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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 SUBPART CERTIFICATION REPORT

Model Tested: SPH-A420
FCC ID (Requested): A3LSPHA420A
Report No: FE-128-R1
Job No: FE-128
Date issued: 2007-07-02

- Abstract -

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

Prepared By

SH ONG - Test Engineer

Authorized By

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MEASUREMENT REPORT

1. FCC Certification Information

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

1.1 §2.1033 General Information

- Applicant Name: SAMSUNG ELECTRONICS CO., LTD.
- Address: 416 Maetan3-Dong, Yeongtong-gu, Suwon City
Gyeonggi-Do, Korea 443-742
- Attention: SungJoo KIM, Engineering Manager (QA Lab)
- FCC ID: A3LSPHA420A
- Quantity: Quantity production is planned
- Emission Designators: 1M27F9W(CDMA)
- Tx Freq. Range: 824.70-848.31MHz (CDMA)
- Rx Freq. Range: 869.70-893.31MHz (CDMA)
- Max. Power Rating: 0.342 W ERP CDMA (25.34dBm)
- FCC Classification(s): Licensed Non-Broadcast Transmitter Held to Ear (TNE)
- Equipment (EUT) Type: Single-Band CDMA Phone
- Modulation(s): CDMA
- Frequency Tolerance: $\pm 0.00025\%$ (2.5ppm)
- FCC Rule Part(s): §22(H), §2.
- Dates of Test: June 26 - 27, 2007
- Place of Test: SAMSUNG Lab,
- Test Report S/N: FE-128-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.

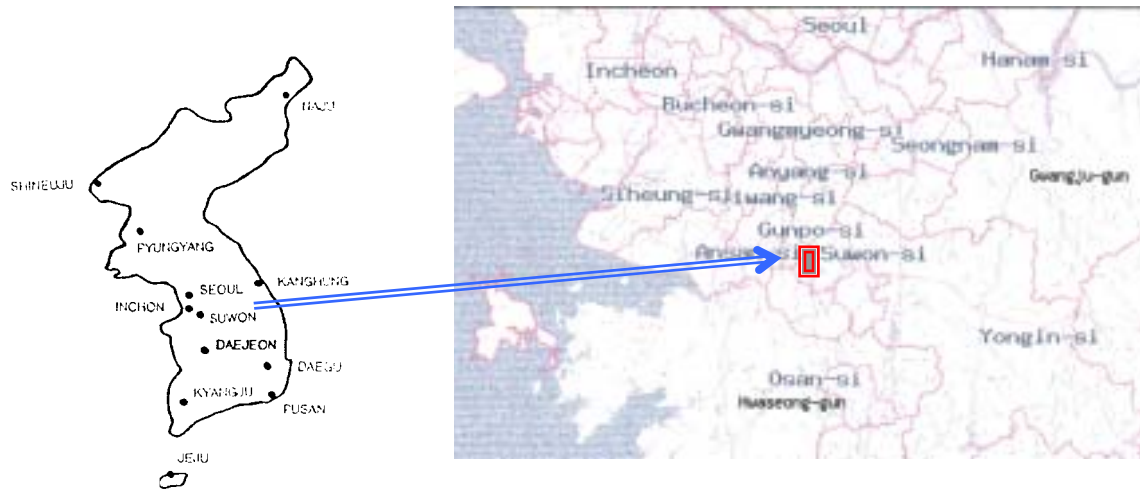


Figure1. Map of the Suwon City area.

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.

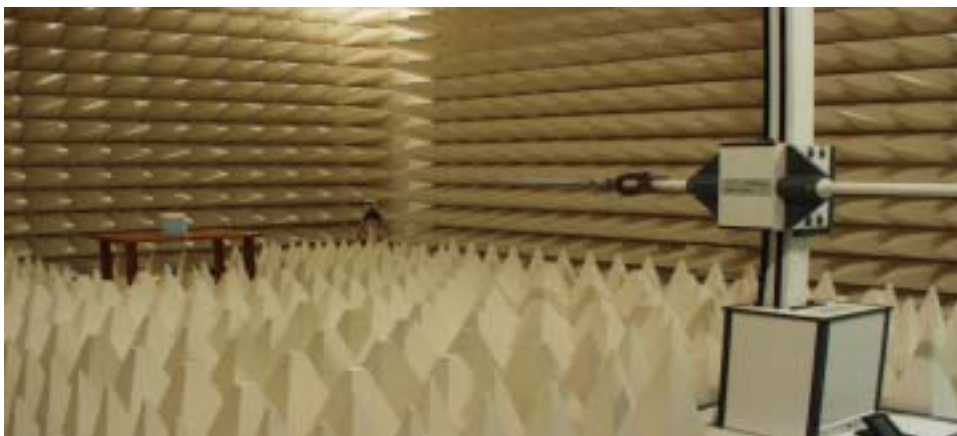


Figure2. Photograph of 3m Fully-Anechoic Chamber



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	ES126	836119/010	2007-10-01
	E4440A(3Hz~26.5GHz)	MY41000236	2008-04-14
	E4440A(3Hz~26.5GHz)	MY41000233	2007-07-21
Signal Generator	SMR20	835197/030	2008-01-11
Amplifier	5S1G4	304866	2007-10-19
Network Analyzer	8753E	JP38160590	2008-06-26
Power Sensor	8485A	3318A19924	2007-09-24
Power Meter	E4419B	GB41293846	2007-09-06
Pre-Amplifier	8449B	3008A00691	2008-01-02
Communication test set	8960	GB42230535	2008-01-02
	8960	GB42360886	2007-07-03
Antenna Master	MA240	240/618	Not Required
Controller	HD100	100/756	Not Required
Horn Antenna	HF906	100134	2008-05-04
Dipole Antenna	3121C-DB4	9007-588	2008-05-29
Communication test set	CMU200	109162	2007-10-17
Receive Antenna	HL040	353255/019	2007-09-20
	HL040	353255/020	2008-04-25
Power Supply	E3640A	MY40003594	2008-06-25
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
Environmental Chamber	SH-241	92000549	2007-11-16
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	SO2	SO55	TDSO SO32
Cellular	1013	RC1	24.84	24.85	-
		RC3	24.82	24.83	24.83
	384	RC1	24.94	24.94	-
		RC3	24.95	24.94	24.93
	777	RC1	24.89	24.89	-
		RC3	24.88	24.87	24.87

