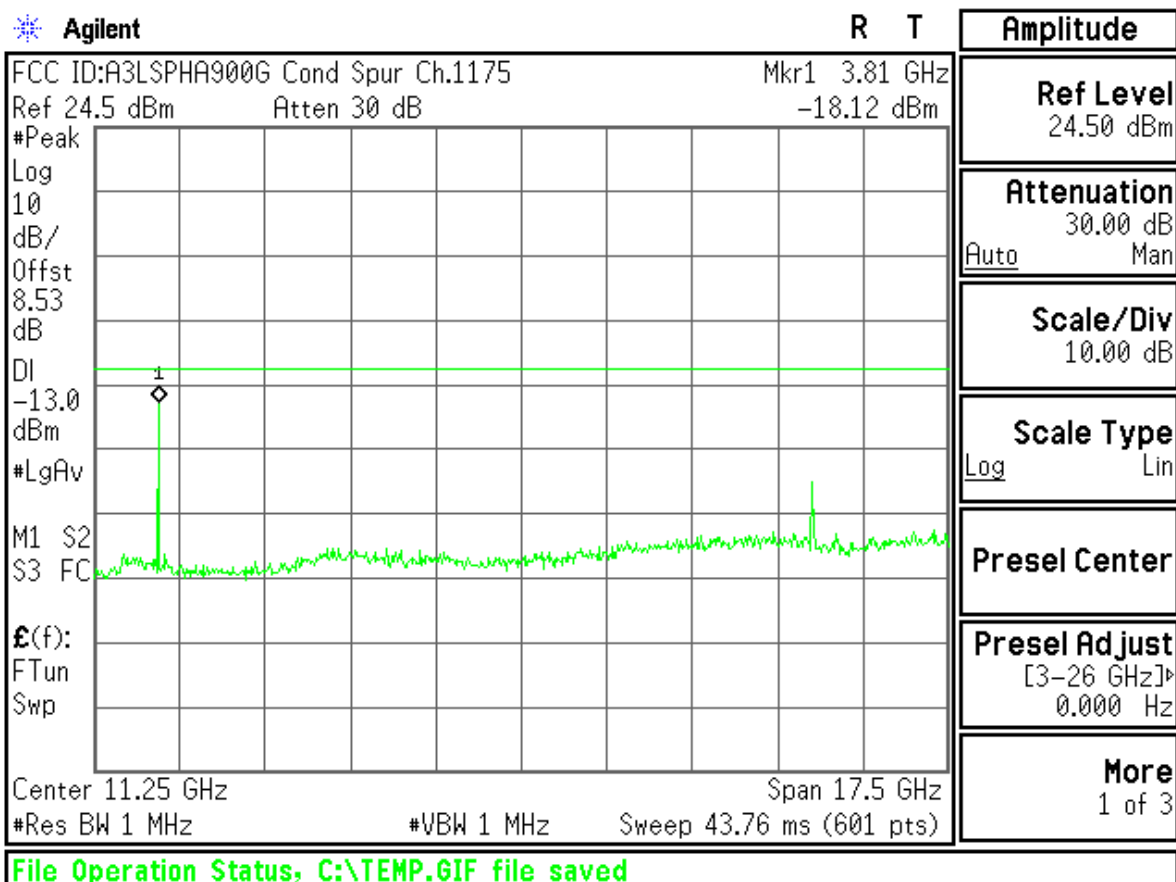
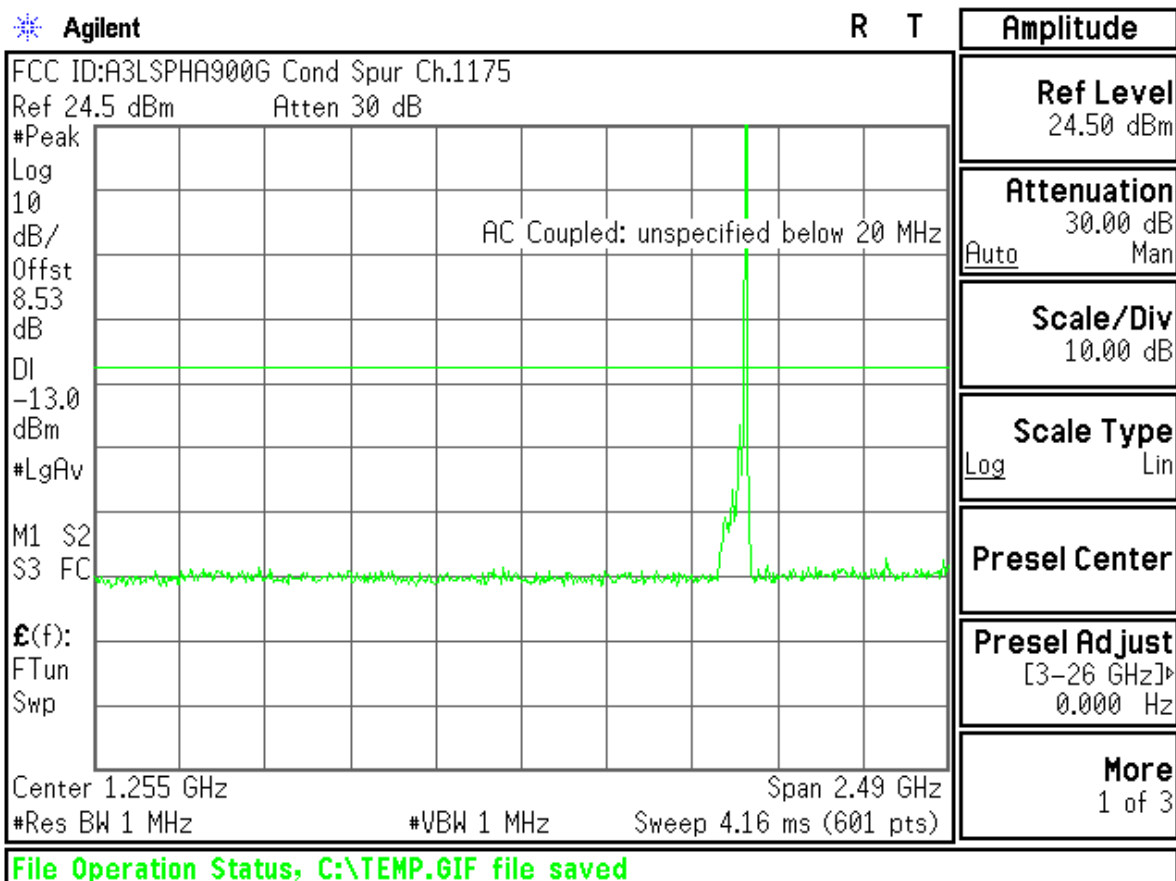
[3-26 GHz]▶

