






MSUNG ELECTRONICS Co., Ltd.,
Regulatory Compliance Team
IT R&D Center
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FCC CFR47 PART 24 SUBPART CERTIFICATION TEST DATA

Model Tested: SGH-P500
FCC ID (Requested): A3LSGHP500
Report No: FA-012-R1
Date issued: September 03, 2003

- Abstract -

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

Prepared By		Date	Sep. 03, 2003.
	JH NAM - Test Engineer		
Checked By		Date	Sep. 8, 2003
	CW PARK - Manager		
Authorized By		Date	Sep. 8, 2003
	JK CHOI - Senior Manager		

Test Equipment

Name of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26	836119/101	2004-08-19
	E4440A(3Hz~26.5GHz)	MY41000236	2003-11-25
	E4440A(3Hz~26.5GHz)	MY41000233	2003-11-25
Signal Generator	SMIQ03B(300KHz~3.3GHz)	83824/021	2004-01-20
	SMR20(1GHz~20GHz)	835197/030	2004-01-20
Power Meter	E4419B	GB41293846	2003-11-26
Power Sensor	8481B(1mW~25W)	3318A10325	2003-09-26
	8485A(1uW~100mW)	3318A19924	2003-09-26
Amplifier	5S1G4(0.8~4.2GHz, 5W)	304866	2003-11-26
Pre-Amplifier	8449B(1~26.5GHz, 30dB)	3008A00691	2004-01-21
Communication test set	8960	GB42230535	2003-12-02
	8960	GB42360886	2004-01-09
Antenna Master	MA0001	ANT0967	Not Required
Controller	HD100	100/756	Not Required
Environmental Chamber	SH-241	92000548	2003-12-12
	SH-241	92000549	2003-12-12
Horn Antenna	HF906(1GHz~18GHz)	360306/011	2004-02-10
	HF906(1GHz~18GHz)	100134	2004-03-31
Dipole Antenna	3121C-DB4	9007-587	2003-11-08
	3121C-DB4	9007-588	2004-03-21
Receive Antenna	HO040	353255/020	2004-04-08
Attenuator	8494A(0~11dB)	3308A31997	2004-01-20
	8496A(0~110dB)	3308A14426	2004-01-20
Directional Coupler	4278-311-2(0.1~1GHz)	B3679637	2004-01-22
	4278-111-2(1~2GHz)	B103DC8722	2004-01-22
High Pass Filter	WHK1.0/15G-10SS(1~15GHz)	1	Not Required
	WHV1.0/15G-10SS(1~15GHz)	1	Not Required
	WHK/3.5/18G-10SS(3.5~18GHz)	3	Not Required
	WHK/3.5/18G-10SS(3.5~18GHz)	4	Not Required
Shielded Semi-Anechoic Chamber	RF0002	ANT0001	2004-01-21

FCC ID : A3LSGHP500

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

Supply Voltage: 3.7 VDC

Modulation: PCS GSM

Reference level

Frequency (MHz)	Output (dBm)	Polarization	S/A (dBm)	Ant gain (dBi)	Ref level (dBm)
1880.00	27.00	H	-12.27	8.18	-20.45
		V	-12.30	8.18	-20.48

Result

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-16.22	H2	24	31.23	1.327	Standard
1880.00	-16.15	H1	124	31.30	1.349	Standard
1909.80	-16.93	H1	125	30.52	1.127	Standard

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-16.16	H1	120	31.29	1.346	Slim
1880.00	-15.96	H1	112	31.49	1.409	Slim
1909.80	-16.80	H1	118	30.65	1.161	Slim

Radiated Spurious Emission Measurements by Substitution Method

according to ANSI/TIA/EIA-603-A-2001, Aug. 15, 2001:

The EUT was placed on a wooden turn table 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 signals, a peak detector is used, with RBW = VBW = 3 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. 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.

FCC ID : A3LSGHP500

Field Stength of SPURIOUS Radiation

Operating Frequency : 1850.2 MHz

Measured Output Power : 31.49 dBm = 1.409 W

Modulation Signal : PCS GSM

Limit : $43+10\log_{10}(W) = 44.49$ dBc

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-46.60	H1	55.13
	3	5550.60	-57.09	H2	60.53
	4	7400.80	-	-	-
	5	9251.00	-	-	-
	6	11101.20	-	-	-
	7	12951.40	-	-	-
	8	14801.60	-	-	-
661	2	3760.00	-47.49	H1	55.64
	3	5640.00	-53.77	H2	57.42
	4	7520.00	-	-	-
	5	9400.00	-	-	-
	6	11280.00	-	-	-
	7	13160.00	-	-	-
	8	15040.00	-	-	-
810	2	3819.60	-48.55	V	56.45
	3	5729.40	-55.16	H2	59.28
	4	7639.20	-	-	-
	5	9549.00	-	-	-
	6	11458.80	-	-	-
	7	13368.60	-	-	-
	8	15278.40	-	-	-

Radiated Spurious & Harmonic Conversion Table

Date ; 2003 . 08 . 22 ~ 08 . 27

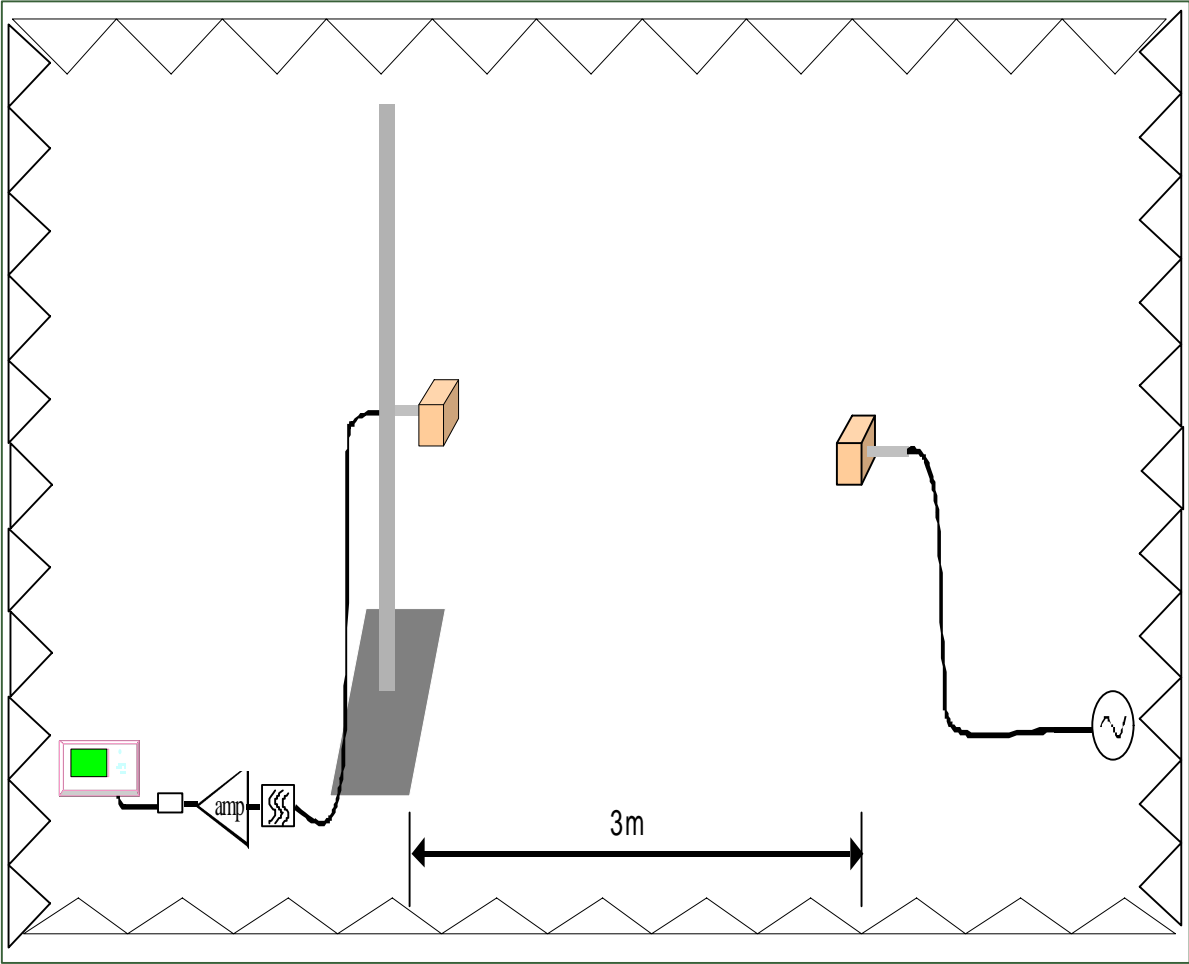
Test Engineer : J.H. Nam

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

FCC ID : A3LSGHP500 Mode : GSM1900 EIRP : 31.49

CH	Har	Frequency (MHz)	Tx CL (dB)	Horn Gain (dB)	Tx Level @ (S/G 10dBm)	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)
512	2	3700.40	11.14	8.87	7.73	-46.60	-48.32	-23.64	-25.18	55.13	56.67
	3	5550.60	13.91	10.60	6.69	-57.09	-62.76	-29.04	-34.90	60.53	66.39
	4	7400.80	16.68	10.83	4.15	-	-	-	-	-	-
	5	9251.00	19.37	11.56	2.19	-	-	-	-	-	-
	6	11101.20	22.51	12.79	0.28	-	-	-	-	-	-
	7	12951.40	22.99	12.66	-0.33	-	-	-	-	-	-
	8	14801.60	24.52	12.69	-1.83	-	-	-	-	-	-
661	2	3760.00	11.13	8.98	7.85	-47.49	-48.09	-24.15	-24.66	55.64	56.15
	3	5640.00	14.10	10.60	6.50	-53.77	-58.37	-25.93	-30.78	57.42	62.27
	4	7520.00	17.05	10.83	3.78	-	-	-	-	-	-
	5	9400.00	19.61	11.60	1.99	-	-	-	-	-	-
	6	11280.00	22.92	12.93	0.01	-	-	-	-	-	-
	7	13160.00	23.62	12.64	-0.98	-	-	-	-	-	-
	8	15040.00	25.04	12.70	-2.34	-	-	-	-	-	-
810	2	3819.60	11.28	8.98	7.70	-49.16	-48.55	-26.16	-24.96	57.65	56.45
	3	5729.40	14.12	10.73	6.61	-55.16	-57.93	-27.79	-30.03	59.28	61.52
	4	7639.20	17.47	10.87	3.40	-	-	-	-	-	-
	5	9549.00	19.92	11.67	1.75	-	-	-	-	-	-
	6	11458.80	21.77	12.90	1.13	-	-	-	-	-	-
	7	13368.60	23.26	12.65	-0.61	-	-	-	-	-	-
	8	15278.40	25.17	12.73	-2.44	-	-	-	-	-	-

