




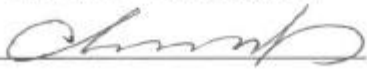

MSUNG ELECTRONICS Co., Ltd.,
Regulatory Compliance Team
IT R&D Center
416, Maetan-3dong,
Paldal-gu, Suwon-si,
Gyeonggi-do, Korea 442-742

FCC CFR47 PART 24 SUBPART CERTIFICATION TEST DATA

Model Tested: SGH-D100
FCC ID (Requested): A3LSGHD100
Report No: FA-010-R1
Date issued: May 29, 2003

- Abstract -

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

Prepared By		Date	May 29, 2003
	JH NAM - Test Engineer		
Checked By		Date	May 30, 2003
	CW PARK - Manager		
Authorized By		Date	May 30, 2003
	JK CHOI - Senior Manager		

Test Equipment

Name of Equipment	Model	Serial No.	Due Date
Spectrum Analyzer	ESI26(20Hz~26.5GHz)	836119/010	2004-02-04
	E4440B(3Hz~26.5GHz)	MY41000236	2003-11-25
	E4440B(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	PL-4S(Temperature/Humidity)	13005454	2003-08-20
	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
Log Periodic Dipole 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 : A3LSGHD100

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	-12.17	8.18	-20.35
		V	-12.18	8.18	-20.36

Result

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-17.70	H1	126	29.65	0.923	Standard
1880.00	-18.53	H1	128	28.82	0.762	Standard
1909.80	-19.34	H1	120	28.01	0.632	Standard

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-17.83	H1	131	29.52	0.895	SLIM
1880.00	-18.62	H1	128	28.73	0.746	SLIM
1909.80	-19.40	H1	122	27.95	0.624	SLIM

Effective Radiated Power Output 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. 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 the dipole is measured. The ERP is recorded.

FCC ID : A3LSGHD100

Field Stength of SPURIOUS Radiation

Operating Frequency : 1850.2 MHz

Measured Output Power : 29.65 dBm = 0.923 W

Modulation Signal : PCS GSM

Limit : $43+10\log_{10}(W) = 42.65$ dBc

Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-40.47	V	46.65
	3	5550.60	-60.75	V	62.64
	4	7400.80	-60.82	H2	59.27
	5	9251.00	-63.61	H2	58.46
	6	11101.20	-60.14	H2	51.26
	7	12951.40	-80.20	H2	69.32
	8	14801.60	-	-	-
661	2	3760.00	-53.64	H1	59.97
	3	5640.00	-60.37	H2	63.06
	4	7520.00	-59.69	H2	58.32
	5	9400.00	-62.62	H2	58.00
	6	11280.00	-81.94	H2	71.41
	7	13160.00	-	-	-
	8	15040.00	-	-	-
810	2	3819.60	-42.50	H2	50.57
	3	5729.40	-53.09	H2	55.57
	4	7639.20	-58.66	H2	57.67
	5	9549.00	-67.35	H2	61.81
	6	11458.80	-79.46	H2	68.39
	7	13368.60	-	-	-
	8	15278.40	-	-	-