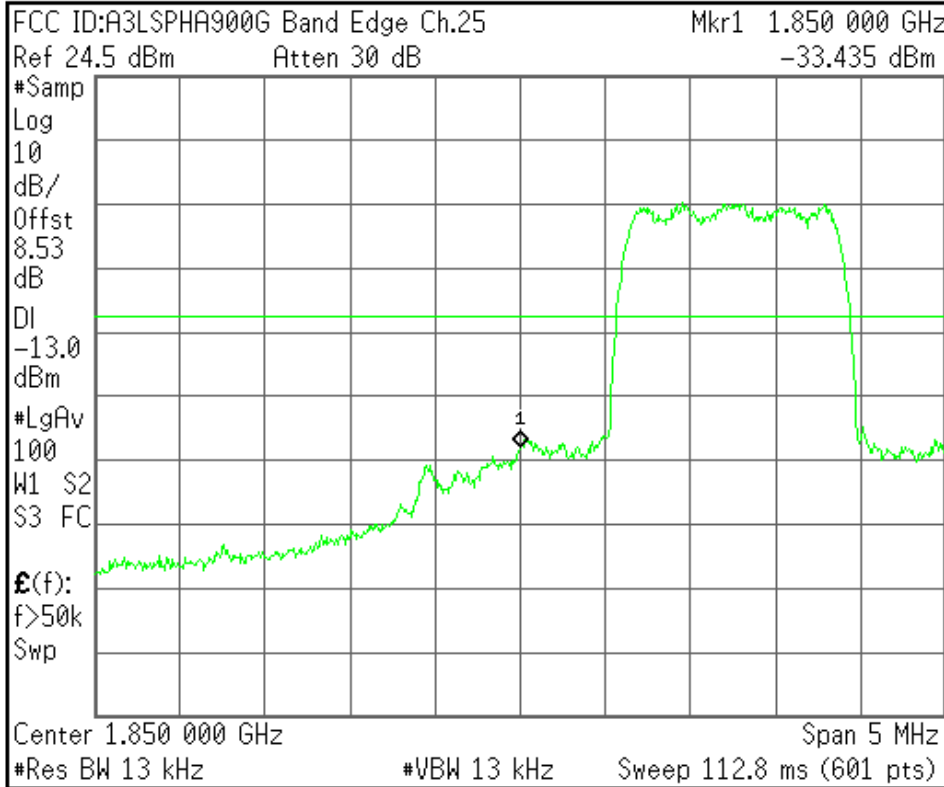
0.000 Hz

More

1 of 3

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





Ref Level
 24.50 dBm

Attenuation
 30.00 dB
 Auto Man

Scale/Div
 10.00 dB