**Radiated Spurious & Harmonic
Configuration for Calibration**



- Tx Cable loss
- Horn Ant Gain
- Rx Cable loss + HPF Insertion loss + Attenuator
- Pre-Amp gain
- Air loss

FCC ID : A3LSGHP500

Frequency Stability (PCS GSM)

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference voltage : 3.7VDC

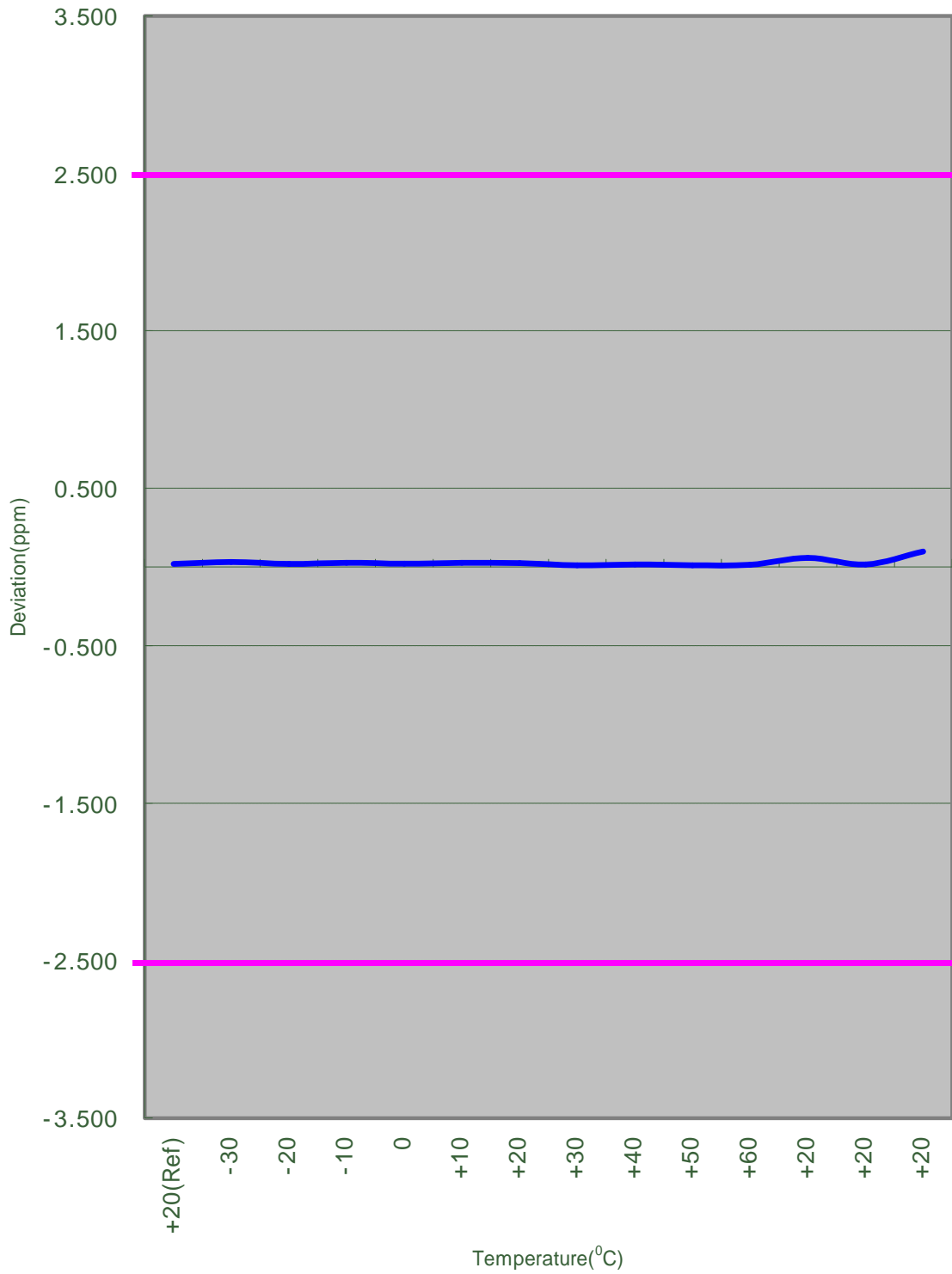
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (V dc)	TEMP (OC)	Frequency error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	36.2	1,880,000,036	0.000002	0.019
100%		-30	58.69	1,880,000,059	0.000003	0.031
100%		-20	35.85	1,880,000,036	0.000002	0.019
100%		-10	49.36	1,880,000,049	0.000003	0.026
100%		0	38.73	1,880,000,039	0.000002	0.021
100%		+10	48.15	1,880,000,048	0.000003	0.026
100%		+20	45.3	1,880,000,045	0.000002	0.024
100%		+30	20.89	1,880,000,021	0.000001	0.011
100%		+40	30.17	1,880,000,030	0.000002	0.016
100%		+50	19.23	1,880,000,019	0.000001	0.010
100%		+60	27.41	1,880,000,027	0.000001	0.015
85%		3.15	+20	107.36	1,880,000,107	0.000006
115%	4.26	+20	30.13	1,880,000,030	0.000002	0.016
Batt. Endpoint	3.15	+20	183.52	1,880,000,184	0.000010	0.098

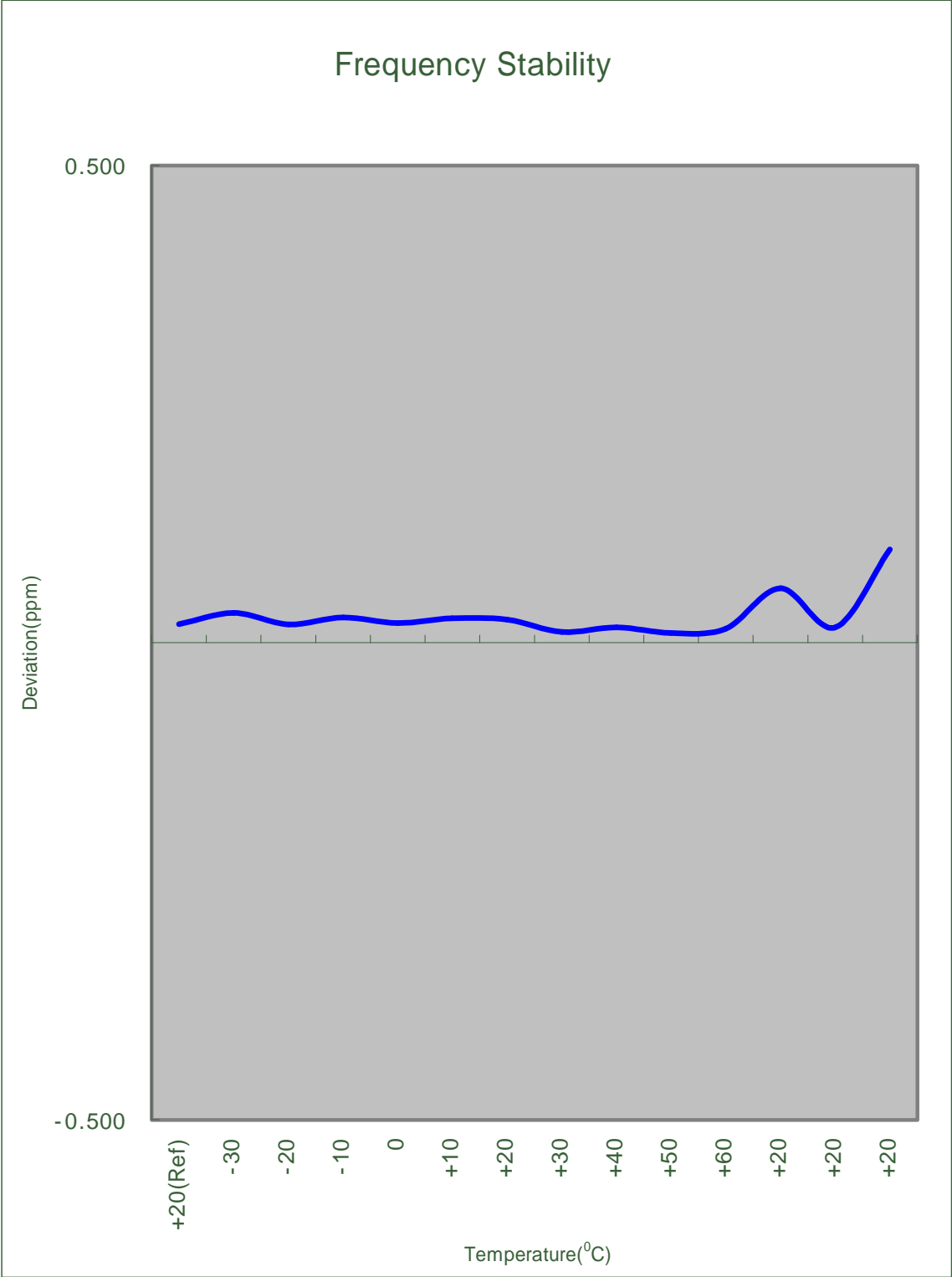
Note : The temperature is varied from -30°C to +60°C using an environmental chamber