Radiated Spurious & Harmonic Conversion Table

FCC ID : A3LSGHD100 Mode : GSM1900

ERP : 29.65dBm

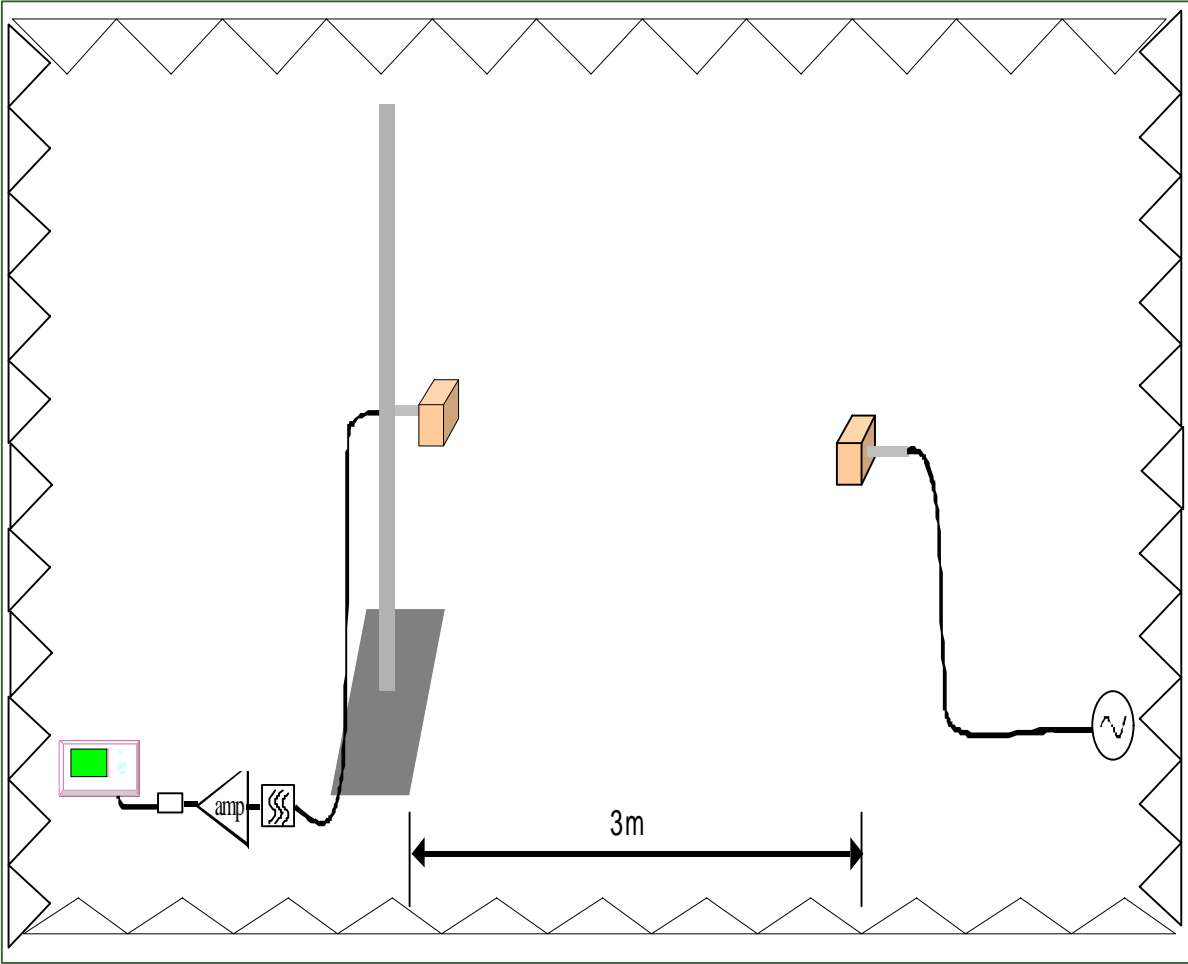
Date : 2003 . 05 . 26 ~ 05 . 27

Test Engineer : JH Nam

- 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 - ⑦

CH	차수	Frequency (MHz)	① Tx CL (dB)	② Horn Gain (dB)	Tx Level (Horn 끝단) S/G 10dBm	⑥ Tested Level Ant : H (dBm)	⑥ Tested Level Ant : V (dBm)	⑦ Actual Value Ant : H (dBm)	⑦ Actual Value Ant : V (dBm)	⑧ Result Ant : H (dBc)	⑧ Result Ant : V (dBc)
512	2	3700.40	13.59	8.87	5.28	-51.94	-40.47	-28.86	-17.00	58.51	46.65
	3	5550.60	18.53	10.60	2.07	-61.26	-60.75	-33.54	-32.99	63.19	62.64
	4	7400.80	22.30	10.83	-1.47	-60.82	-70.43	-29.62	-40.35	59.27	70.00
	5	9251.00	26.05	11.56	-4.49	-63.61	-65.18	-28.81	-30.76	58.46	60.41
	6	11101.20	30.22	12.79	-7.43	-60.14	-81.08	-21.61	-42.49	51.26	72.14
	7	12951.40	35.07	12.66	-12.41	-80.20	-	-39.67	-	69.32	-
	8	14801.60	39.97	12.69	-17.28	-	-	-	-	-	-
	661	2	3760.00	13.75	8.98	5.23	-53.64	-58.89	-30.32	-35.72	59.97
3		5640.00	18.47	10.60	2.13	-60.37	-62.99	-33.41	-35.54	63.06	65.19
4		7520.00	22.44	10.83	-1.61	-59.69	-62.65	-28.67	-32.73	58.32	62.38
5		9400.00	26.83	11.60	-5.23	-62.62	-69.11	-28.36	-35.71	58.01	65.36
6		11280.00	30.39	12.93	-7.46	-81.94	-85.05	-41.79	-45.18	71.44	74.83
7		13160.00	37.44	12.64	-14.80	-	-	-	-	-	-
8		15040.00	41.49	12.70	-18.79	-	-	-	-	-	-
810		2	3819.60	15.24	8.98	3.74	-42.50	-49.74	-20.92	-27.97	50.57
	3	5729.40	19.14	10.73	1.59	-53.09	-62.89	-25.86	-35.31	55.51	64.96
	4	7639.20	23.72	10.87	-2.85	-58.66	-62.18	-28.02	-32.64	57.67	62.29
	5	9549.00	26.73	11.67	-5.06	-67.35	-68.57	-32.16	-33.65	61.81	63.30
	6	11458.80	30.60	12.90	-7.70	-79.46	-84.04	-38.74	-43.22	68.39	72.87
	7	13368.60	42.74	12.65	-20.09	-	-	-	-	-	-
	8	15278.40	43.00	12.73	-20.27	-	-	-	-	-	-

**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 : A3LSGHD100

Frequency Stability (PCS GSM)

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference voltage : 3.7VDC

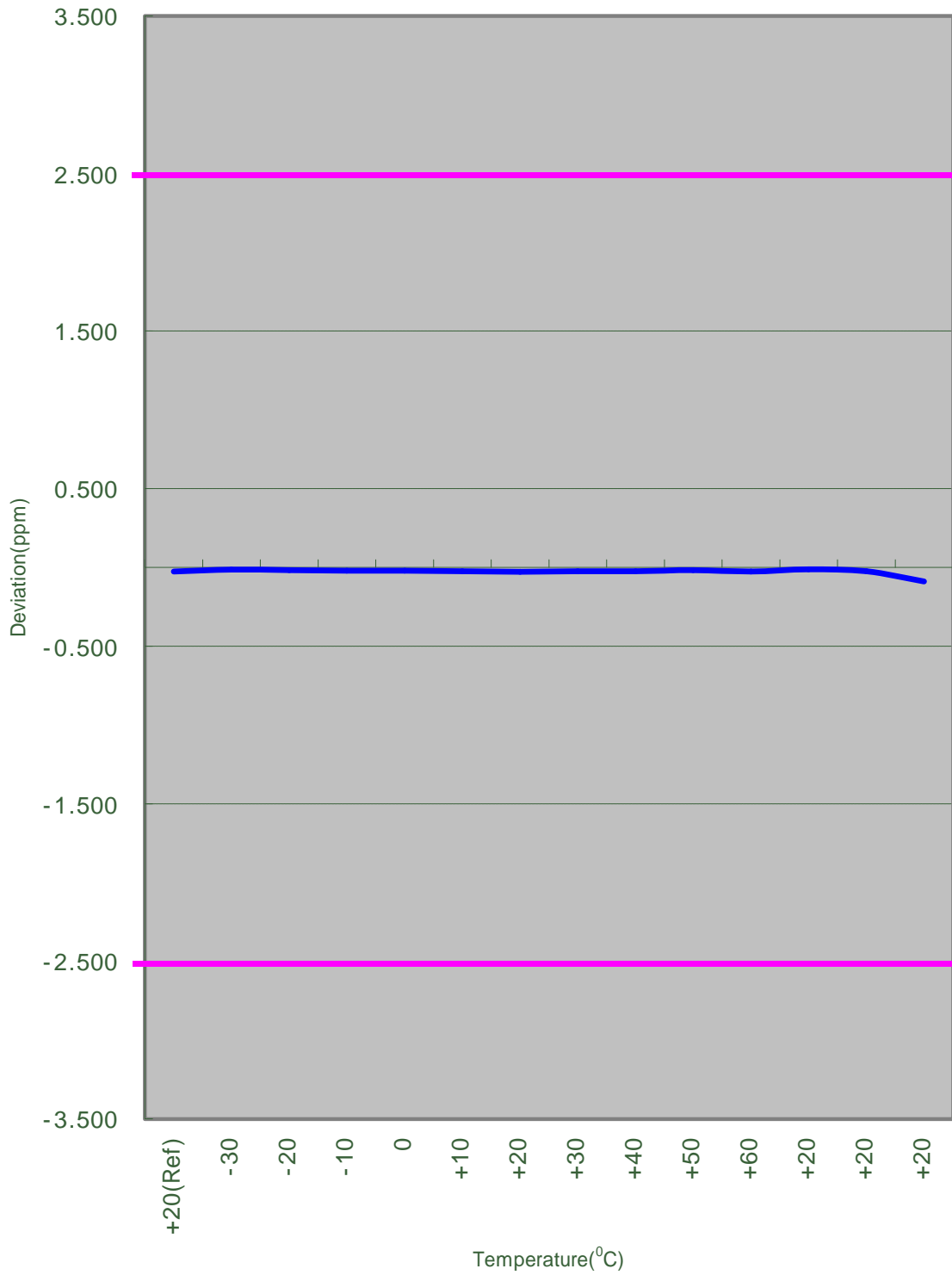
Deviation Limit : ± 0.00025 % or 2.5ppm

Voltage (%)	Power (V dc)	TEMP (OC)	Frequency error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-48	1,879,999,952	-0.000003	-0.026
100%		-30	-26	1,879,999,974	-0.000001	-0.014
100%		-20	-32	1,879,999,968	-0.000002	-0.017
100%		-10	-39	1,879,999,961	-0.000002	-0.021
100%		0	-41	1,879,999,959	-0.000002	-0.022
100%		+10	-47	1,879,999,953	-0.000003	-0.025
100%		+20	-53	1,879,999,947	-0.000003	-0.028
100%		+30	-45	1,879,999,955	-0.000002	-0.024
100%		+40	-45	1,879,999,955	-0.000002	-0.024
100%		+50	-34	1,879,999,966	-0.000002	-0.018
100%		+60	-49	1,879,999,951	-0.000003	-0.026
85%		3.15	+20	-24	1,879,999,976	-0.000001
115%	4.26	+20	-45	1,879,999,955	-0.000002	-0.024
Batt. Endpoint	3.12	+20	-168	1,879,999,832	-0.000009	-0.089