Table 5-3
Maximum Power Output Table for SPH-A420

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

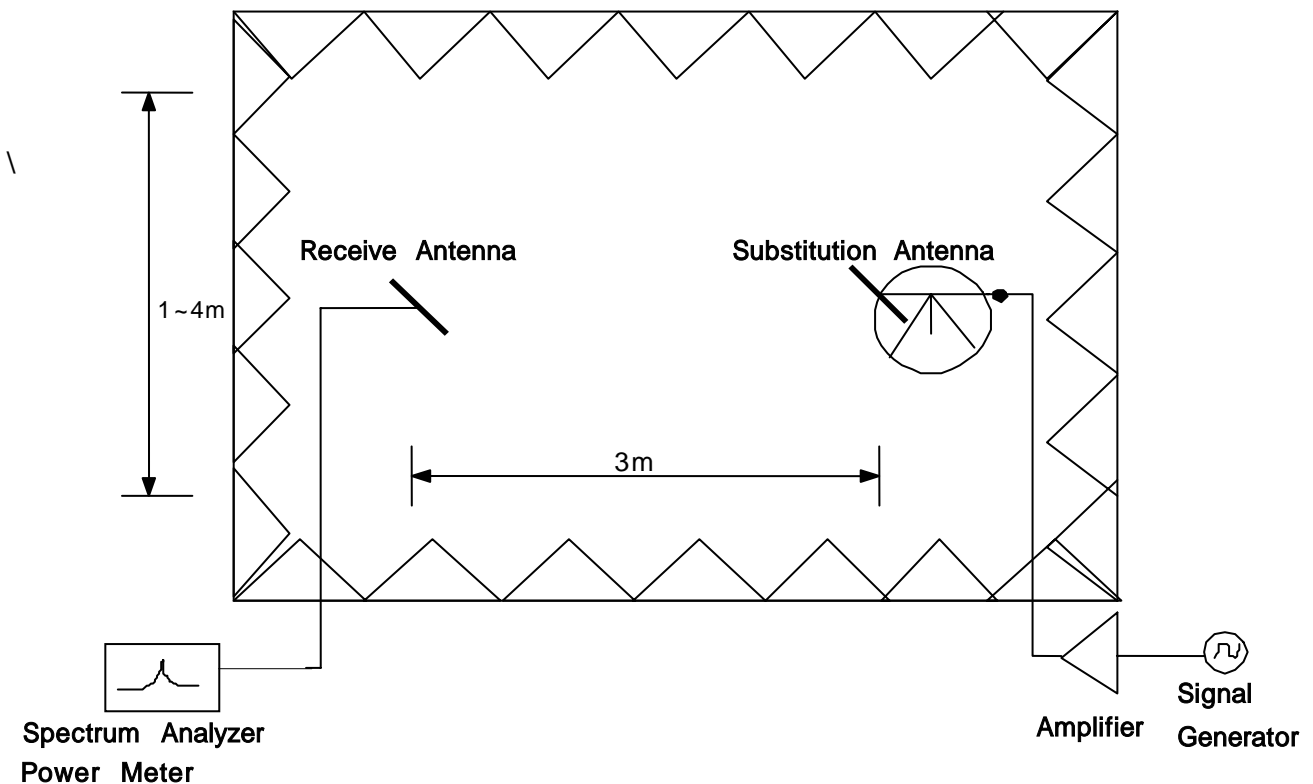


Figure 3. Diagram of ERP/EIRP test Set-up

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

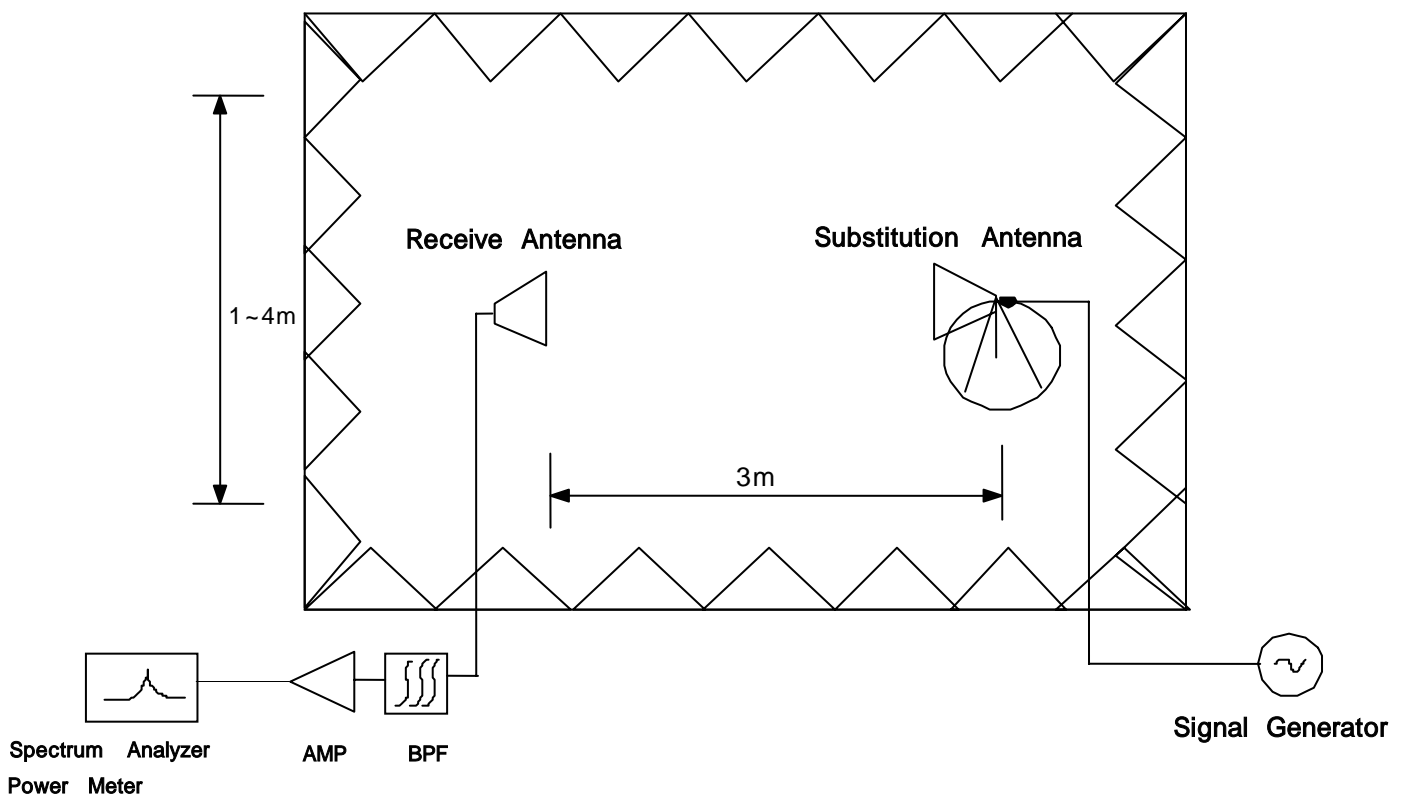


Figure 4. Diagram of Radiated Spurious & Harmonic test Set-up

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* 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 1. 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 (± 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.
 - The artificial load is mounted external to the temperature chamber.

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

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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	23.00	H	-15.74	0.00	-15.74
		V	-13.97	0.00	-13.97
836.52	24.50	H	-14.23	0.00	-14.23
		V	-12.46	0.00	-12.46
848.31	25.00	H	-13.73	0.00	-13.73
		V	-11.96	0.00	-11.96

Result

Frequency (MHz)	From EUT Tested level (dBm)	Polarization (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.70	-15.61	H1	182	23.13	0.206	Standard
836.52	-14.26	H1	179	24.47	0.280	Standard
848.31	-13.39	H1	175	25.34	0.342	Standard

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

Radiated measurements at 3 meters by Substitution Method

6.2 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 : 25.34 dBm = 0.342 W

Modulation Signal : CDMA

$$\text{Limit : } 43 + 10\log_{10}(P) = 38.34 \text{ dBc}$$

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
1013	2	1649.40	-57.15	72.32	H2
	3	2474.10	-63.47	73.62	V
	4	3298.80	-57.77	64.65	H1
	5	4123.50	-66.81	70.12	V
	6	4948.20	-68.39	68.89	H1
	7	5772.90	-	-	-
384	2	1673.04	-60.46	75.31	H1
	3	2509.56	-65.77	75.96	H1
	4	3346.08	-66.47	72.68	V
	5	4182.68	-67.42	71.41	H2
	6	5019.12	-68.95	69.93	H2
	7	5855.64	-	-	-
777	2	1696.62	-61.69	75.77	H2
	3	2544.93	-60.09	70.40	H1
	4	3393.24	-59.56	66.03	H2
	5	4241.55	-65.56	69.85	H2
	6	5089.86	-67.89	69.14	H1
	7	5938.17	-	-	-

Radiated Spurious Emission measurements at 3 meters by Substitution Method



6.3 CDMA Radiated Spurious & Harmonic Conversion Table

Date : June 26, 2007

Test Engineer : SH ONG

Tx Cable loss
 Tx Horn Ant Gain
 Rx Cable loss + HPF Insertion loss + Attenuator
 Pre-Amp gain
 Air loss
 Tested Level from EUT
 = + + -
 = ERP +2.14-

CH	Har	Frequency (MHz)	Tx CL (dB)	Horn Gain (dB)	Tx Level @ (S/G 0dBm)	Tested Level EUT : H (dBm)	Tested Level EUT : V (dBm)	Amplitude of Emission EUT : H (dBm)	Amplitude of Emission EUT : V (dBm)	Result EUT : H (dBc)	Result EUT : V (dBc)
1013	2	1649.40	7.36	8.25	0.89	-57.15	-60.77	-44.84	-48.59	72.32	76.07
	3	2474.10	9.32	9.58	0.26	-65.92	-63.47	-49.12	-46.14	76.60	73.62
	4	3298.80	10.50	9.67	-0.83	-57.77	-64.78	-37.17	-43.50	64.65	70.98
	5	4123.50	12.05	10.59	-1.46	-67.20	-66.81	-43.47	-42.64	70.95	70.12
	6	4948.20	13.02	11.00	-2.02	-68.39	-68.29	-41.41	-41.79	68.89	69.27
	7	5772.90	14.84	11.36	-3.48	-	-	-	-	-	-
384	2	1673.04	7.56	8.25	0.69	-60.46	-62.89	-47.83	-50.33	75.31	77.81
	3	2509.56	9.42	9.58	0.16	-65.77	-66.25	-48.48	-48.55	75.96	76.03
	4	3346.08	10.54	9.67	-0.87	-66.40	-66.47	-45.67	-45.20	73.15	72.68
	5	4182.68	12.26	10.59	-1.67	-67.42	-67.62	-43.93	-44.04	71.41	71.52
	6	5019.12	13.74	11.00	-2.74	-68.95	-68.92	-42.45	-42.60	69.93	70.08
	7	5855.64	14.73	11.36	-3.37	-	-	-	-	-	-
777	2	1696.62	7.59	8.25	0.66	-61.69	-64.00	-48.29	-50.13	75.77	77.61
	3	2544.93	9.48	9.58	0.10	-60.09	-61.71	-42.92	-43.73	70.40	71.21
	4	3393.24	10.62	9.67	-0.95	-59.56	-65.25	-38.55	-43.90	66.03	71.38
	5	4241.55	12.20	10.59	-1.61	-65.56	-66.54	-42.37	-42.70	69.85	70.18
	6	5089.86	13.99	11.00	-2.99	-67.89	-68.48	-41.66	-41.99	69.14	69.47
	7	5938.17	14.94	11.36	-3.58	-	-	-	-	-	-



6.4 Frequency Stability

6.4.1 CDMA Frequency Stability Table

Operating Frequency : 836,520,000 Hz

Channel : 384

Reference Voltage : 3.7VDC

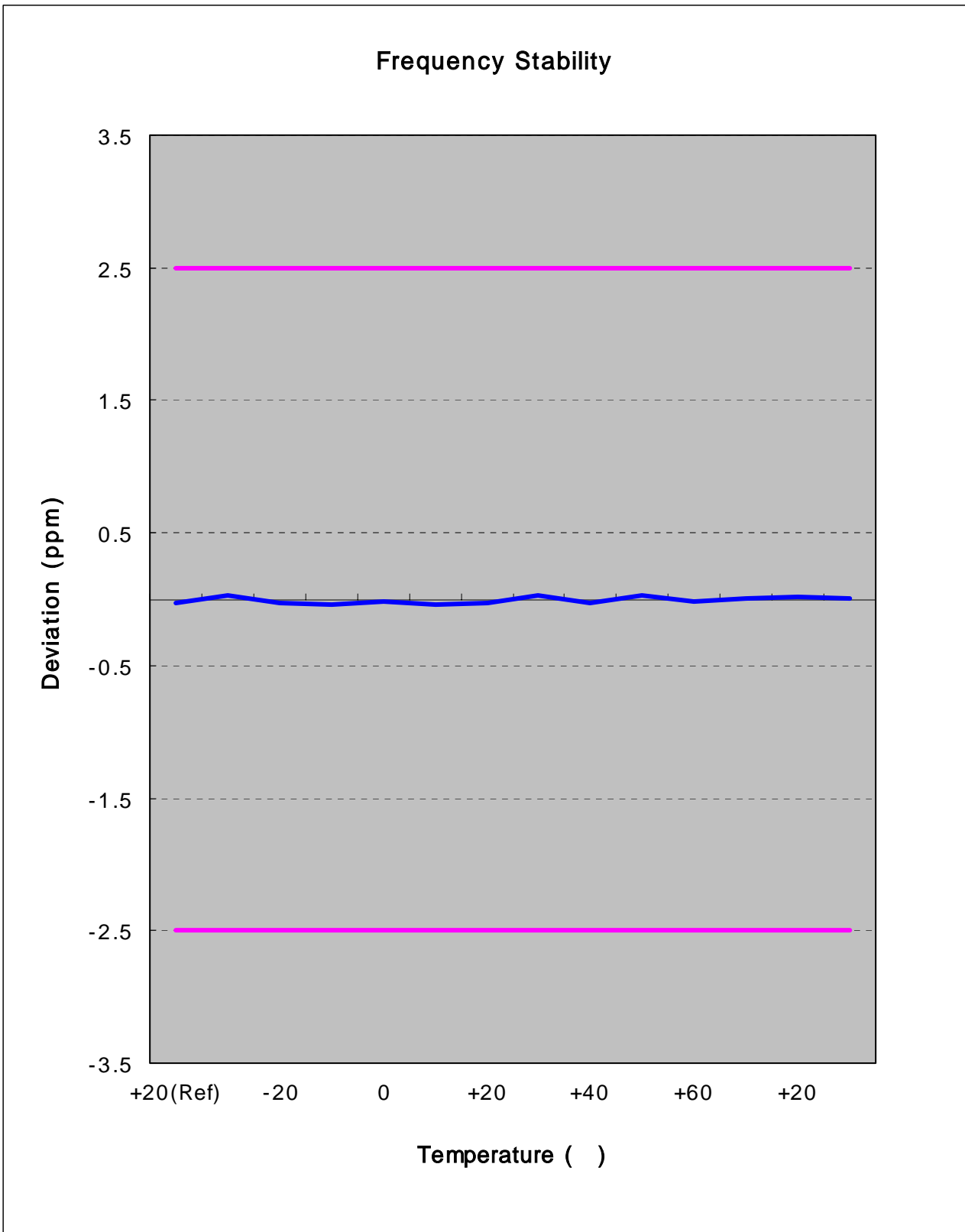
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (VDC)	Temp. (°C)	Frequency Error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-23.83	836,519,976	-0.000003	-0.028
100%		-30	22.78	836,520,023	0.000003	0.027
100%		-20	-22.63	836,519,977	-0.000003	-0.027
100%		-10	-32.75	836,519,967	-0.000004	-0.039
100%		0	-14.80	836,519,985	-0.000002	-0.018
100%		+10	-33.48	836,519,967	-0.000004	-0.040
100%		+20	-23.83	836,519,976	-0.000003	-0.028
100%		+30	25.60	836,520,026	0.000003	0.031
100%		+40	-24.58	836,519,975	-0.000003	-0.029
100%		+50	24.34	836,520,024	0.000003	0.029
100%		+60	-13.39	836,519,987	-0.000002	-0.016
85%	3.25	+20	8.06	836,520,008	0.000001	0.010
115%	4.26	+20	10.96	836,520,011	0.000001	0.013
Batt. Endpoint	3.25	+20	8.06	836,520,008	0.000001	0.010