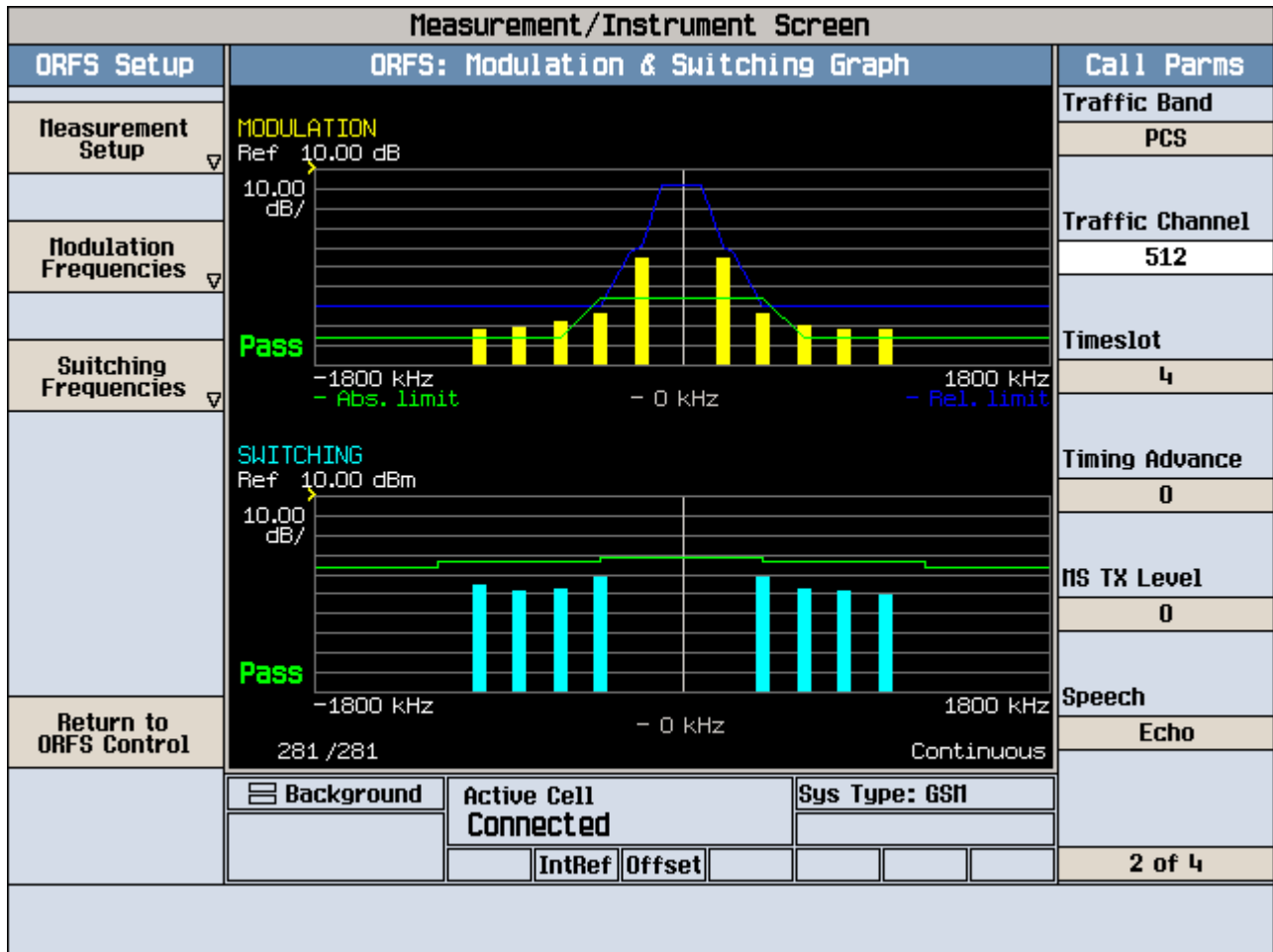
The EUT is tested down to the battery end point.