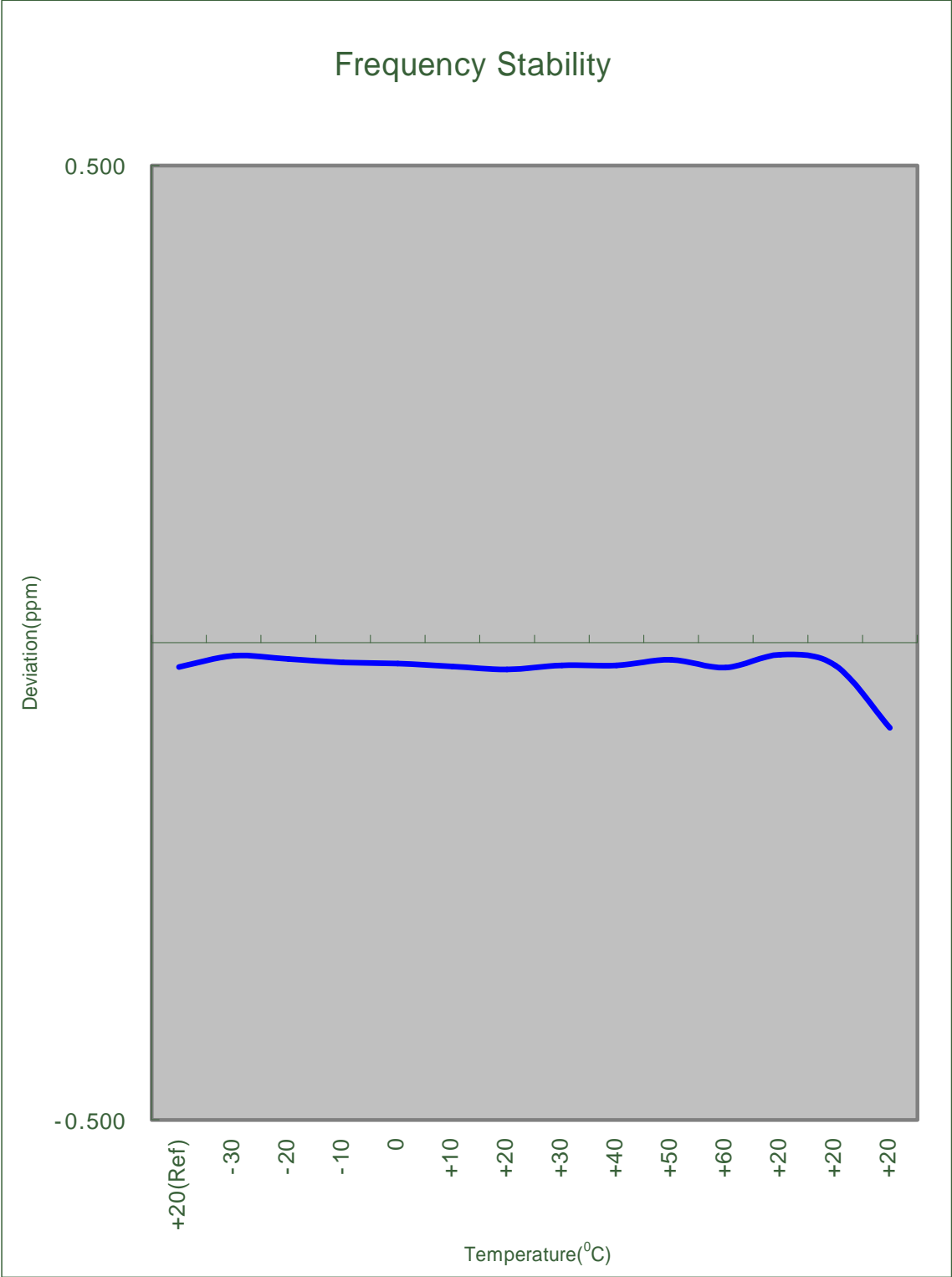
Note : The temperature is varied from -30°C to +60°C using an environmental chamber

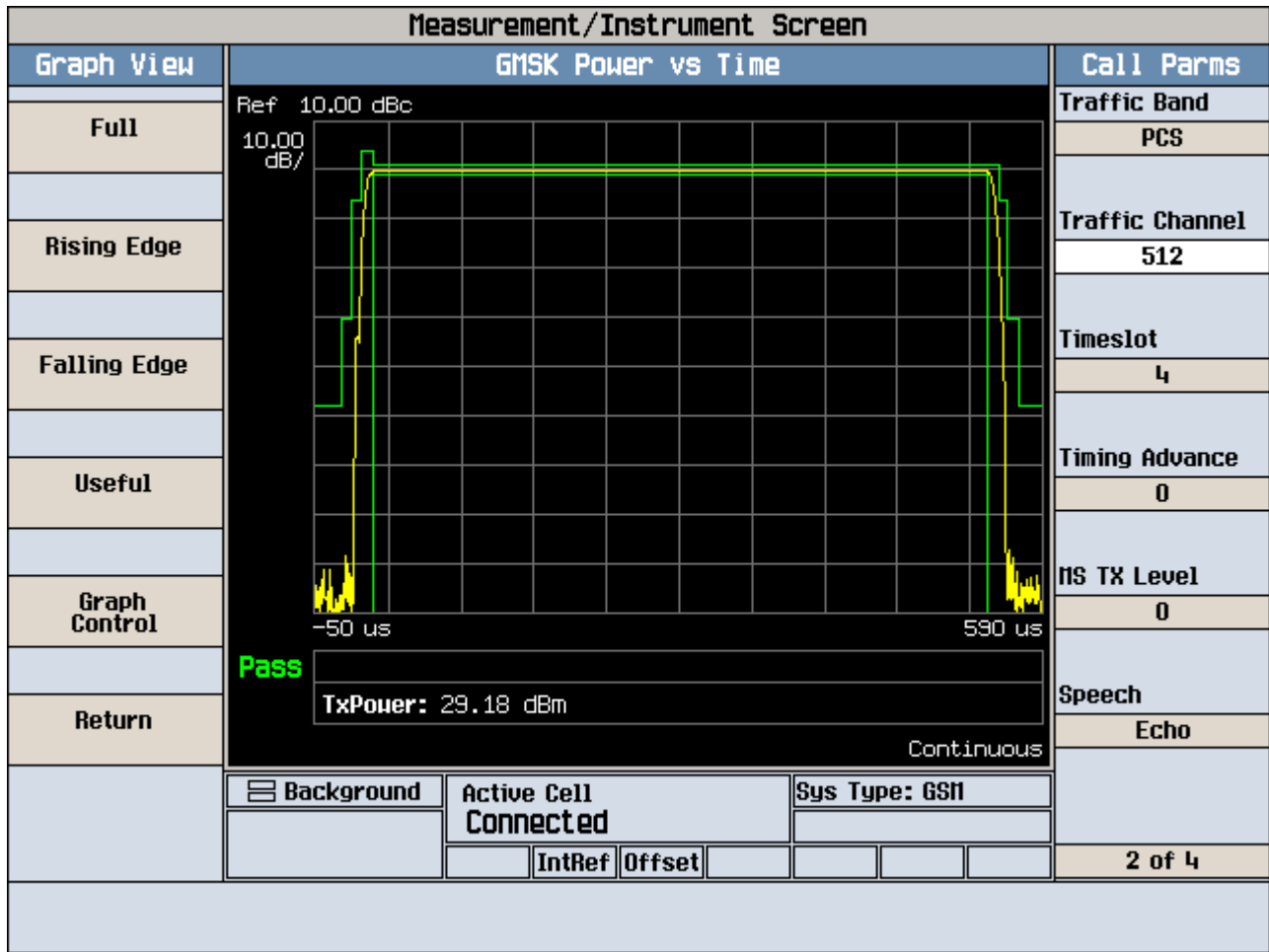
The EUT is tested down to the battery end point.