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

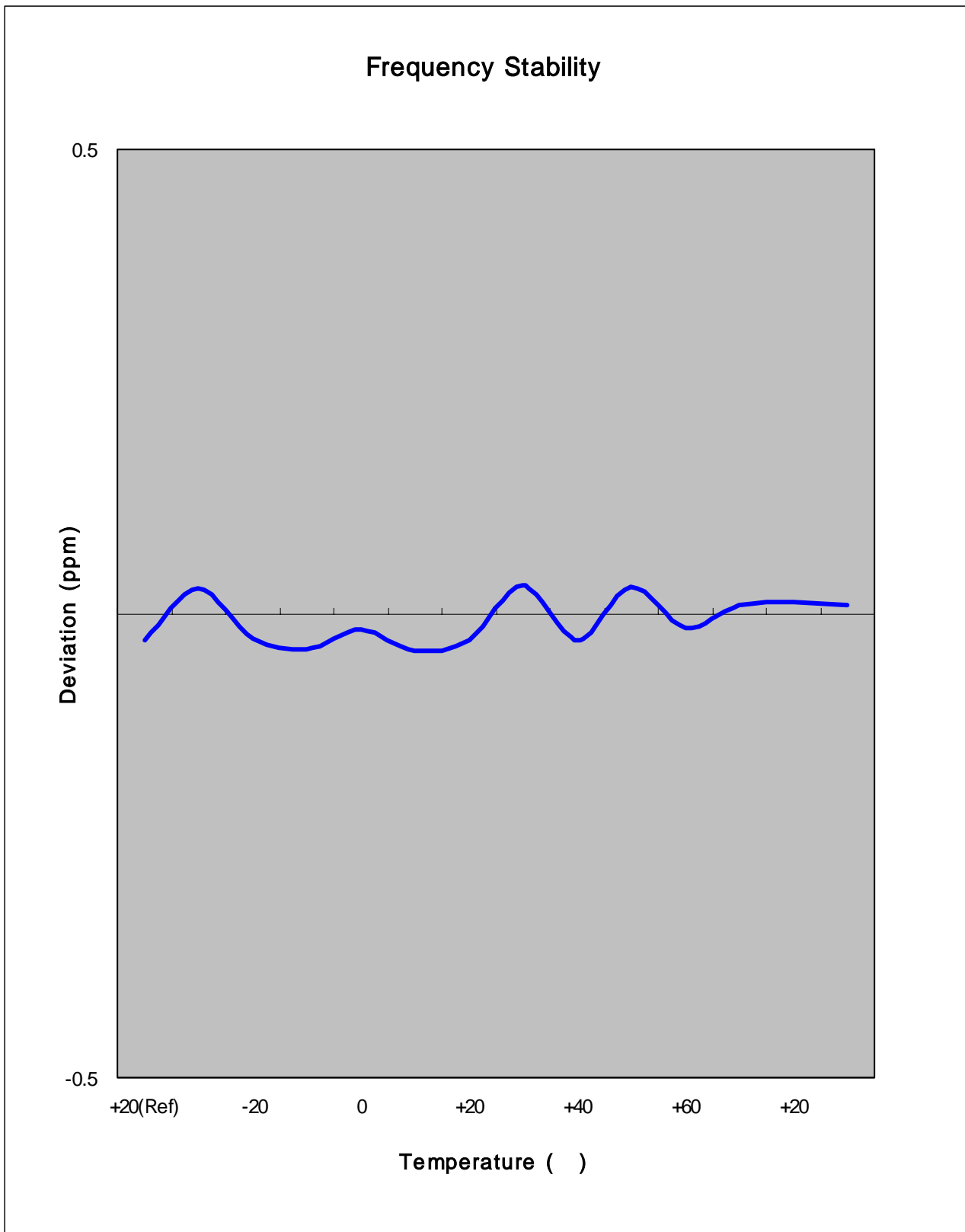
The EUT is tested down to the battery end point

6.4.2 CDMA Frequency Stability Graph



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Zoom In



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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)

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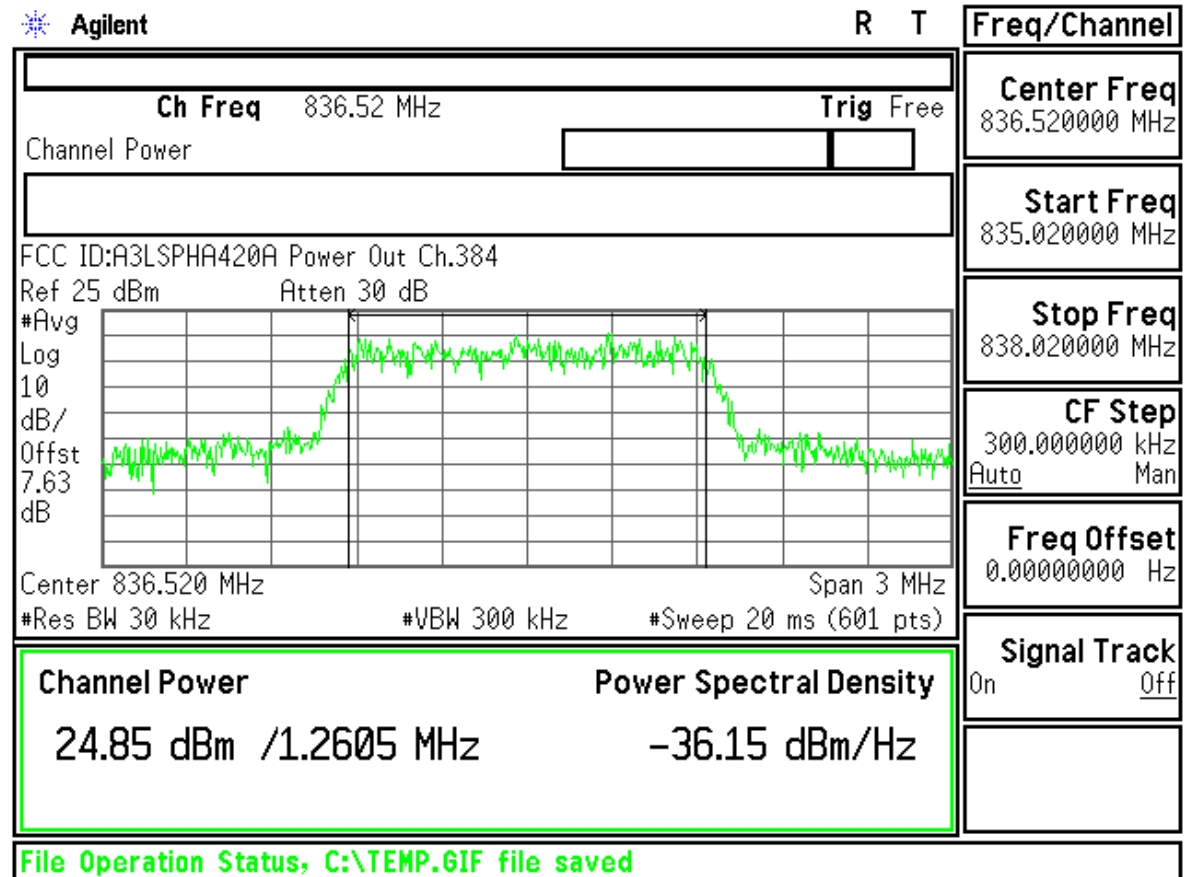
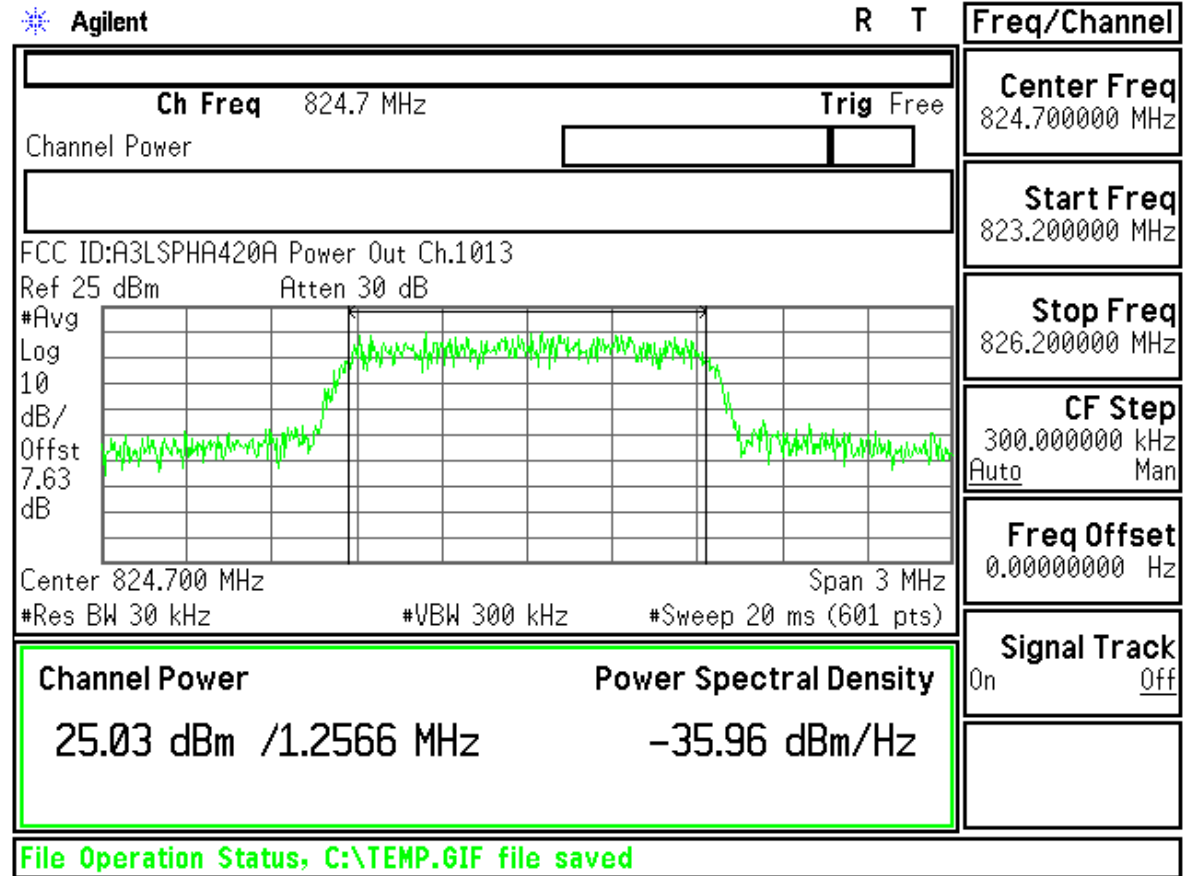
8. CONCLUSION

The data collected shows that the SAMSUNG Dual-Band CDMA Phone with Bluetooth
FCC ID : A3LSPHA420A complies with all the requirements of Parts 2, 22 of the FCC Rules.