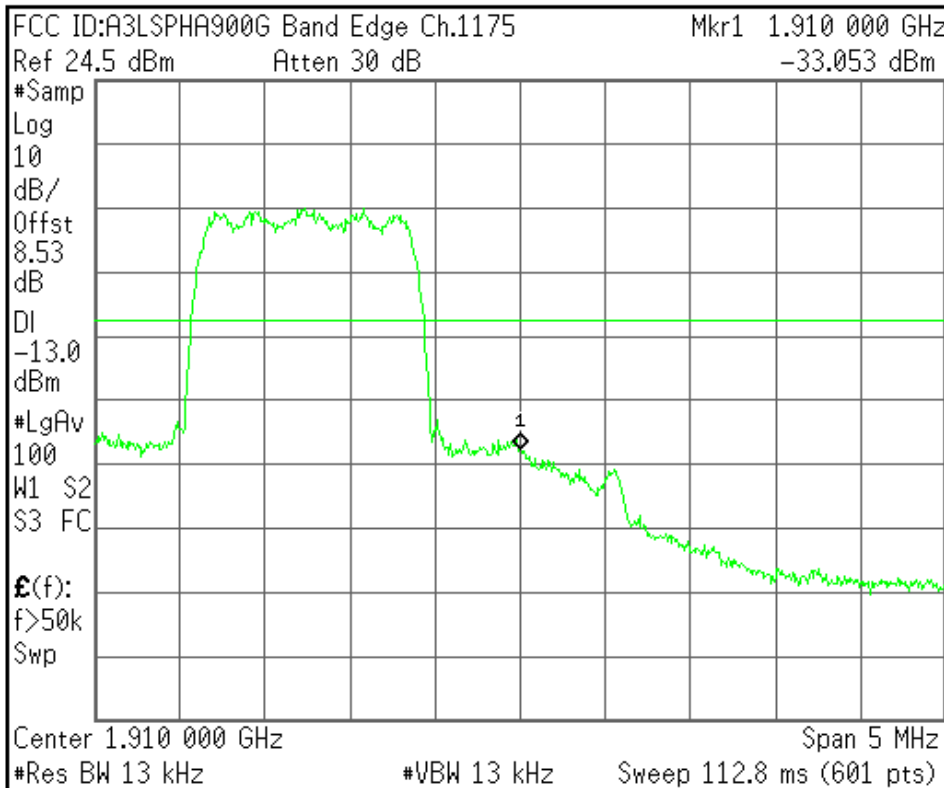
Scale Type
 Log Lin

Presel Center

Presel Adjust
 [3-26 GHz]▶
 0.000 Hz

More
 1 of 3

Invalid suffix



Ref Level
 24.50 dBm

Attenuation
 30.00 dB
 Auto Man

Scale/Div