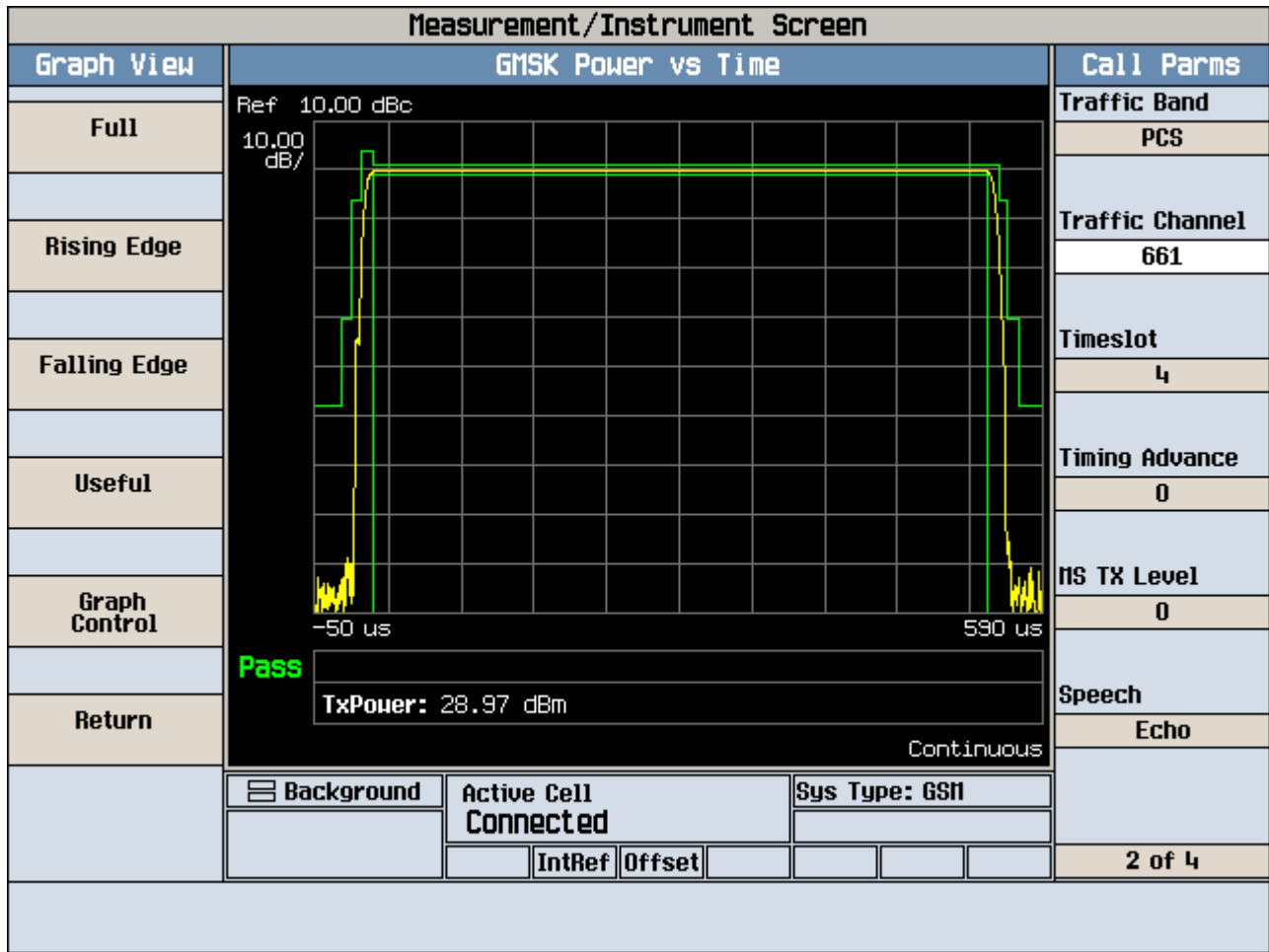
Frequency Stability

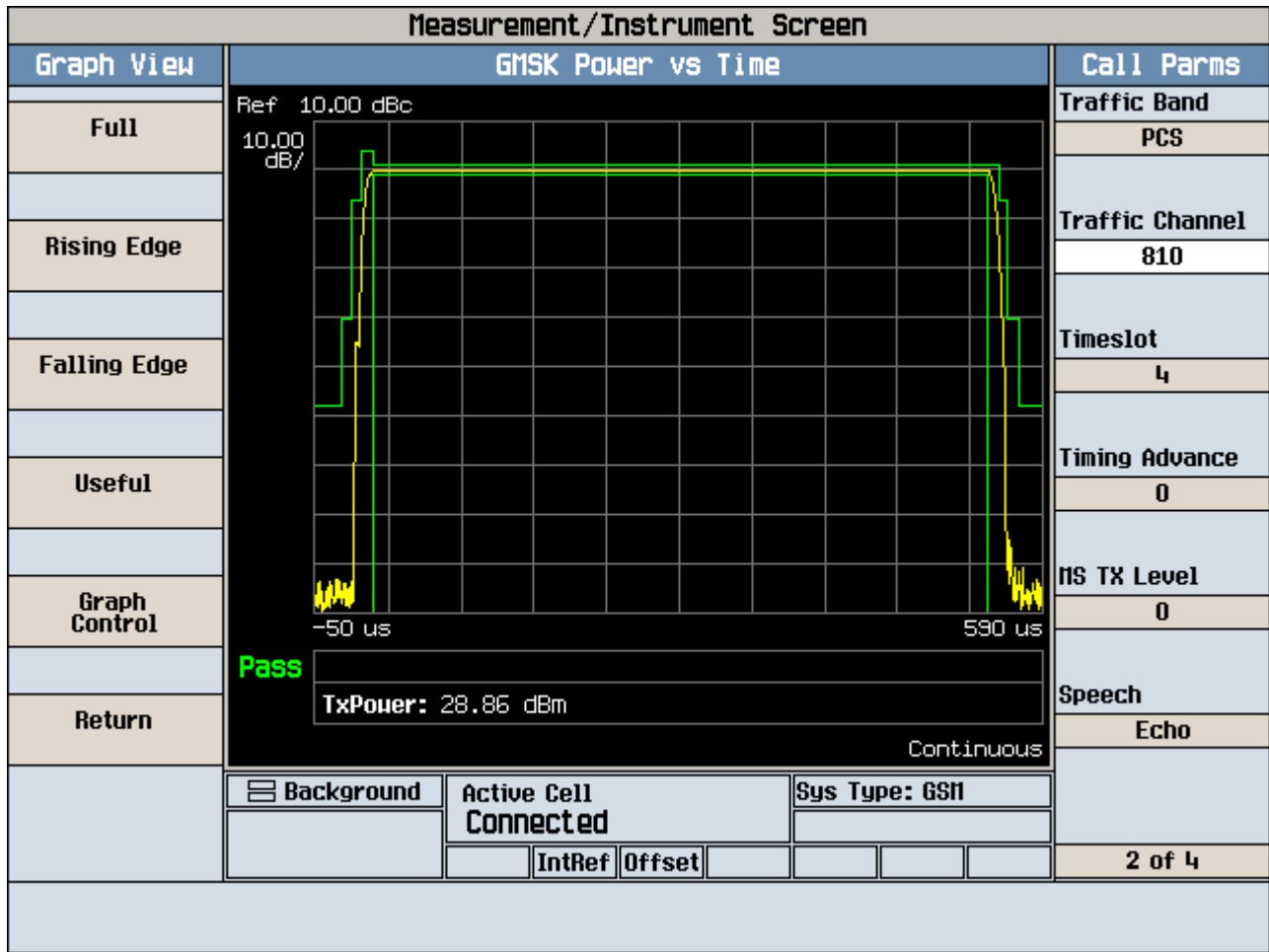


Zoom In

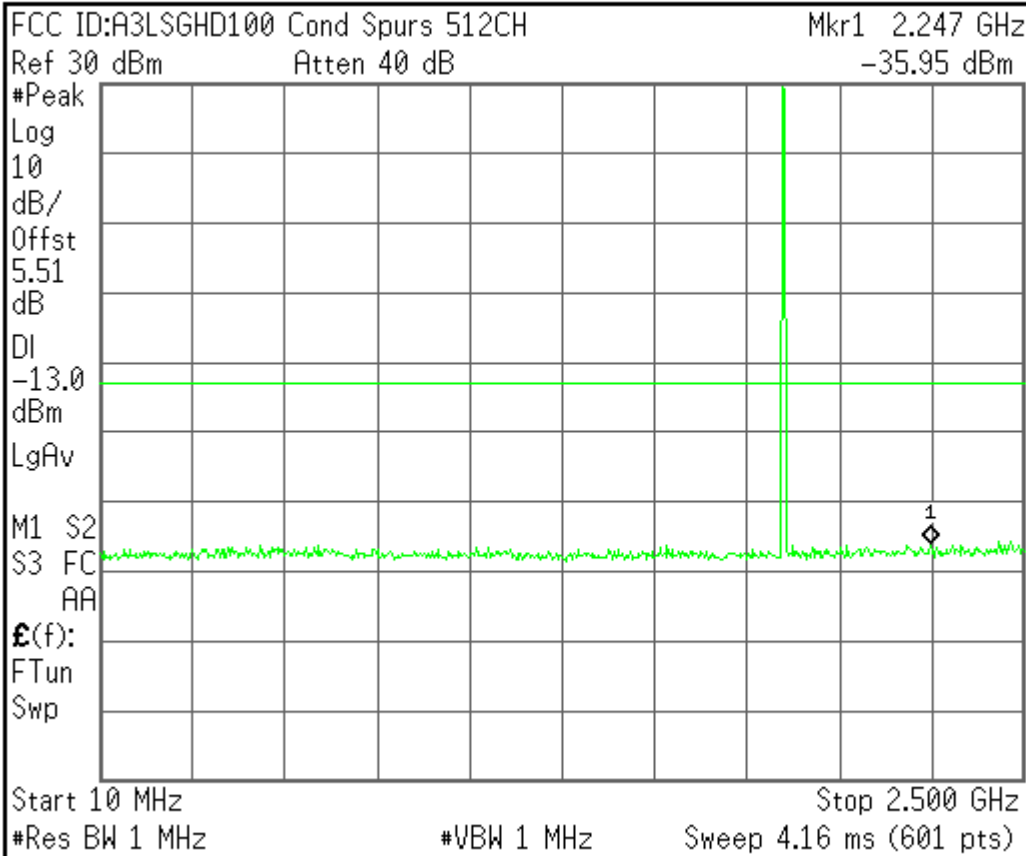








Agilent