- End of page -



9. TEST PLOTS



Agilent

R T

Freq/Channel

Ch Freq 848.31 MHz Trig Free

Channel Power

Center Freq
848.310000 MHz

Start Freq
846.810000 MHz

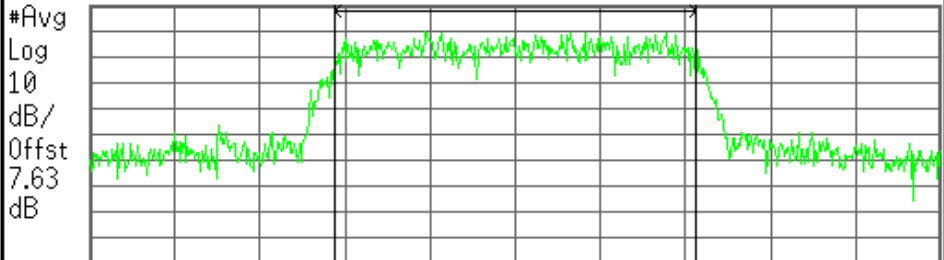
Stop Freq
849.810000 MHz

CF Step
300.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

FCC ID:A3LSPHA420A Power Out Ch.777
Ref 25 dBm Atten 30 dB



Center 848.310 MHz Span 3 MHz
#Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (601 pts)

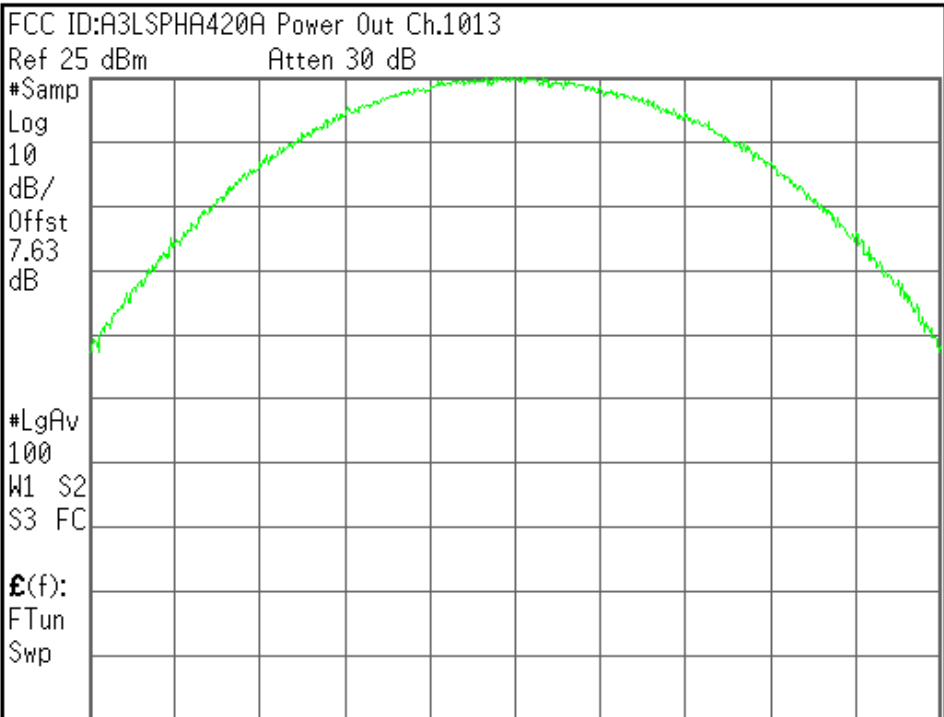
Channel Power	Power Spectral Density
25.00 dBm /1.2684 MHz	-36.04 dBm/Hz

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

Agilent

R T

Freq/Channel



FCC ID:A3LSPHA420A Power Out Ch.1013
Ref 25 dBm Atten 30 dB

#Samp Log 10 dB/Offst 7.63 dB

#LgAv 100
W1 S2
S3 FC

£(f): FTun Swp

Center 824.70 MHz Span 10 MHz
#Res BW 3 MHz #VBW 3 MHz Sweep 1 ms (601 pts)

Center Freq
824.700000 MHz

Start Freq
819.700000 MHz

Stop Freq
829.700000 MHz

CF Step
1.00000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

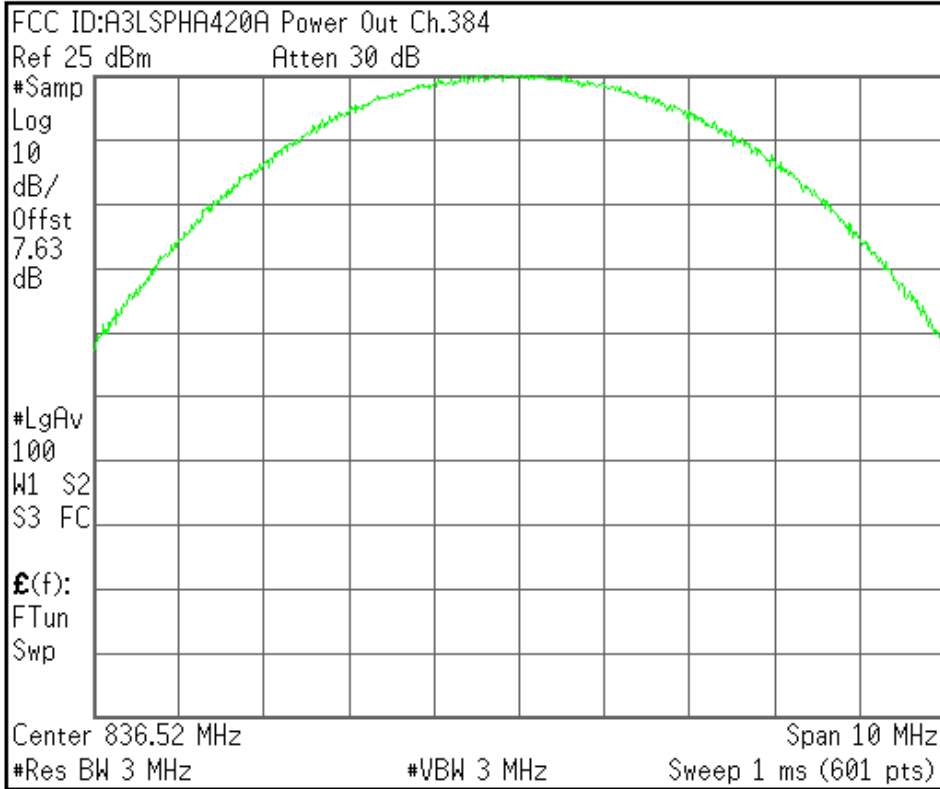
Signal Track
On Off

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

Agilent

R T

Freq/Channel



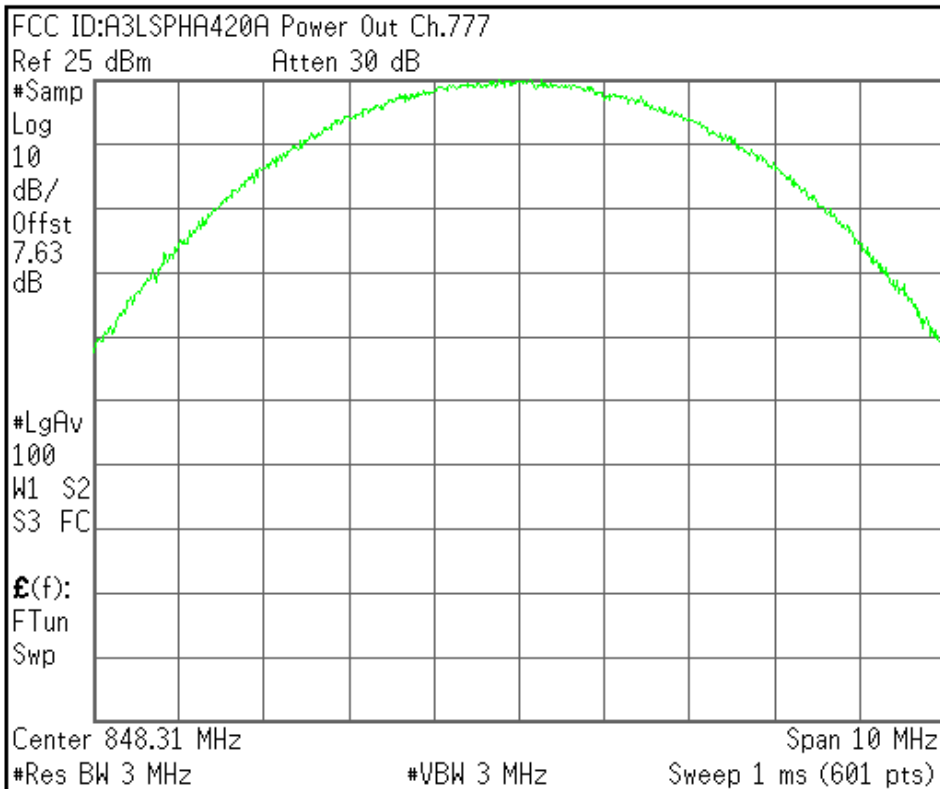
Center Freq 836.520000 MHz
Start Freq 831.520000 MHz
Stop Freq 841.520000 MHz
CF Step 1.00000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



Center Freq 848.310000 MHz
Start Freq 843.310000 MHz
Stop Freq 853.310000 MHz
CF Step 1.00000000 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

Ch Freq 824.7 MHz Trig Free

Occupied Bandwidth

Center Freq
824.700000 MHz

Start Freq
823.200000 MHz

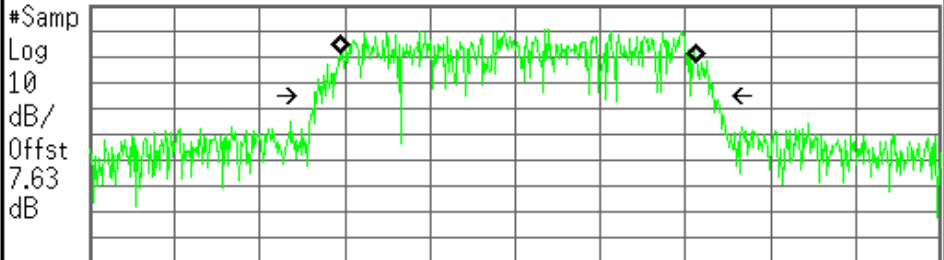
Stop Freq
826.200000 MHz

CF Step
300.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

FCC ID:A3LSPHA420A 0BW Ch.1013
Ref 25 dBm Atten 30 dB



Center 824.700 MHz Span 3 MHz
#Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
1.2566 MHz	x dB	-26.00 dB
Transmit Freq Error		7.303 kHz
x dB Bandwidth		1.405 MHz*

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

Agilent

R T

Freq/Channel

Ch Freq 836.52 MHz Trig Free

Occupied Bandwidth

Center Freq
836.520000 MHz

Start Freq
835.020000 MHz

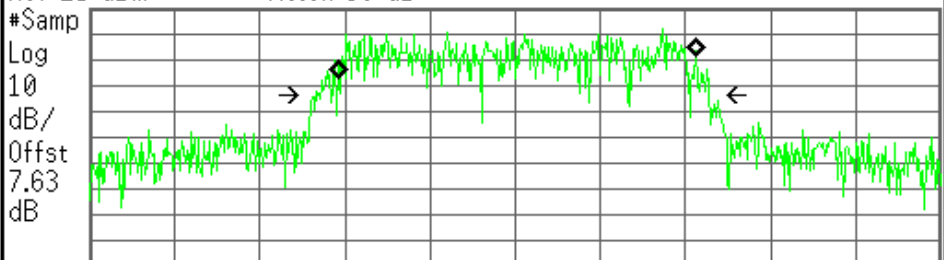
Stop Freq
838.020000 MHz

CF Step
300.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

FCC ID:A3LSPHA420A 0BW Ch.384
Ref 25 dBm Atten 30 dB



Center 836.520 MHz Span 3 MHz
#Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (601 pts)