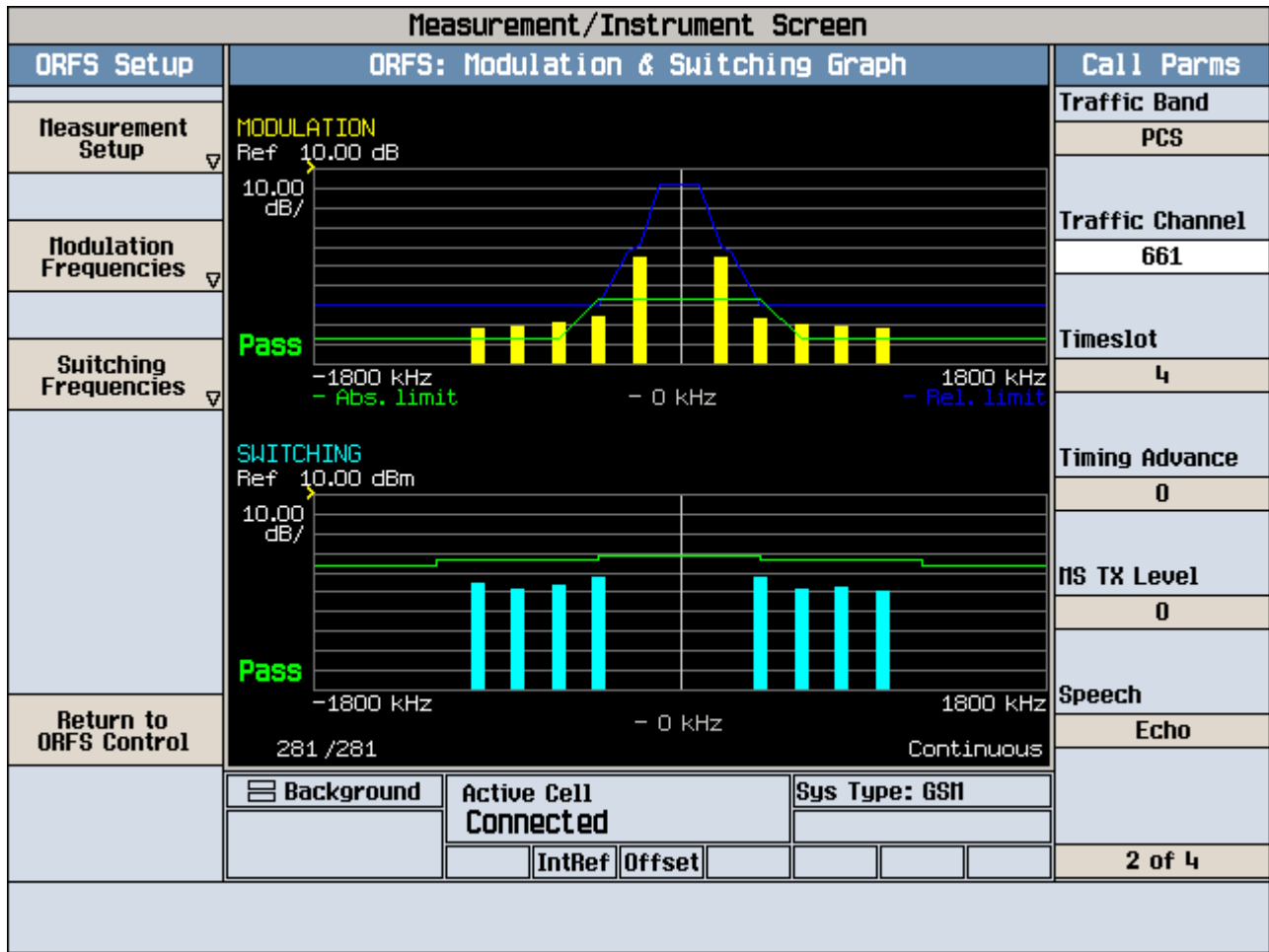
Frequency Stability

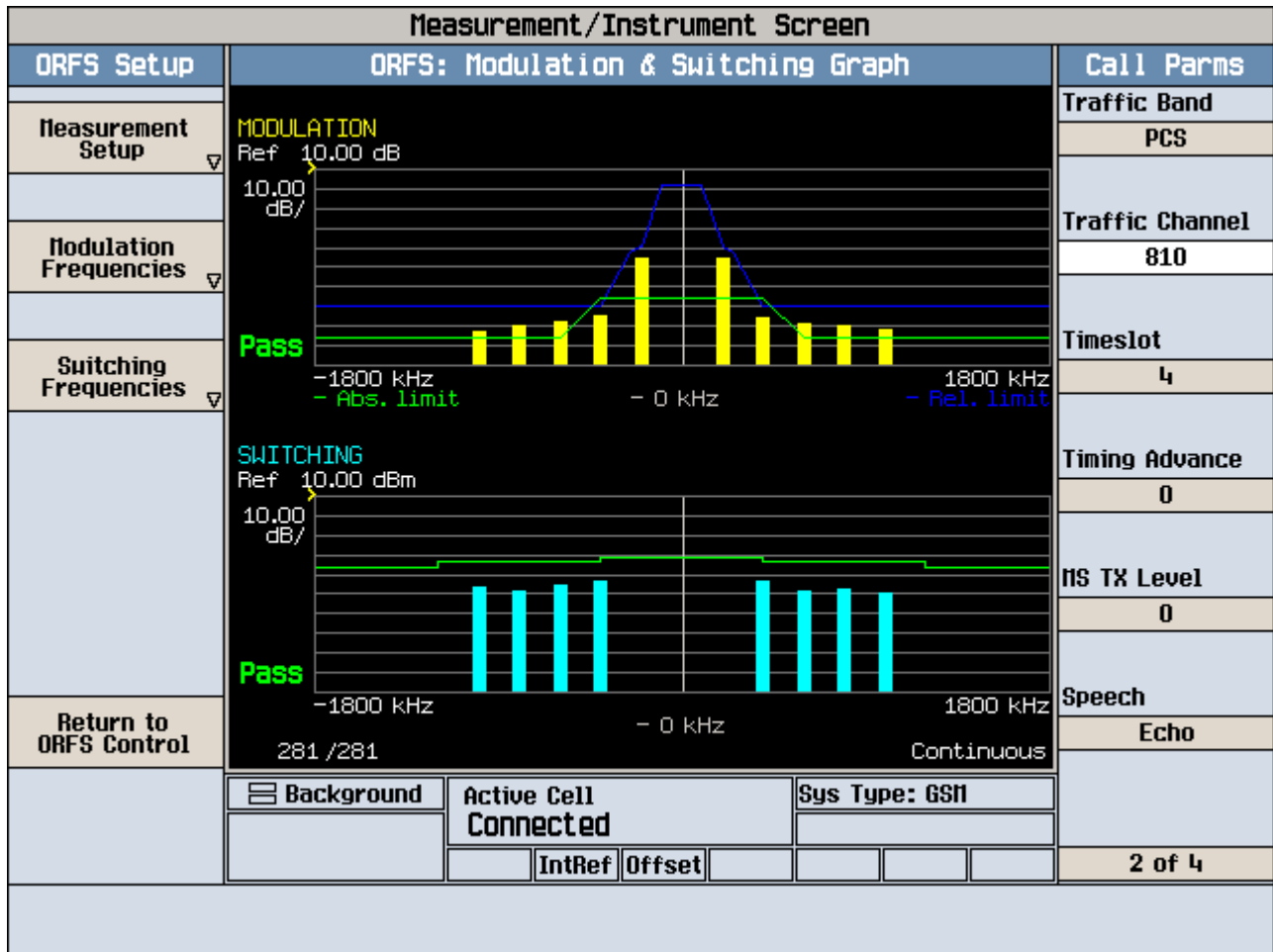


Zoom In





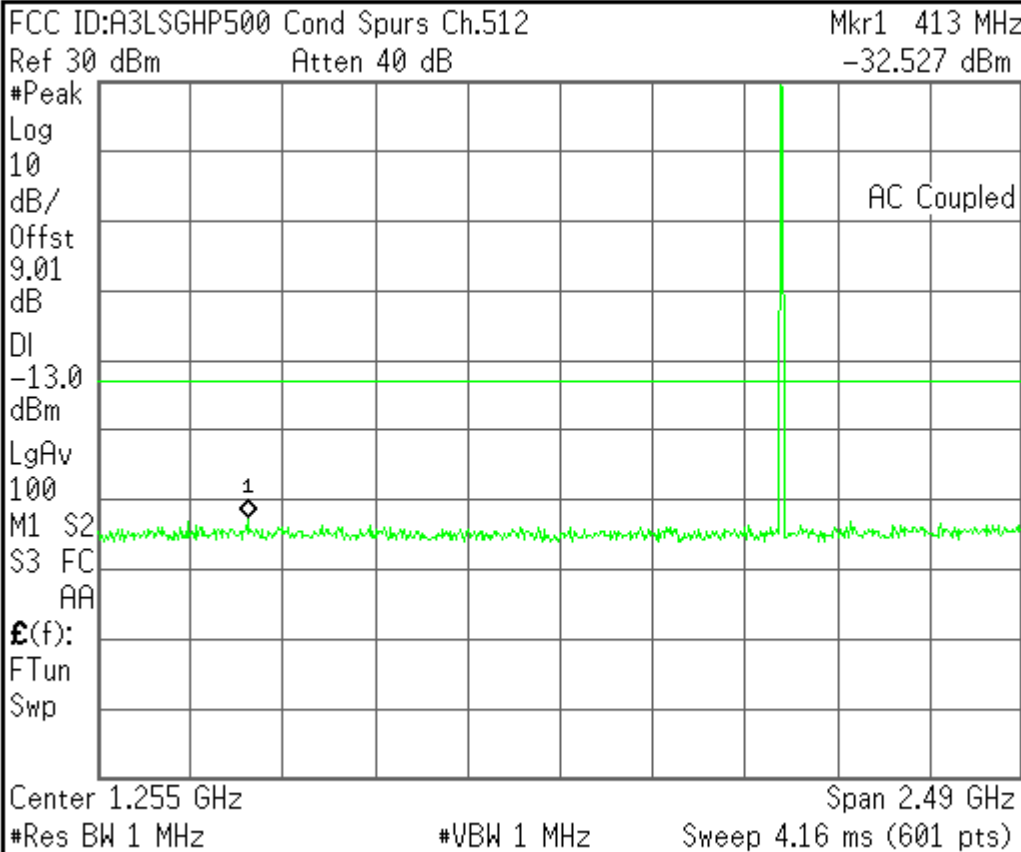




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Freq/Channel



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

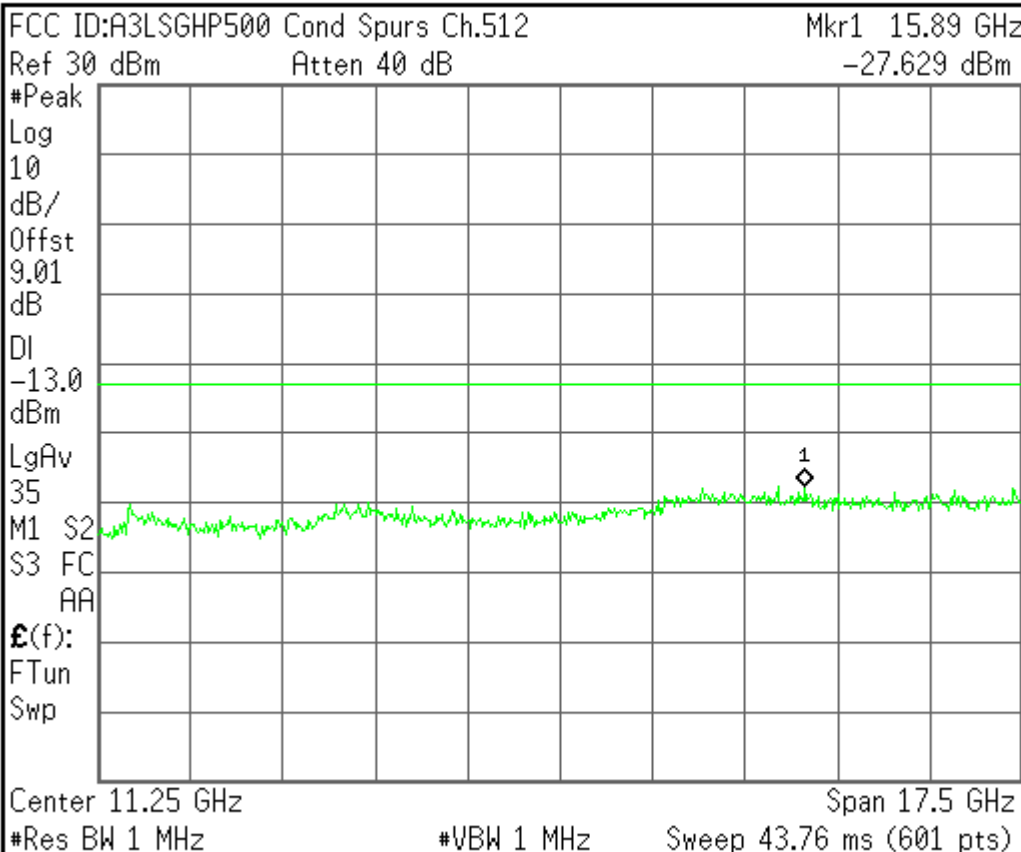
Signal Track
On Off

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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