Freq/Channel

Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

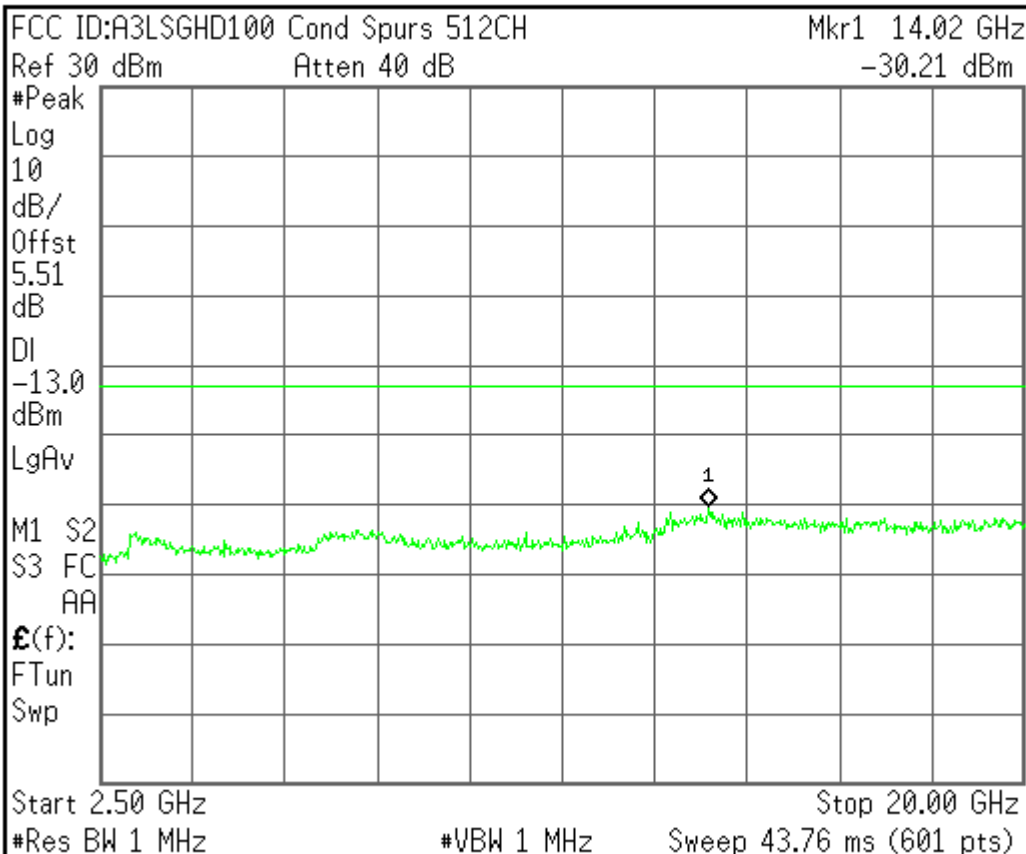
CF Step
249.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