Occupied Bandwidth	Occ BW % Pwr	99.00 %
1.2605 MHz	x dB	-26.00 dB
Transmit Freq Error		3.816 kHz
x dB Bandwidth		1.389 MHz*

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

Agilent

R T

Freq/Channel

Ch Freq 848.31 MHz Trig Free

Occupied Bandwidth

Center Freq
848.310000 MHz

Start Freq
846.810000 MHz

Stop Freq
849.810000 MHz

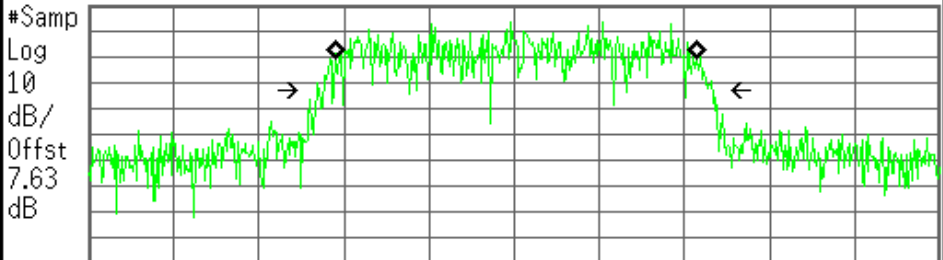
CF Step
300.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

FCC ID:A3LSPHA420A 0BW Ch.777

Ref 25 dBm Atten 30 dB



Center 848.310 MHz Span 3 MHz
#Res BW 30 kHz #VBW 300 kHz #Sweep 20 ms (601 pts)

Occupied Bandwidth 1.2684 MHz

Occ BW % Pwr 99.00 %

x dB -26.00 dB

Transmit Freq Error 5.510 kHz

x dB Bandwidth 1.396 MHz*

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

Agilent

R T

Freq/Channel

FCC ID:A3LSPHA420A Rx Spurious Emission Mkr1 885.58 MHz
Ref -50 dBm #Atten 0 dB -91.50 dBm

Center Freq
881.500000 MHz

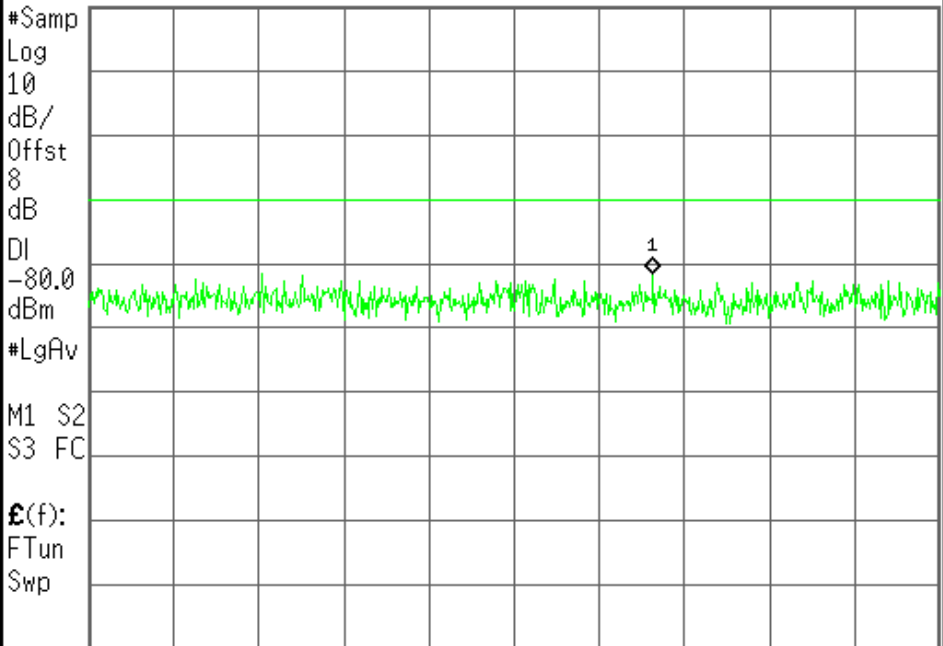
Start Freq
869.000000 MHz

Stop Freq
894.000000 MHz

CF Step
2.50000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off



Center 881.50 MHz Span 25 MHz
#Res BW 30 kHz #VBW 300 kHz #Sweep 1 s (601 pts)

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

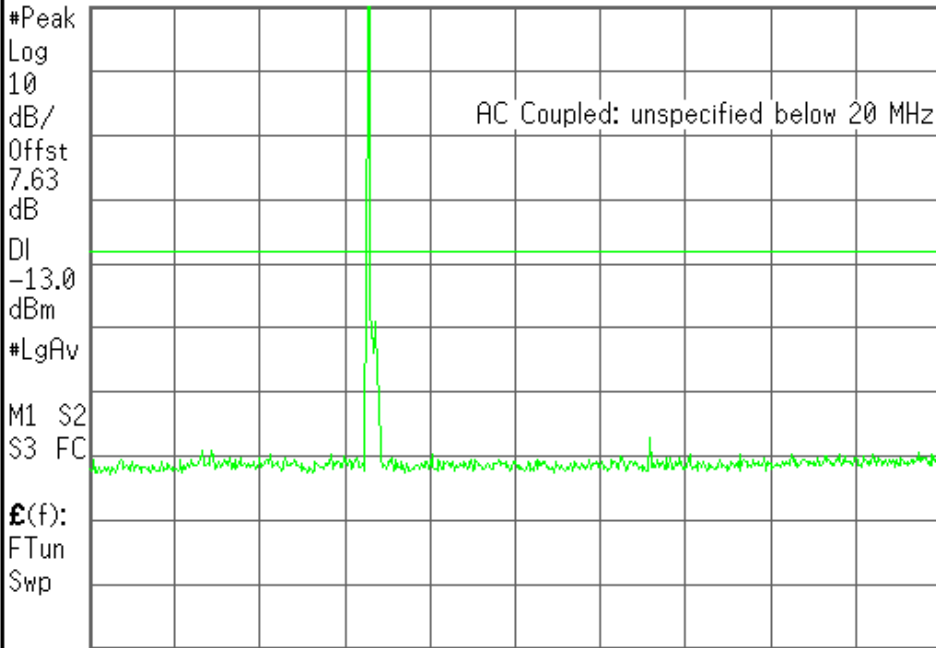
Agilent

R T

Freq/Channel

FCC ID:A3LSPHA420A Cond Spur Ch.1013

Ref 25 dBm Atten 30 dB



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

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

Invalid suffix

Agilent

R T

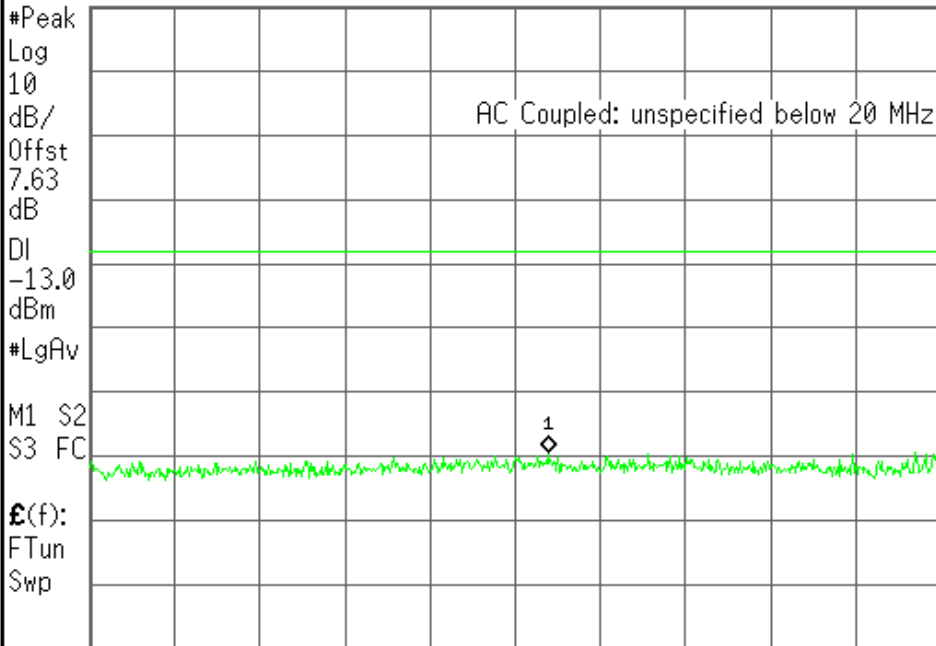
Freq/Channel

FCC ID:A3LSPHA420A Cond Spur Ch.1013

Mkr1 394.7 MHz

Ref 25 dBm Atten 30 dB

-44.22 dBm



Center Freq
367.350000 MHz

Start Freq
10.0000000 MHz

Stop Freq
724.700000 MHz

CF Step
71.4700000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

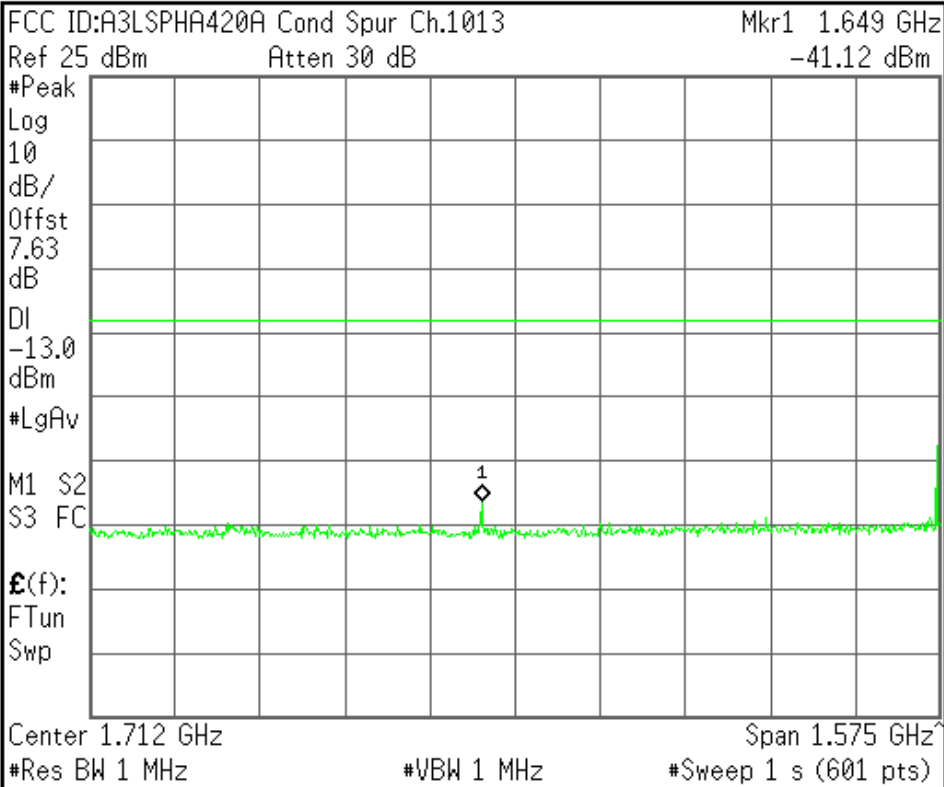
Center 367.4 MHz Span 714.7 MHz
#Res BW 1 MHz #VBW 1 MHz Sweep 1.2 ms (601 pts)