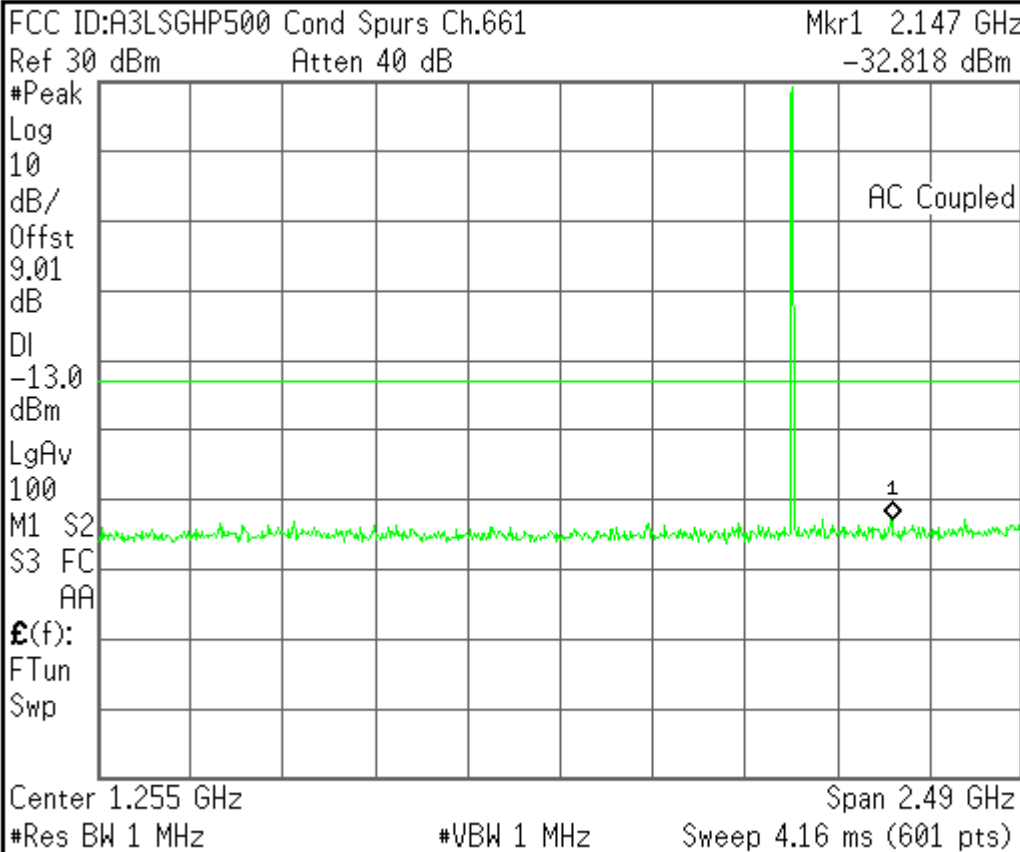
Signal Track
On Off

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Freq/Channel



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

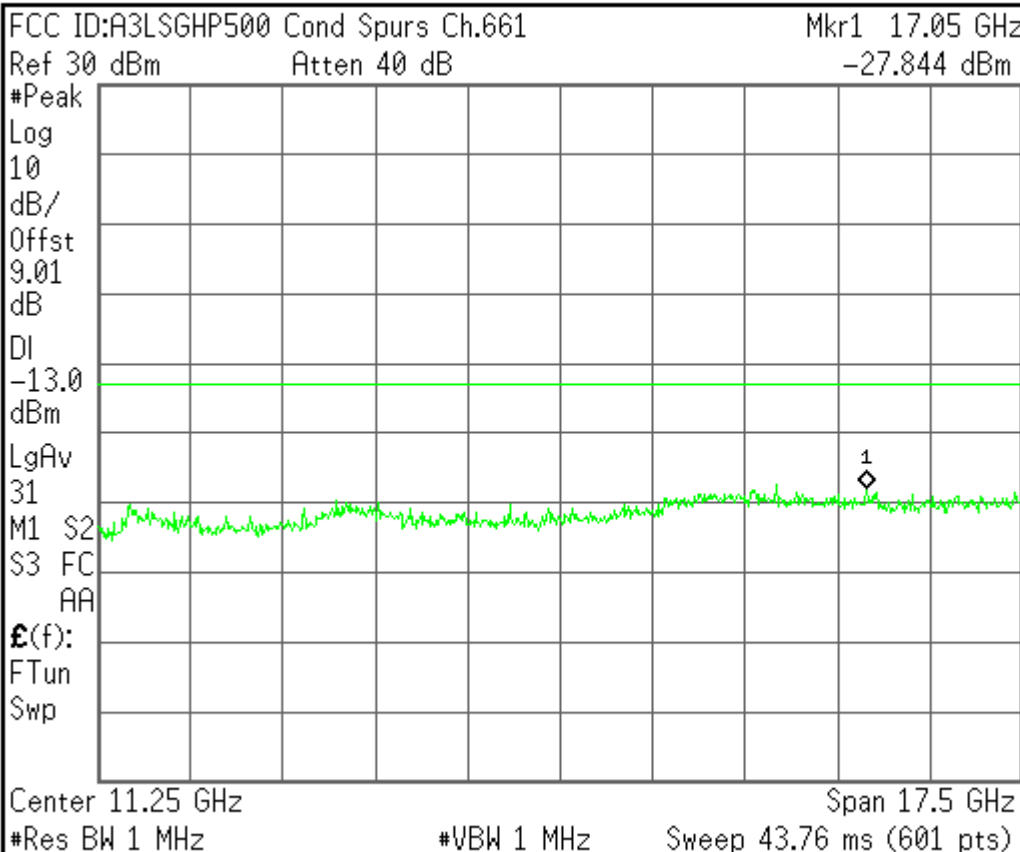
Signal Track
On Off

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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

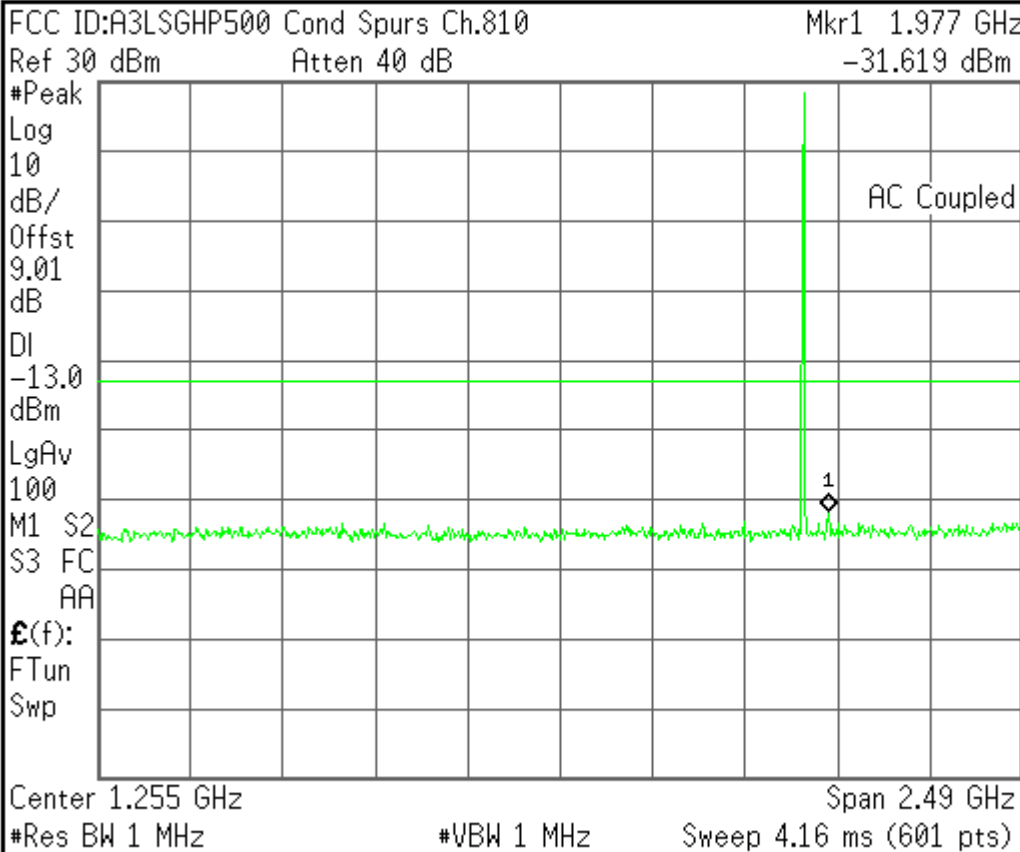
Signal Track
On Off

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Freq/Channel



Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

CF Step
249.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

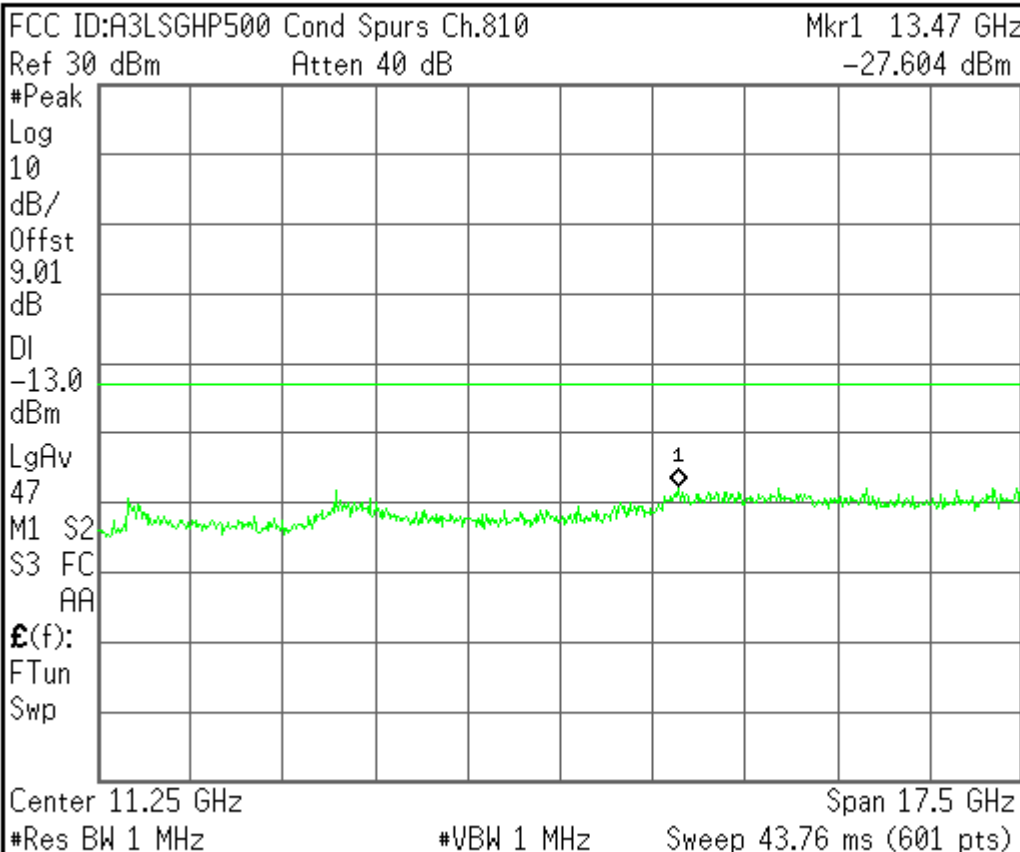
Signal Track
On Off

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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