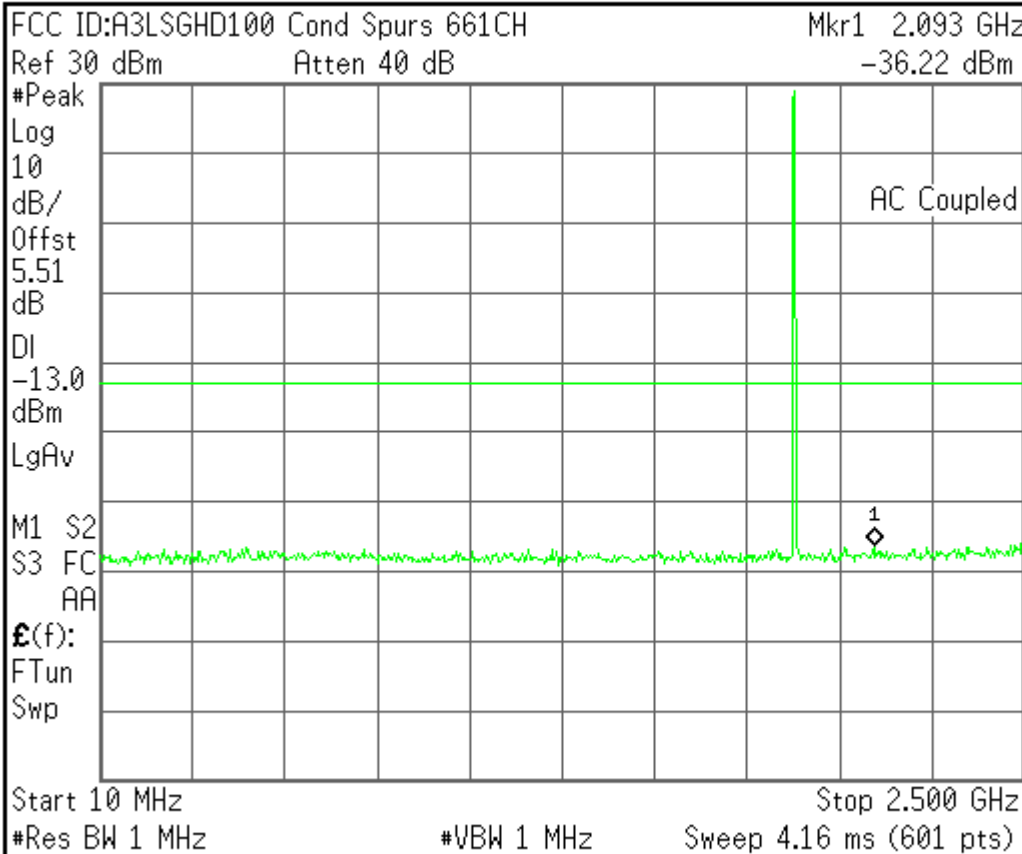
CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

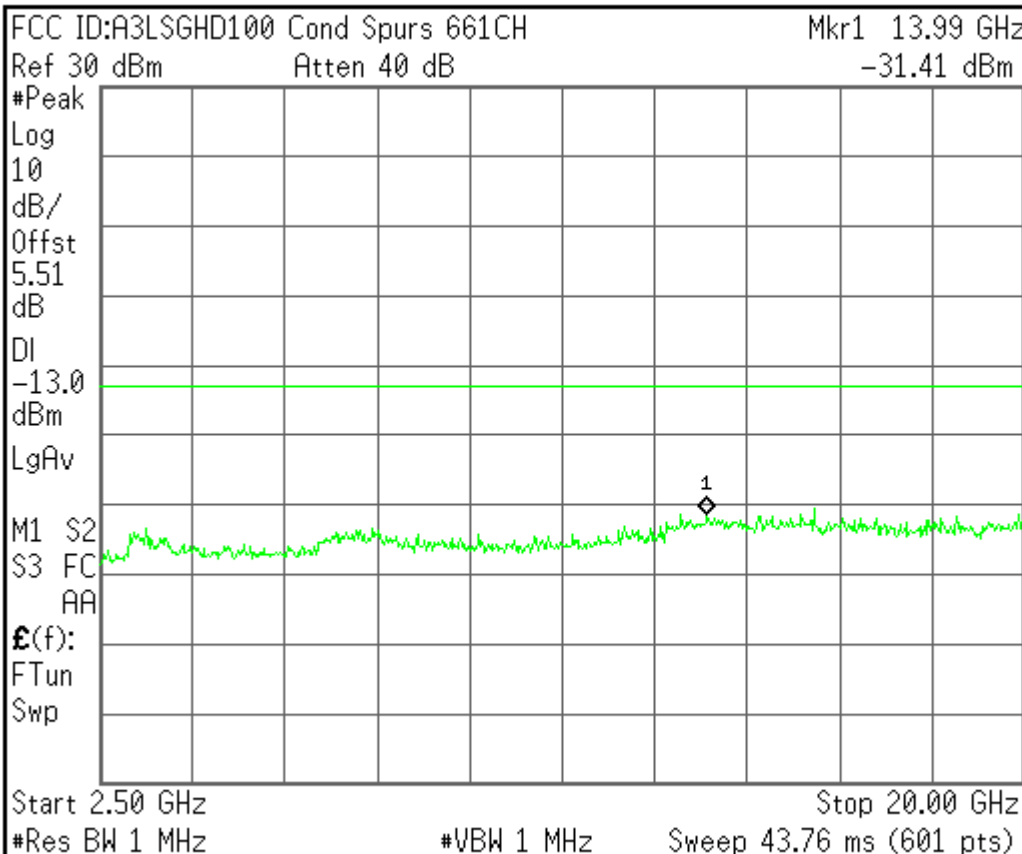
CF Step
249.000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