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

Agilent

R T

Freq/Channel



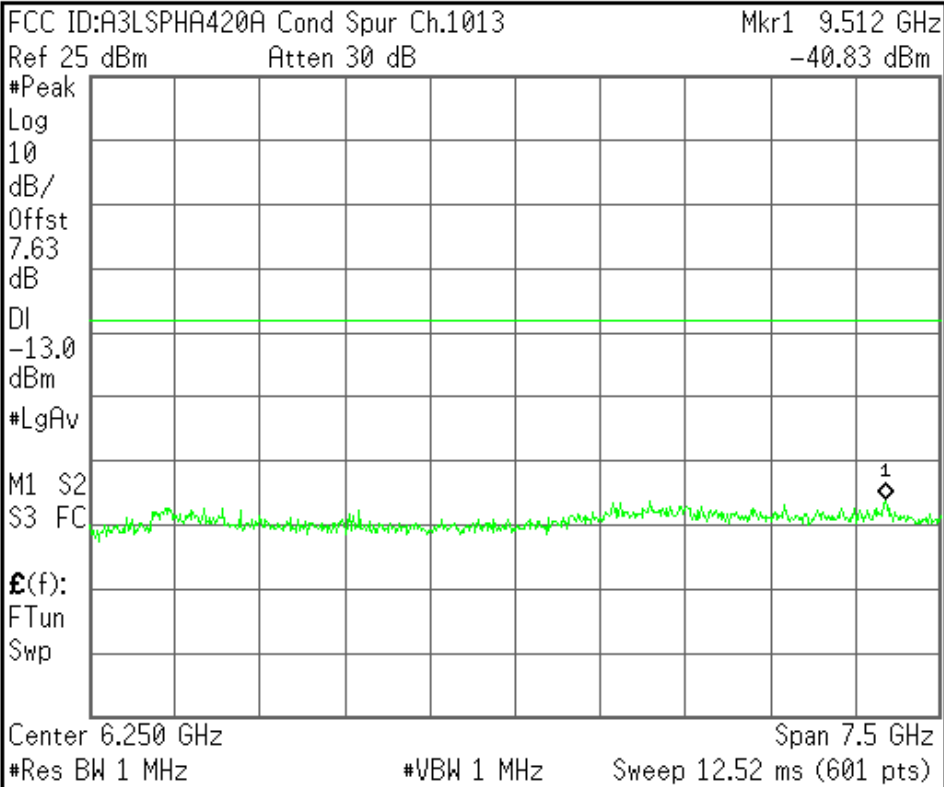
Center Freq 1.71235000 GHz
Start Freq 924.700000 MHz
Stop Freq 2.50000000 GHz
CF Step 157.530000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Suffix not allowed

Agilent

R T

Freq/Channel



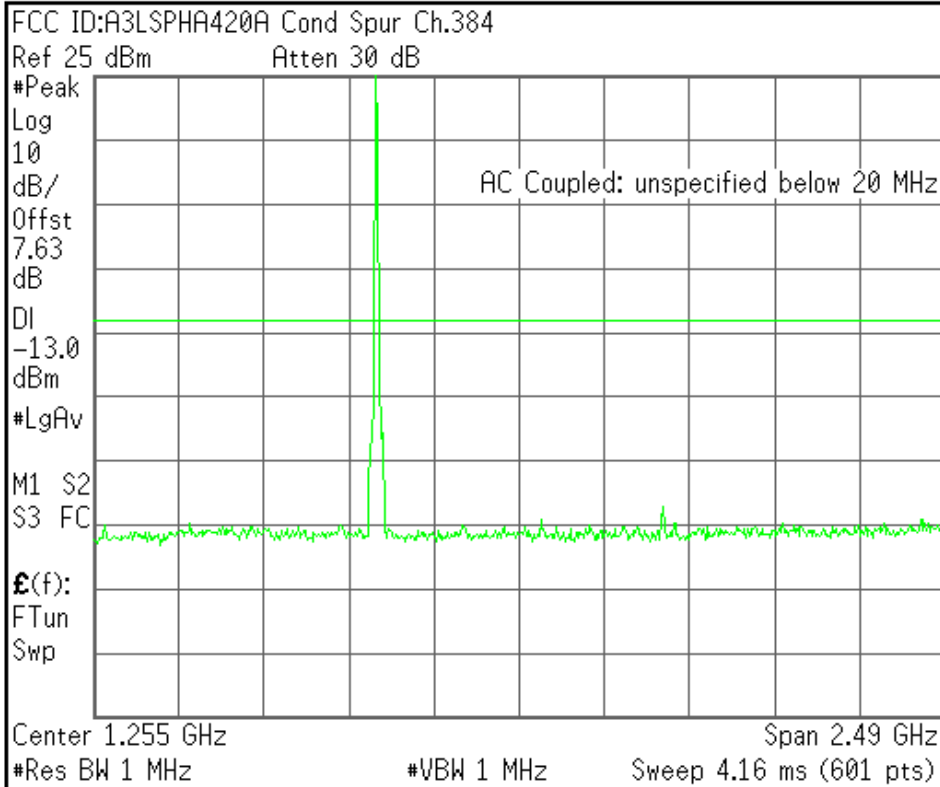
Center Freq 6.25000000 GHz
Start Freq 2.50000000 GHz
Stop Freq 10.00000000 GHz
CF Step 750.000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



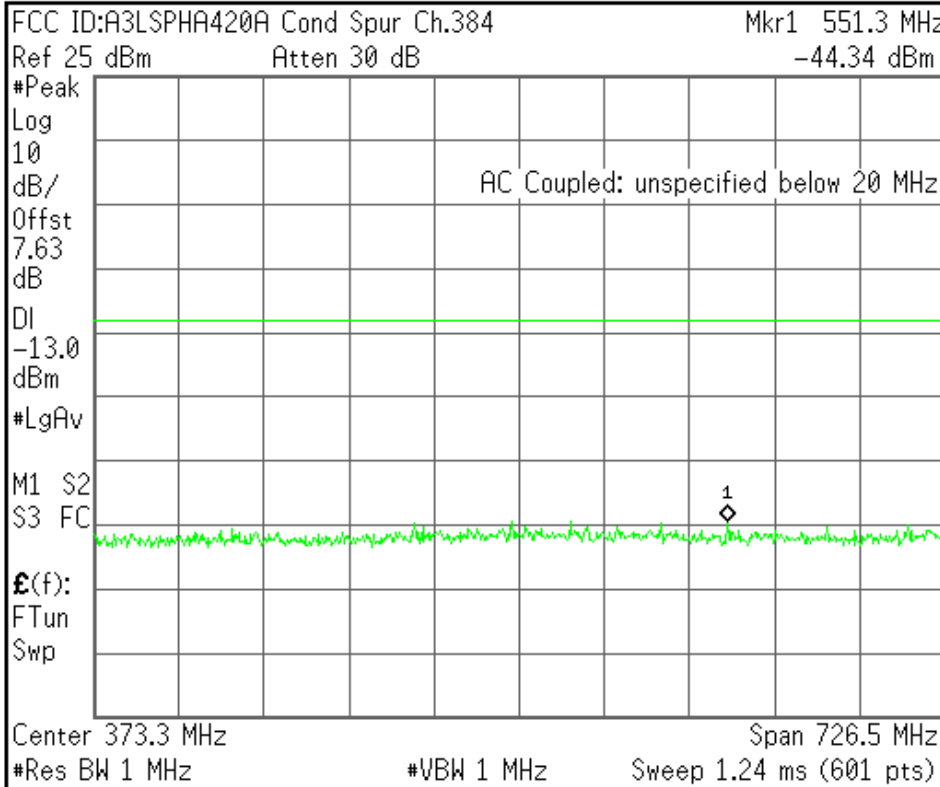
Center Freq 1.25500000 GHz
Start Freq 10.00000000 MHz
Stop Freq 2.50000000 GHz
CF Step 249.0000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



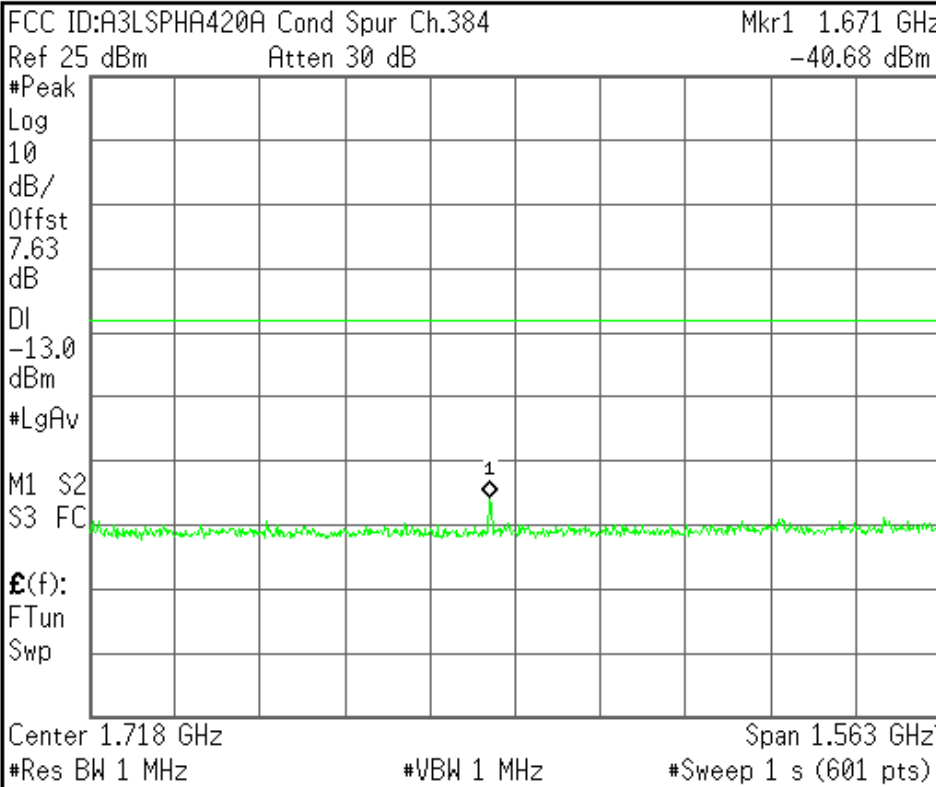
Center Freq 373.260000 MHz
Start Freq 10.00000000 MHz
Stop Freq 736.520000 MHz
CF Step 72.6520000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