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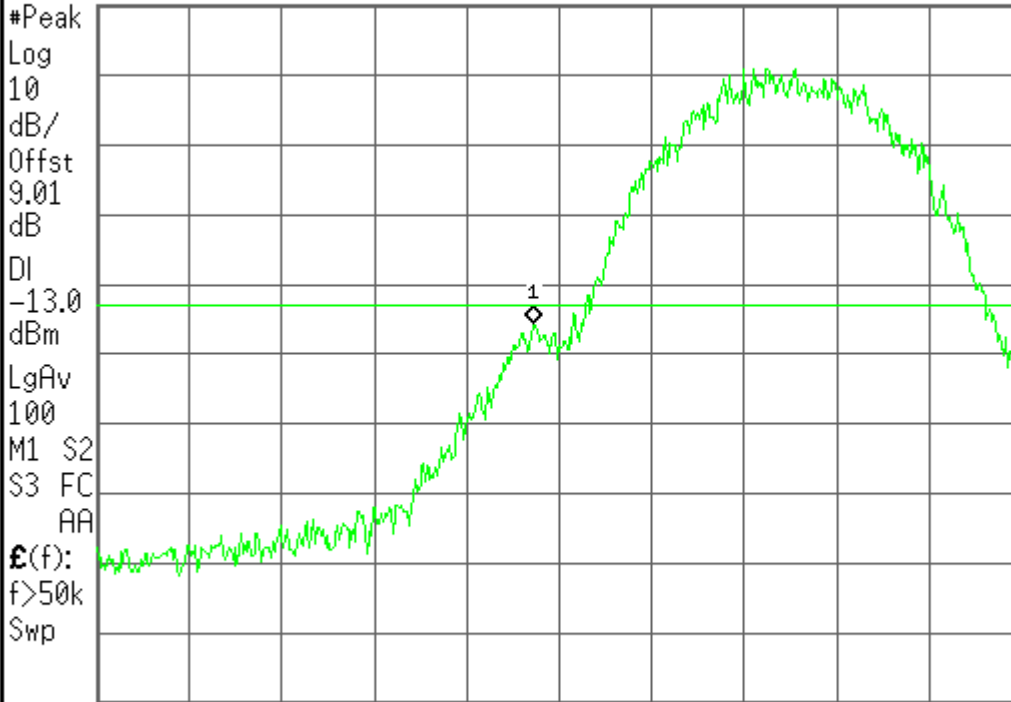
Agilent

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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block A Ch.512 Mkr1 1.849 976 8 GHz

Ref 30 dBm Atten 40 dB -15.494 dBm



Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.850 000 0 GHz Span 810 kHz

#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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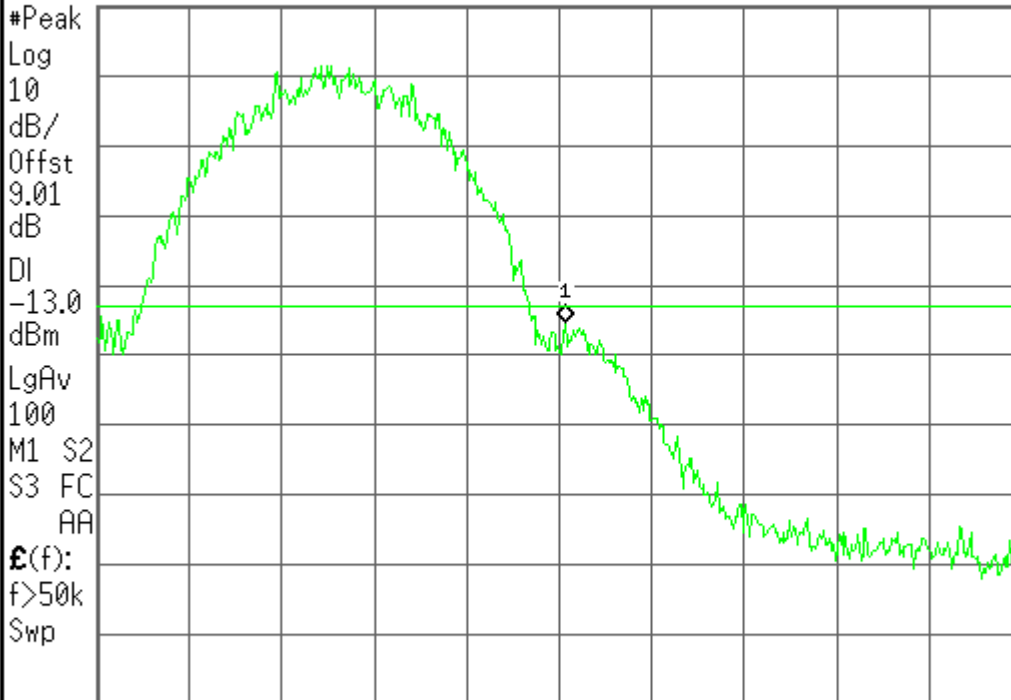
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block A Ch.585 Mkr1 1.865 005 5 GHz

Ref 30 dBm Atten 40 dB -15.297 dBm



Center Freq
1.86500000 GHz

Start Freq
1.86459500 GHz

Stop Freq
1.86540500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.865 000 0 GHz Span 810 kHz

#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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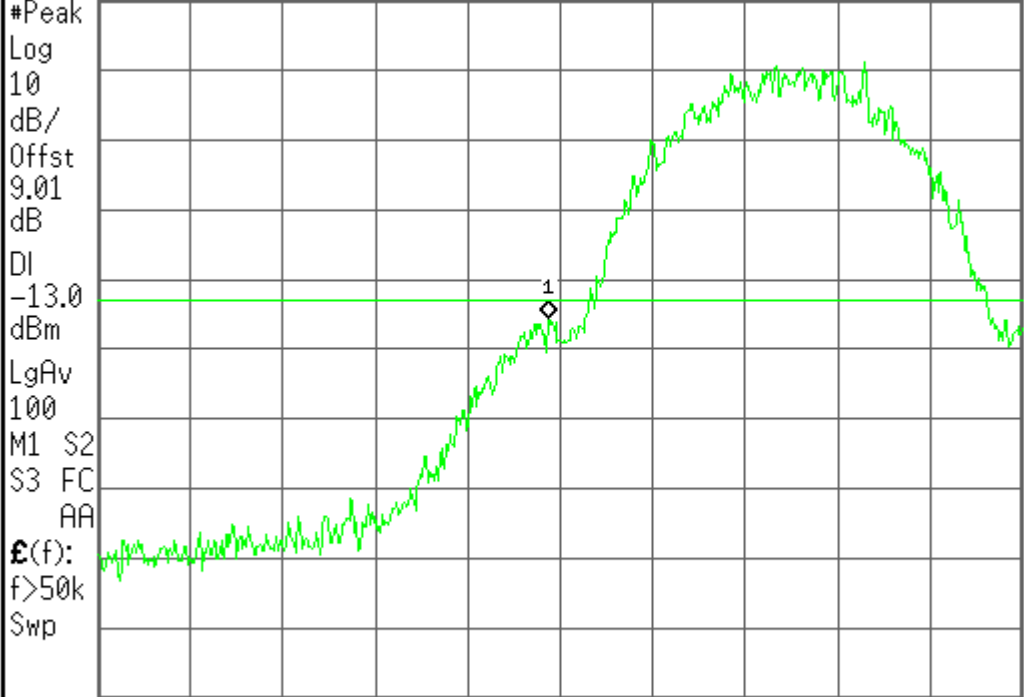
Agilent

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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block B Ch.612 Mkr1 1.869 989 1 GHz
Ref 30 dBm Atten 40 dB -15.584 dBm

Center Freq
1.87000000 GHz



Start Freq
1.86959500 GHz

Stop Freq
1.87040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.870 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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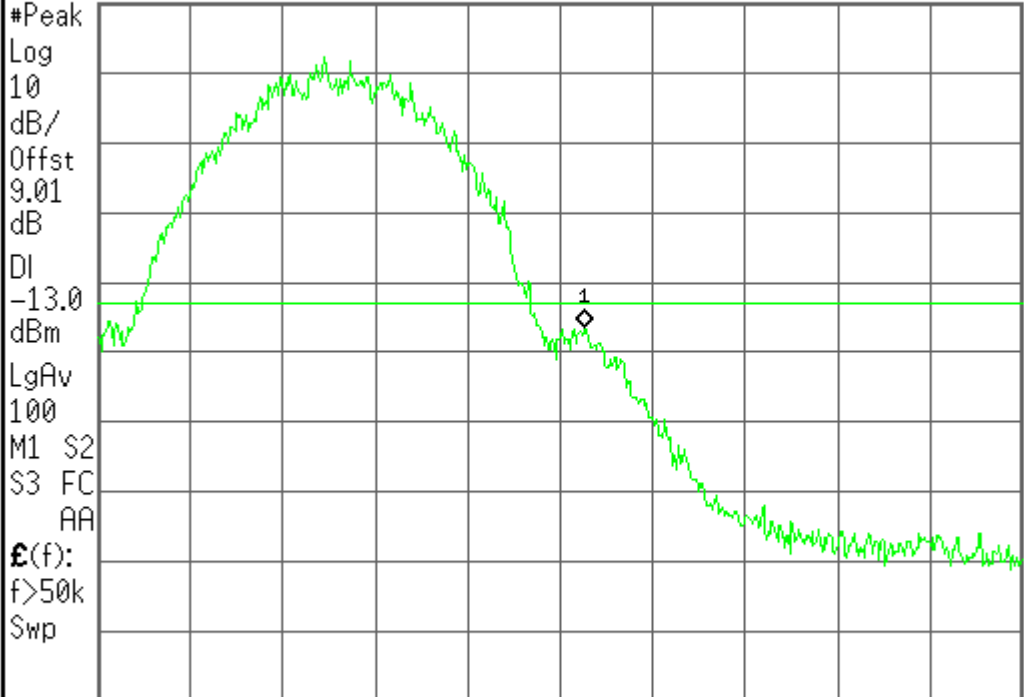
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block B Ch.685 Mkr1 1.885 021 8 GHz
Ref 30 dBm Atten 40 dB -16.451 dBm

Center Freq
1.88500000 GHz



Start Freq
1.88459500 GHz

Stop Freq
1.88540500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.885 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block C Ch.737 Mkr1 1.894 975 5 GHz
Ref 30 dBm Atten 40 dB -15.017 dBm