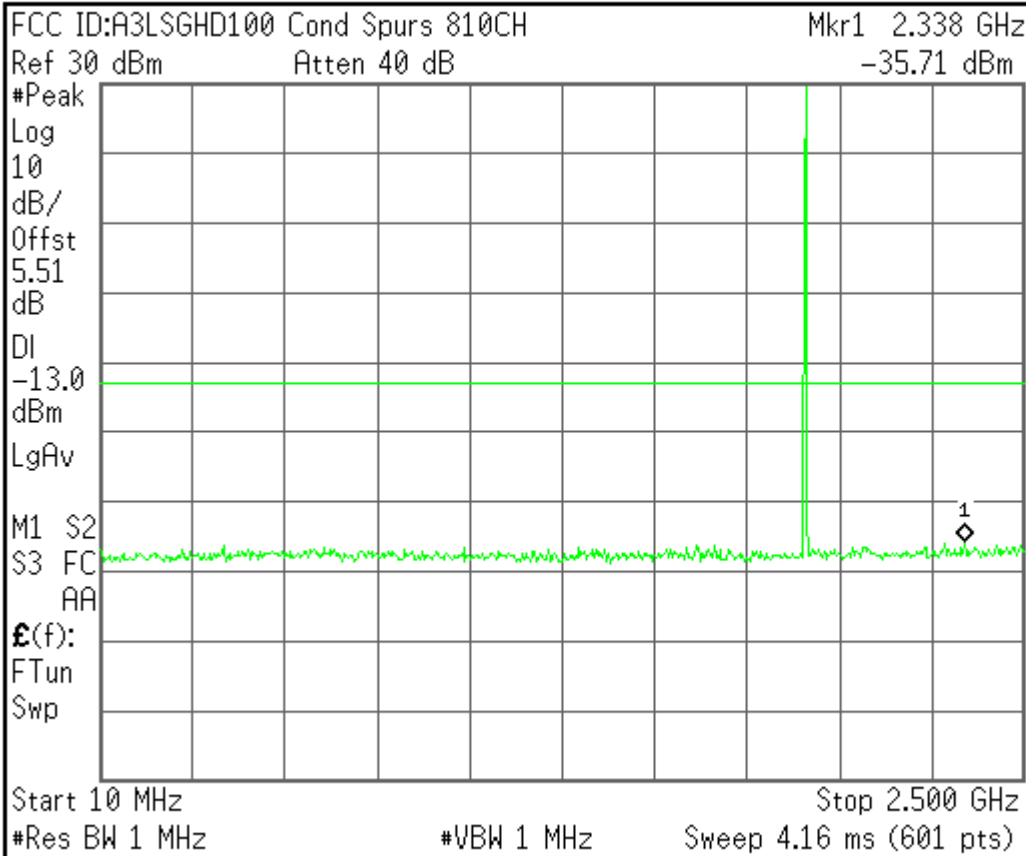
CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.25500000 GHz

Start Freq
10.0000000 MHz

Stop Freq
2.50000000 GHz

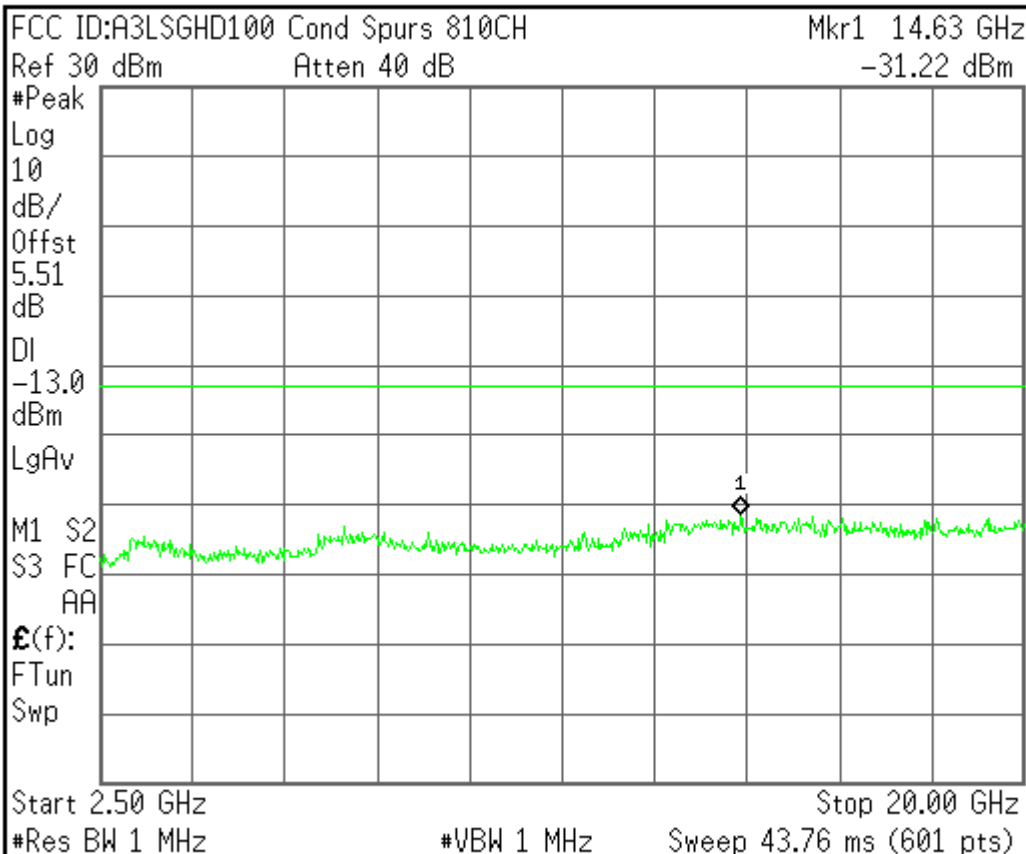
CF Step
249.0000000 MHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
11.2500000 GHz

Start Freq
2.50000000 GHz

Stop Freq
20.0000000 GHz

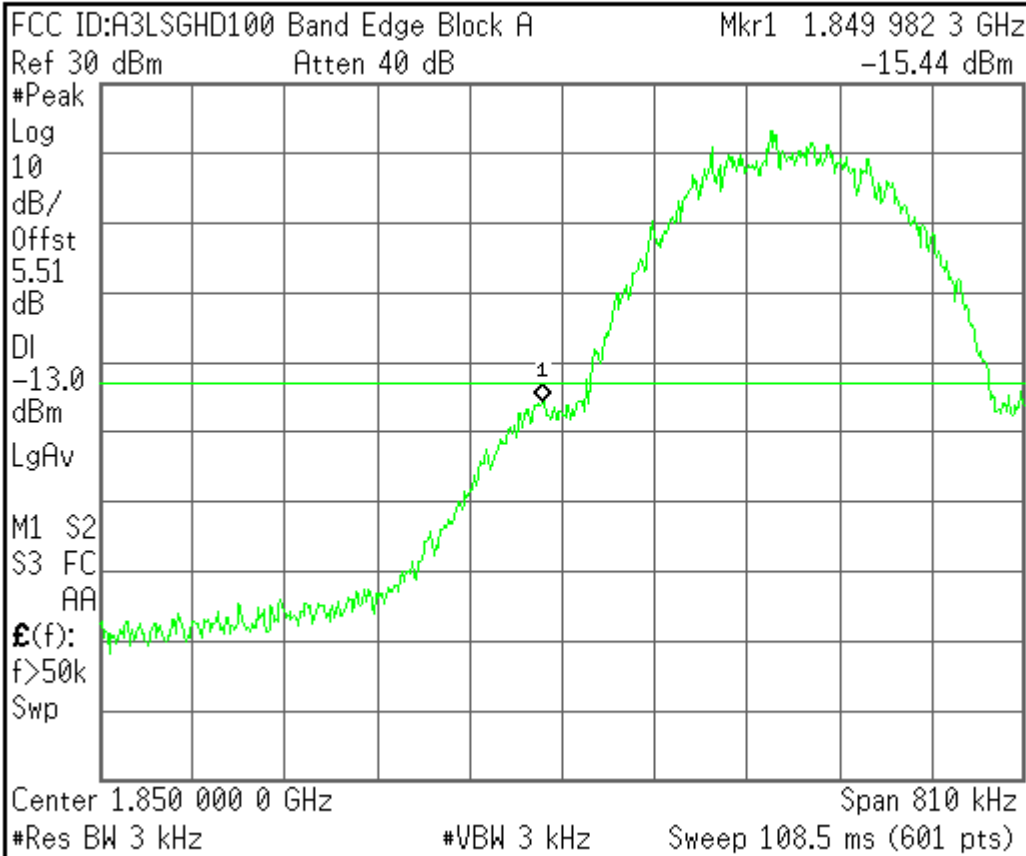
CF Step
1.75000000 GHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.85000000 GHz