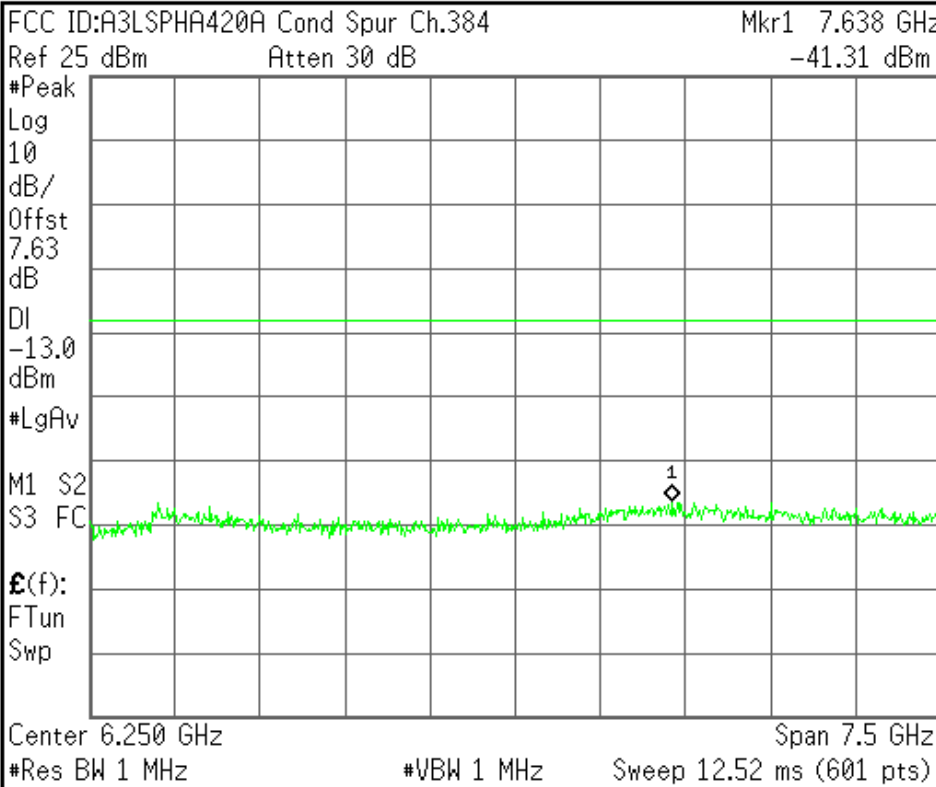
Center Freq 1.71826000 GHz
Start Freq 936.520000 MHz
Stop Freq 2.50000000 GHz
CF Step 156.348000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Suffix not allowed

Agilent

R T

Freq/Channel



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

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

Agilent

R T

Freq/Channel

FCC ID:A3LSPHA420A Cond Spur Ch.777

Ref 25 dBm Atten 30 dB

#Peak

Log

10

dB/

Offst

7.63

dB

DI

-13.0

dBm

#LgAv

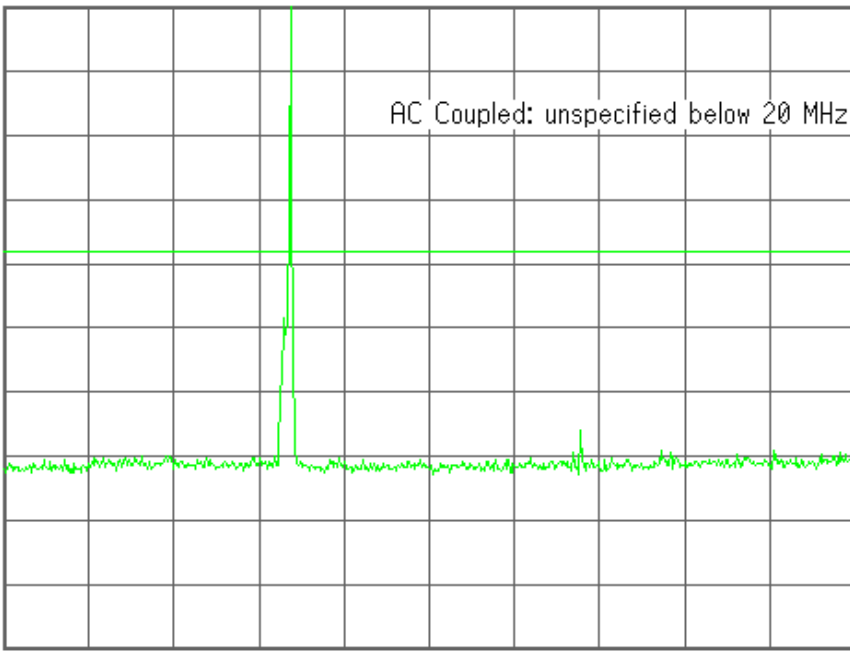
M1 S2

S3 FC

$\mathcal{E}(f)$:

FTun

Swp



Center 1.255 GHz

Span 2.49 GHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 4.16 ms (601 pts)

Center Freq
1.25500000 GHz

Start Freq
10.00000000 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

FCC ID:A3LSPHA420A Cond Spur Ch.777

Mkr1 411.1 MHz

Ref 25 dBm Atten 30 dB

-44.71 dBm

#Peak

Log

10

dB/

Offst

7.63

dB

DI

-13.0

dBm

#LgAv

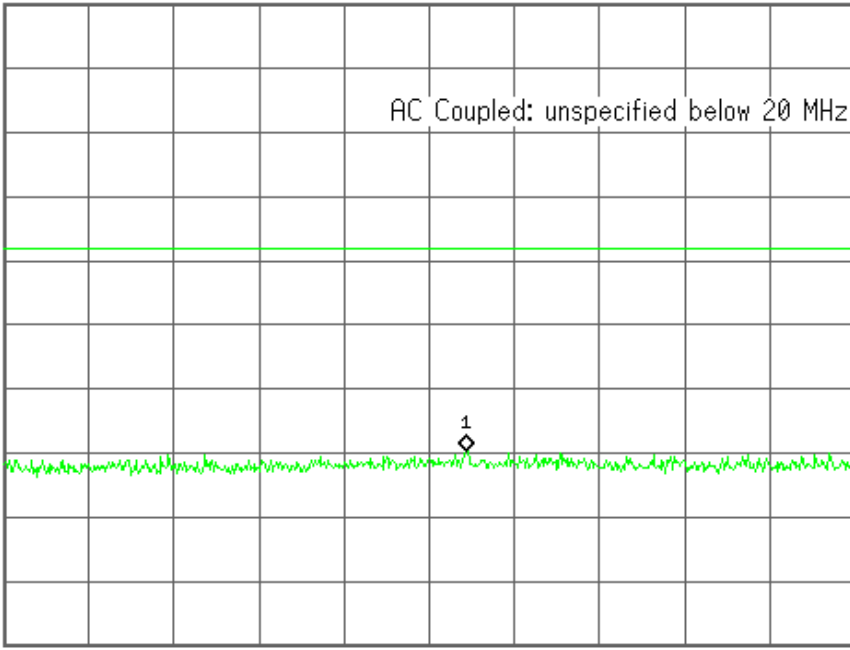
M1 S2

S3 FC

$\mathcal{E}(f)$:

FTun

Swp



Center 379.2 MHz

Span 738.3 MHz

#Res BW 1 MHz

#VBW 1 MHz

Sweep 1.24 ms (601 pts)

Center Freq
379.155000 MHz

Start Freq
10.00000000 MHz

Stop Freq
748.310000 MHz

CF Step
73.8310000 MHz
Auto Man

Freq Offset
0.00000000 Hz

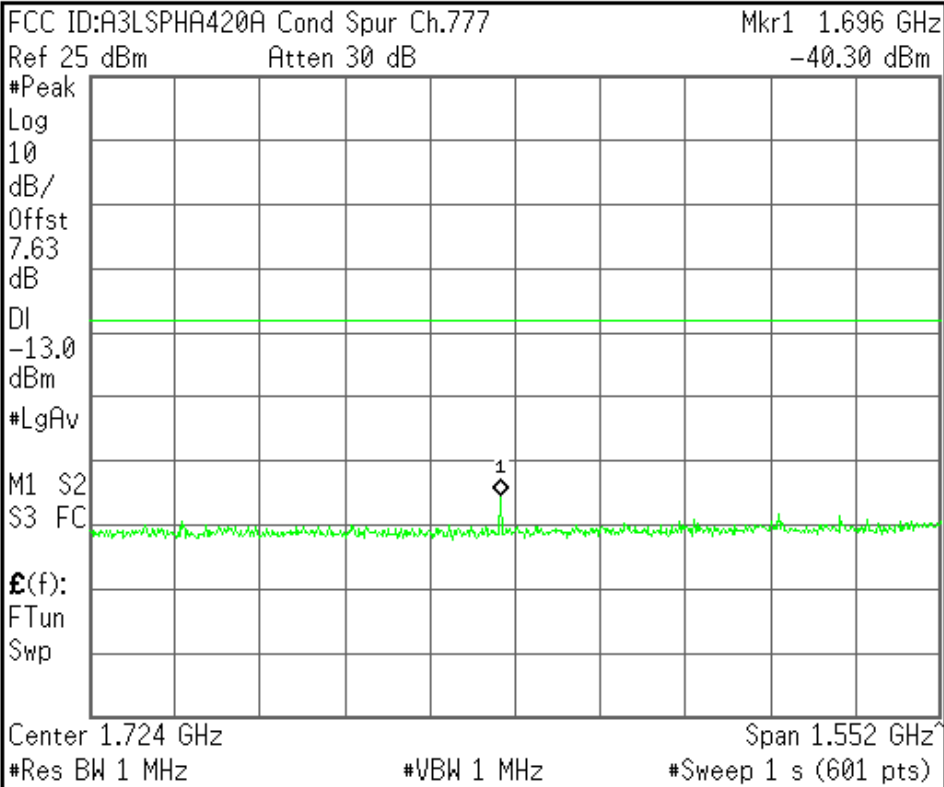
Signal Track
On Off

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

Agilent

R T

Freq/Channel



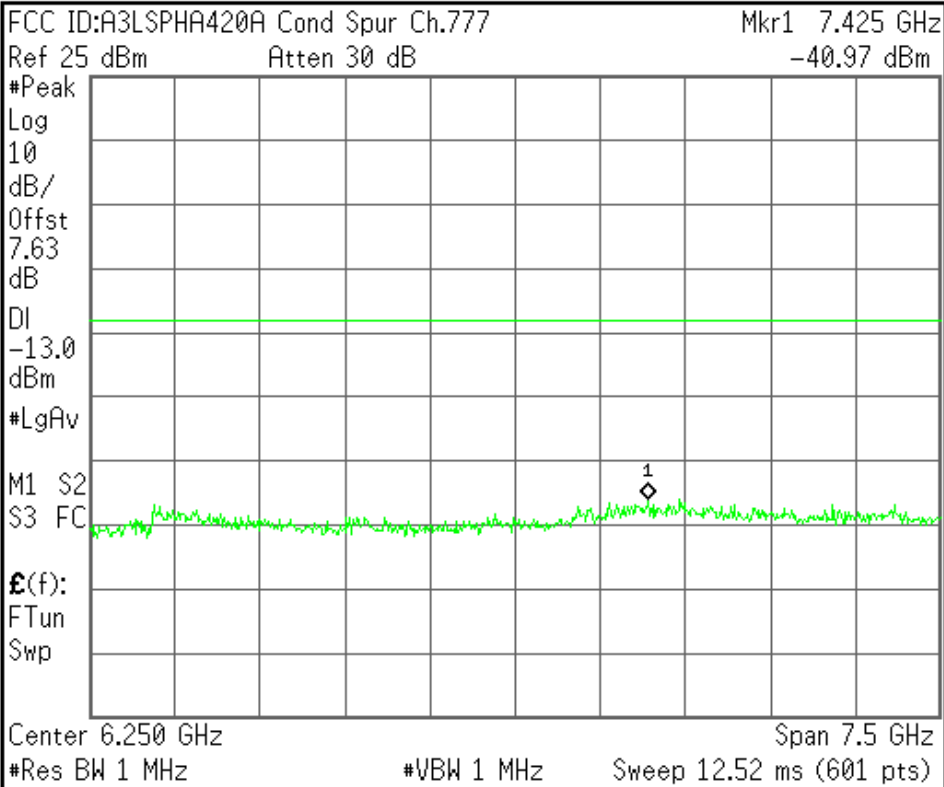
Center Freq 1.72415500 GHz
Start Freq 948.310000 MHz
Stop Freq 2.50000000 GHz
CF Step 155.169000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Suffix not allowed