Center Freq
1.89500000 GHz

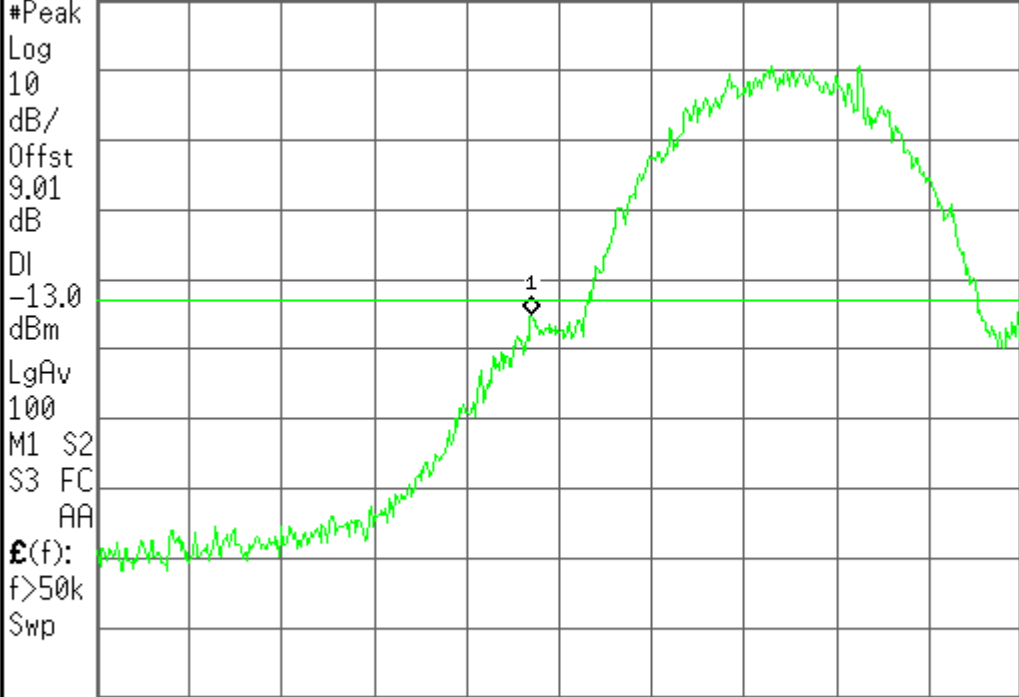
Start Freq
1.89459500 GHz

Stop Freq
1.89540500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off



Center 1.895 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block C Ch.810 Mkr1 1.910 016 4 GHz
Ref 30 dBm Atten 40 dB -16.389 dBm

Center Freq
1.91000000 GHz

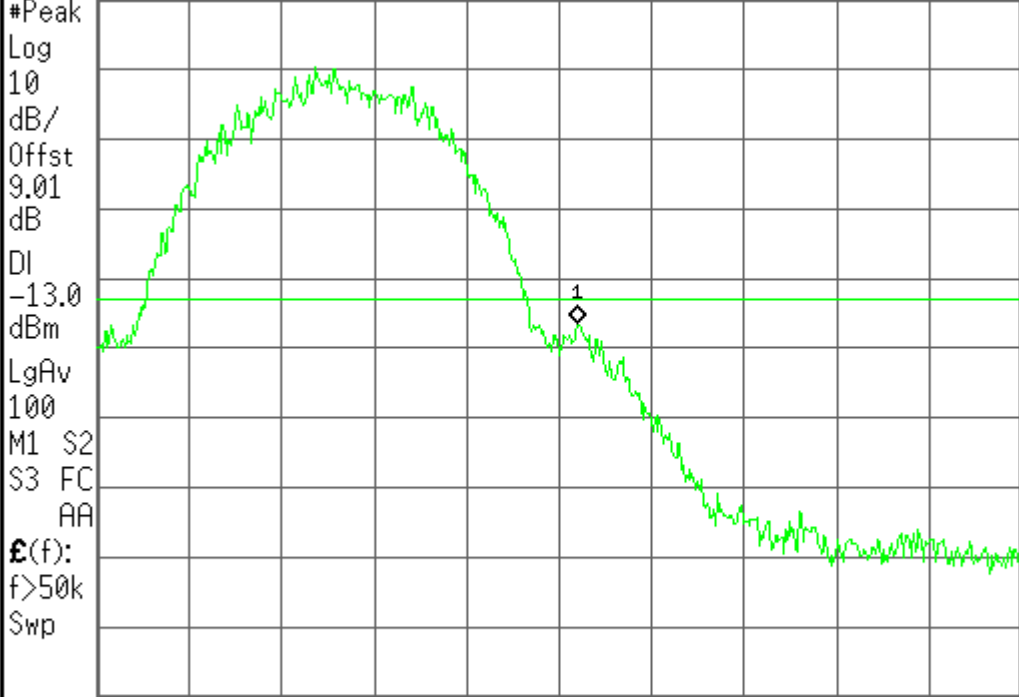
Start Freq
1.90959500 GHz

Stop Freq
1.91040500 GHz

CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off



Center 1.910 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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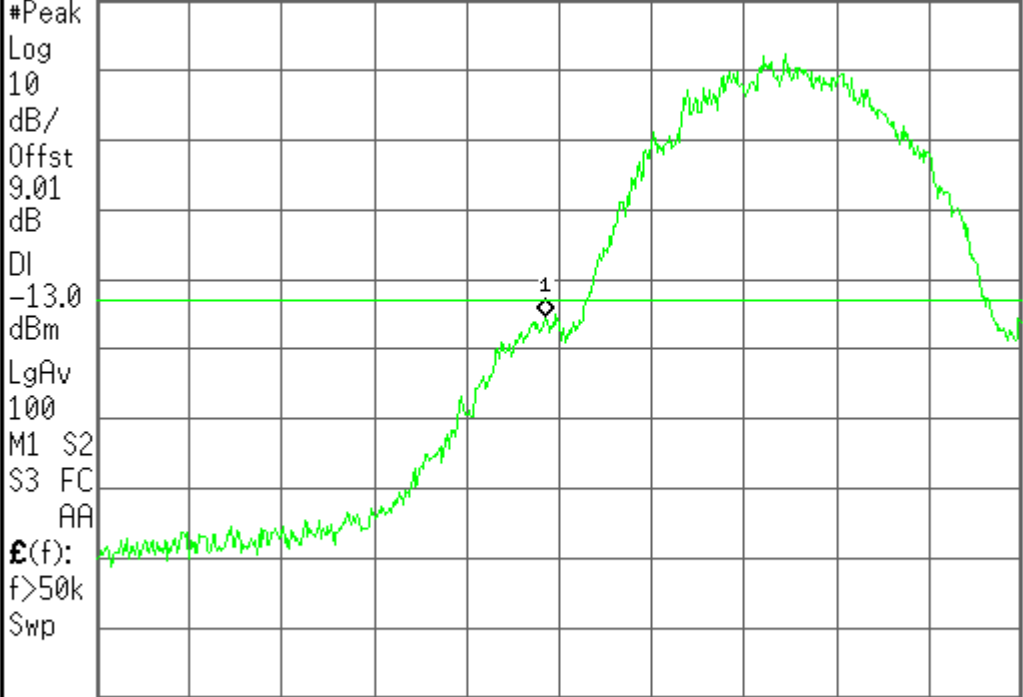
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block D Ch.587 Mkr1 1.864 987 7 GHz
Ref 30 dBm Atten 40 dB -15.346 dBm

Center Freq
1.86500000 GHz



Start Freq
1.86459500 GHz

Stop Freq
1.86540500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.865 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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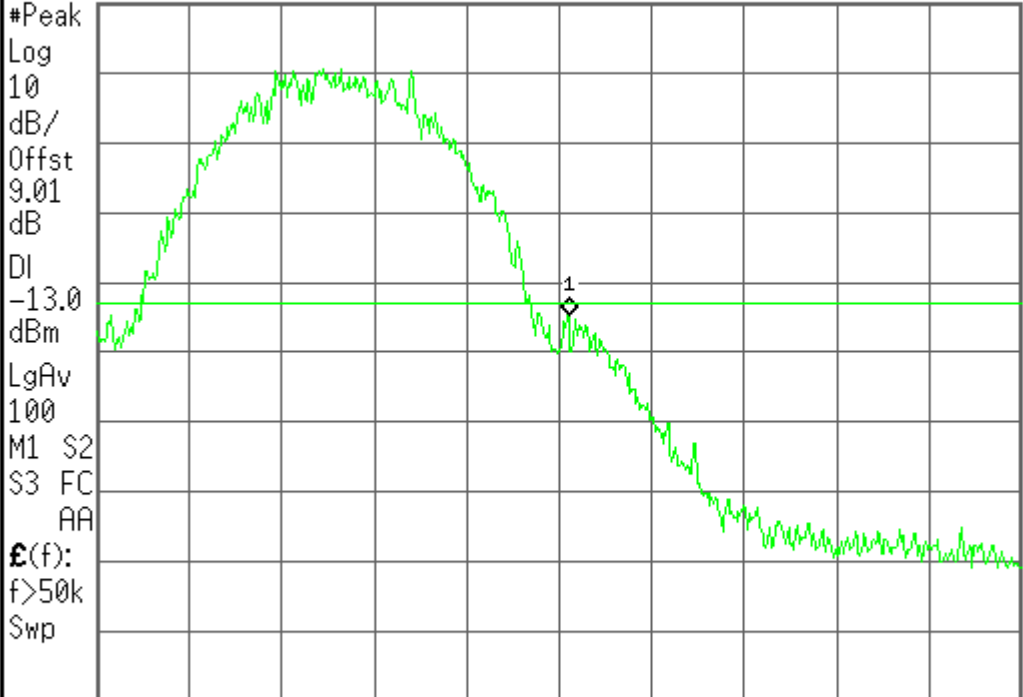
Agilent

L

Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block D Ch.610 Mkr1 1.870 008 2 GHz
Ref 30 dBm Atten 40 dB -14.823 dBm