 10.00 dB

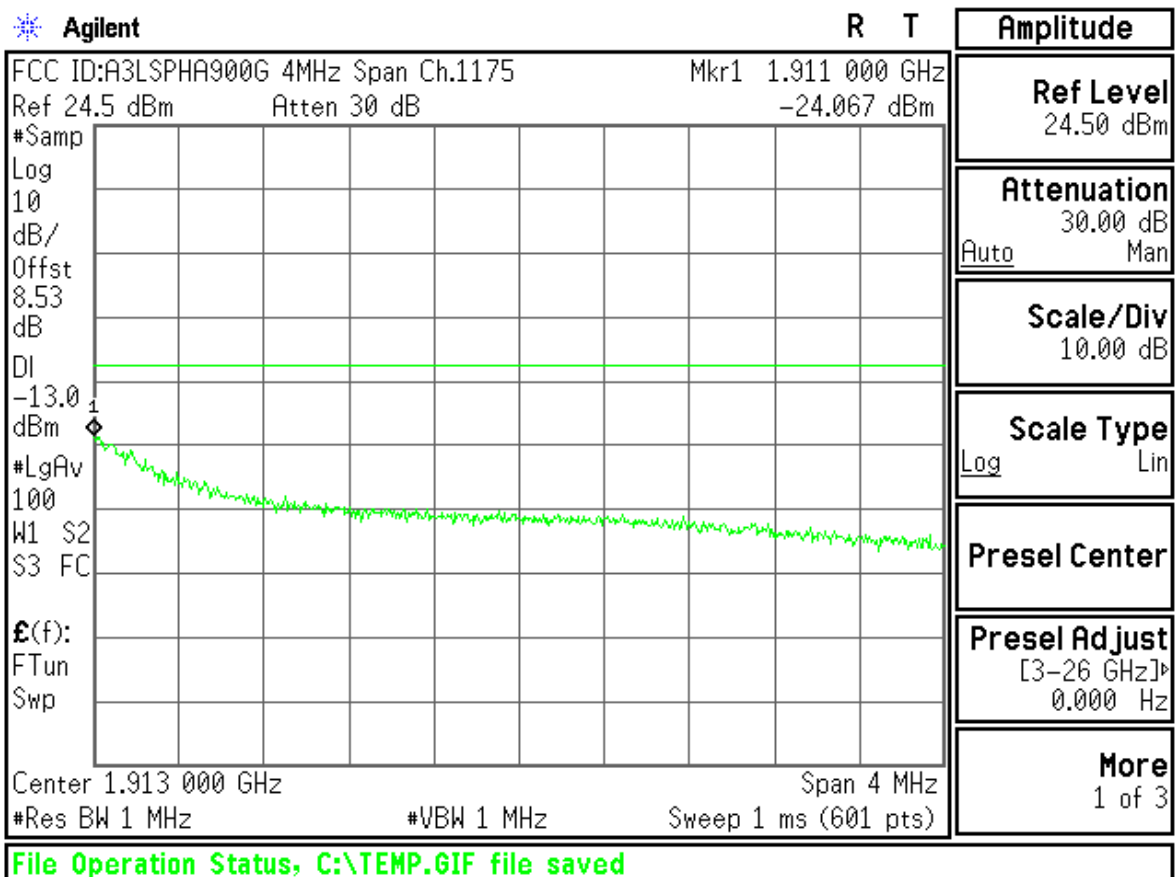
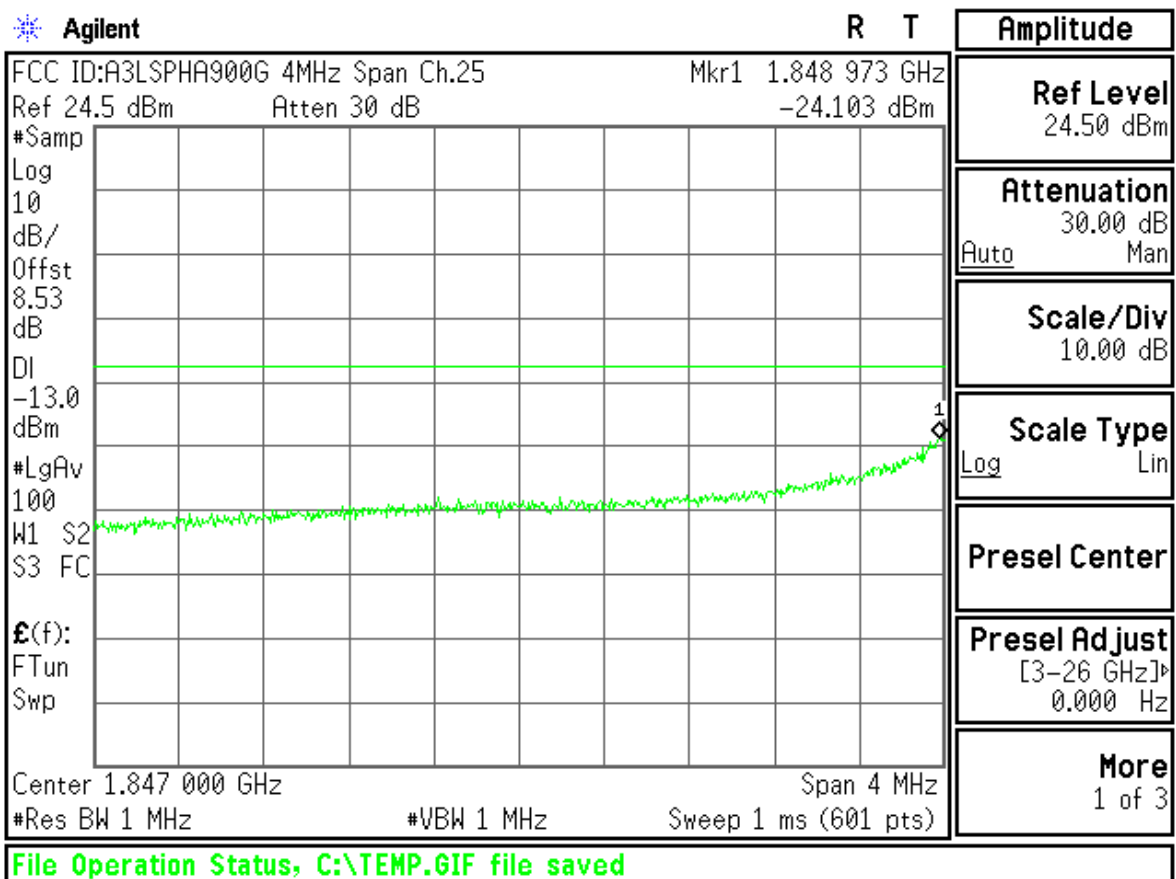
Scale Type
 Log Lin

Presel Center

Presel Adjust
 [3-26 GHz]▶
 0.000 Hz

More
 1 of 3

Invalid suffix



- End of page -