Agilent

R T

Freq/Channel



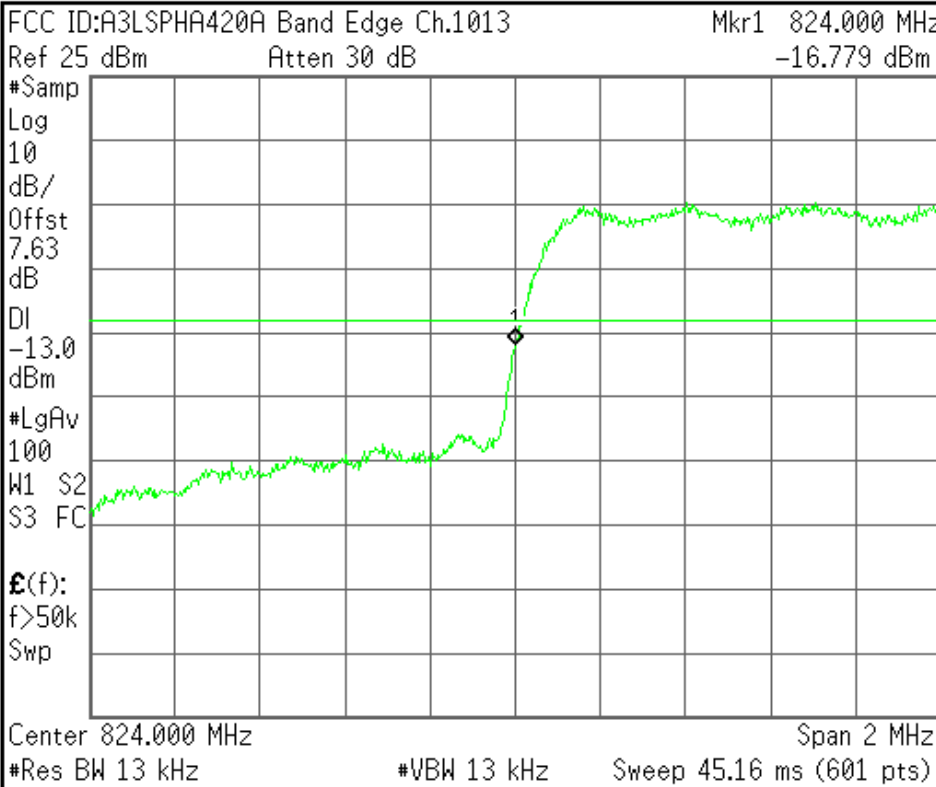
Center Freq 6.25000000 GHz
Start Freq 2.50000000 GHz
Stop Freq 10.00000000 GHz
CF Step 750.000000 MHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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

Agilent

R T

Freq/Channel



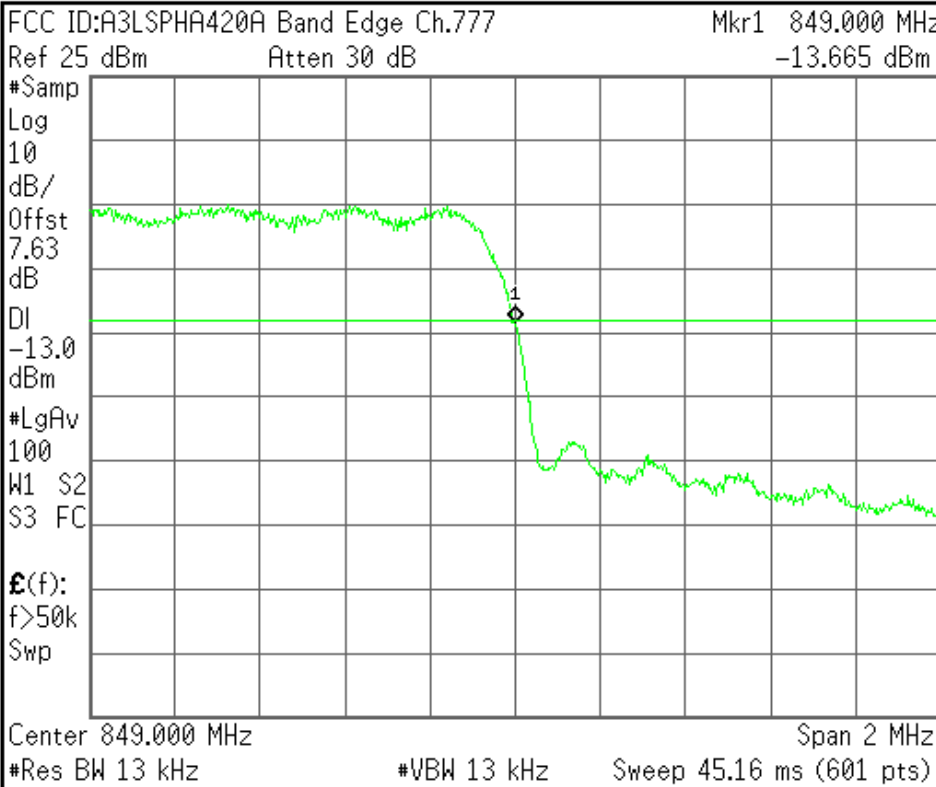
Center Freq 824.000000 MHz
Start Freq 823.000000 MHz
Stop Freq 825.000000 MHz
CF Step 200.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Invalid suffix

Agilent

R T

Freq/Channel



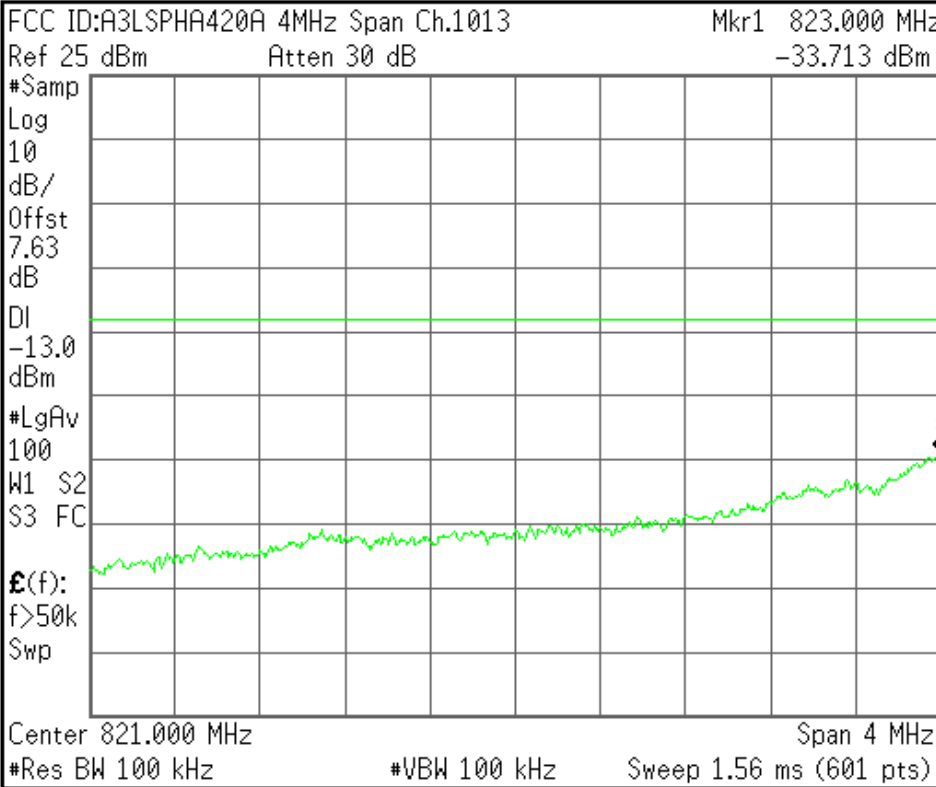
Center Freq 849.000000 MHz
Start Freq 848.000000 MHz
Stop Freq 850.000000 MHz
CF Step 200.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

Invalid suffix

Agilent

R T

Freq/Channel



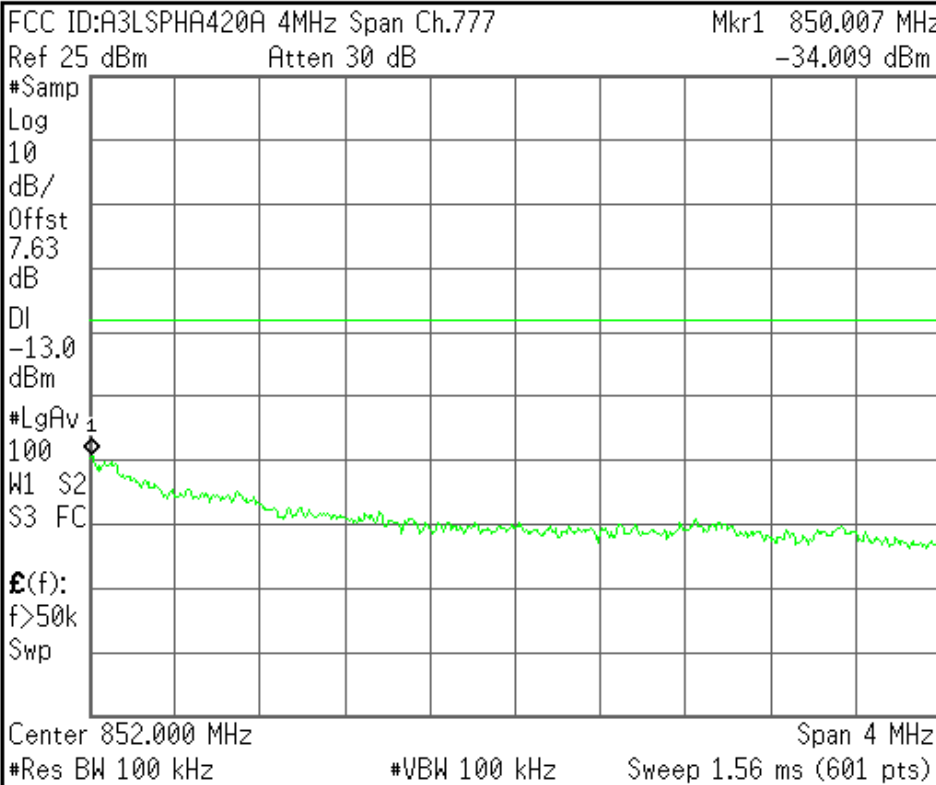
Center Freq 823.000000 MHz
Start Freq 819.000000 MHz
Stop Freq 823.000000 MHz
CF Step 400.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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R T

Freq/Channel



Center Freq 852.000000 MHz
Start Freq 850.000000 MHz
Stop Freq 854.000000 MHz
CF Step 400.000000 kHz Auto Man
Freq Offset 0.00000000 Hz
Signal Track On Off

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