Center Freq
1.87000000 GHz



Start Freq
1.86959500 GHz

Stop Freq
1.87040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.870 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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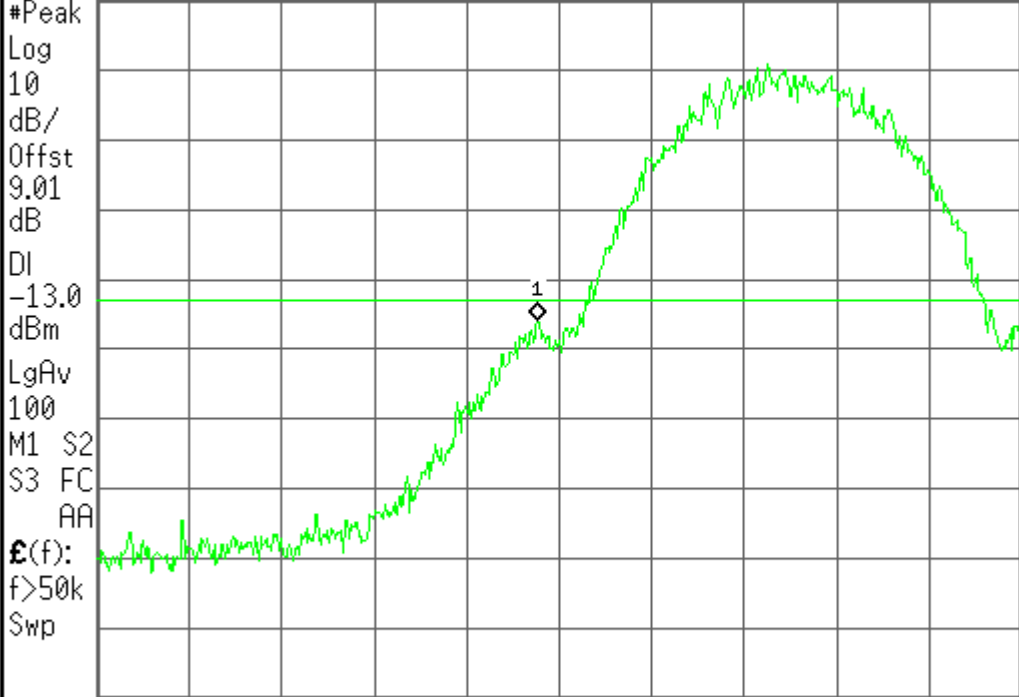
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block E Ch.687 Mkr1 1.884 980 9 GHz
Ref 30 dBm Atten 40 dB -15.888 dBm

Center Freq
1.88500000 GHz



Start Freq
1.88459500 GHz

Stop Freq
1.88540500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.885 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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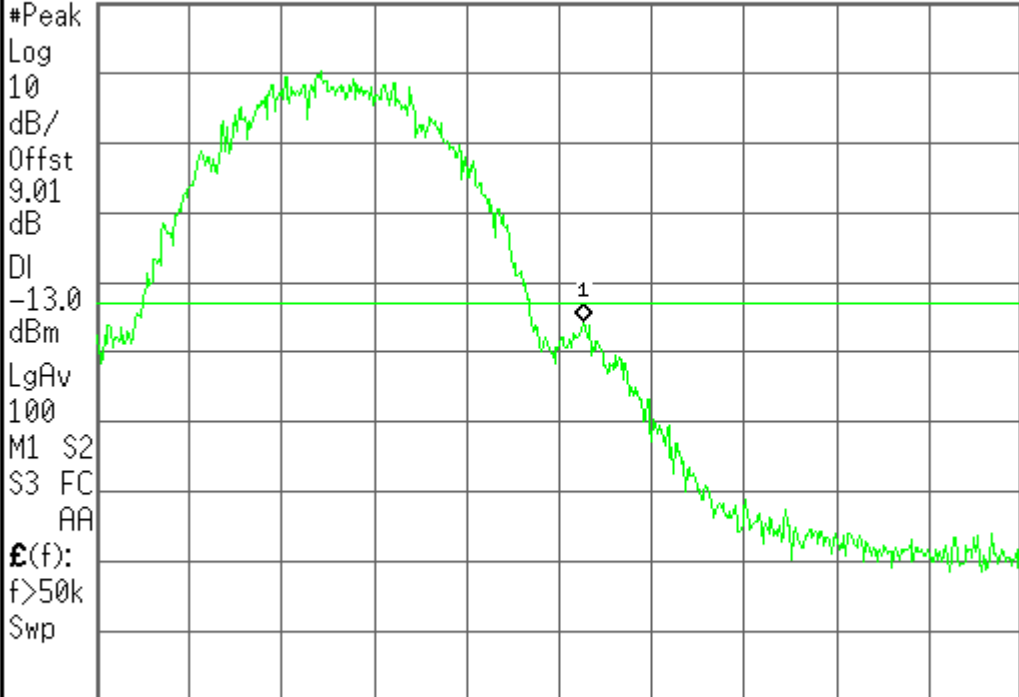
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block E Ch.710 Mkr1 1.890 021 8 GHz
Ref 30 dBm Atten 40 dB -15.540 dBm

Center Freq
1.89000000 GHz



Start Freq
1.88959500 GHz

Stop Freq
1.89040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.890 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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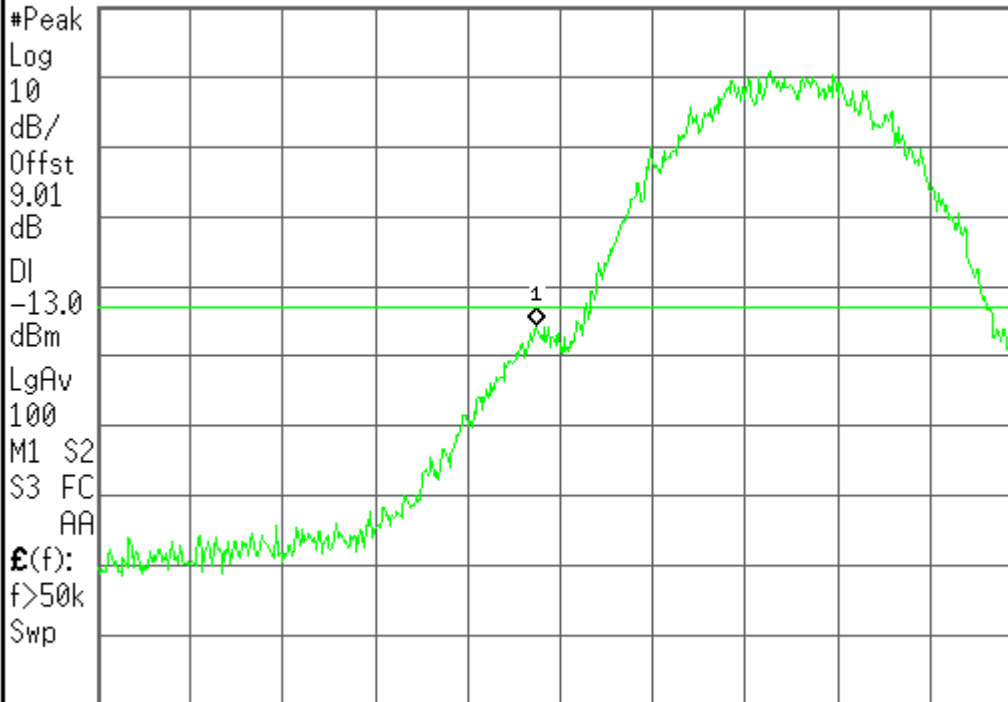
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block F Ch.712 Mkr1 1.889 978 2 GHz
Ref 30 dBm Atten 40 dB -15.475 dBm

Center Freq
1.89000000 GHz



Start Freq
1.88959500 GHz

Stop Freq
1.89040500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.890 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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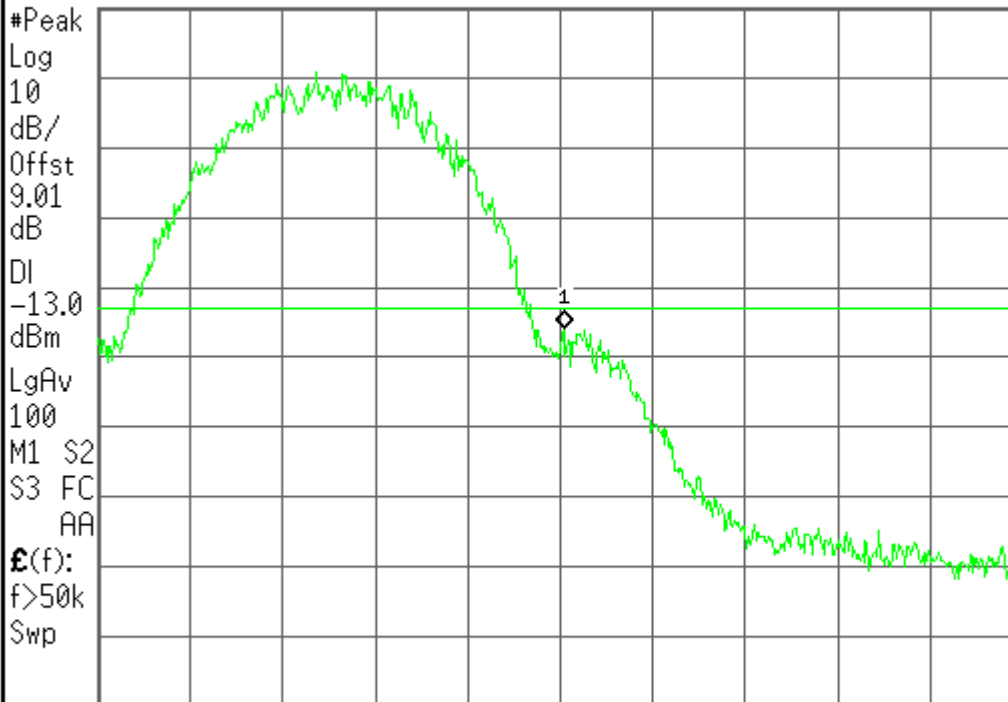
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Freq/Channel

FCC ID:A3LSGHP500 Band Edge Block F Ch.735 Mkr1 1.895 002 7 GHz
Ref 30 dBm Atten 40 dB -15.720 dBm

Center Freq
1.89500000 GHz



Start Freq
1.89459500 GHz

Stop Freq
1.89540500 GHz

CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Center 1.895 000 0 GHz Span 810 kHz
#Res BW 3 kHz #VBW 3 kHz Sweep 108.5 ms (601 pts)

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