Start Freq
1.84959500 GHz

Stop Freq
1.85040500 GHz

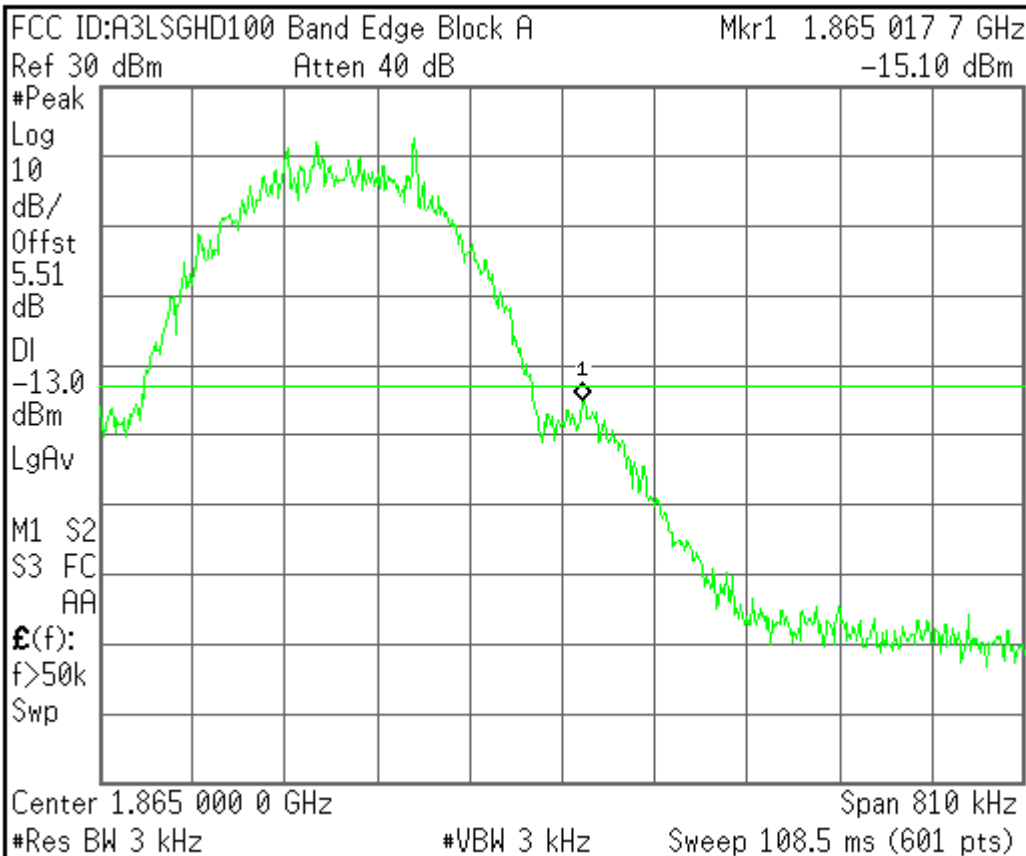
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.86500000 GHz

Start Freq
1.86459500 GHz

Stop Freq
1.86540500 GHz

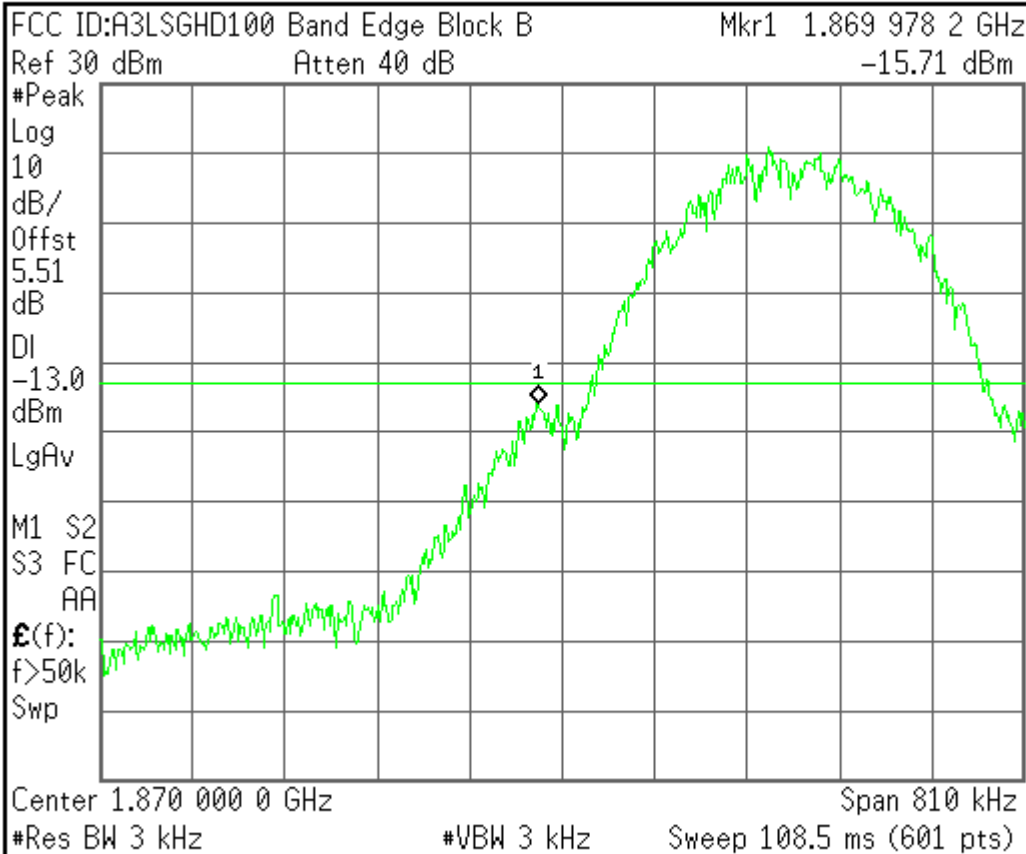
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

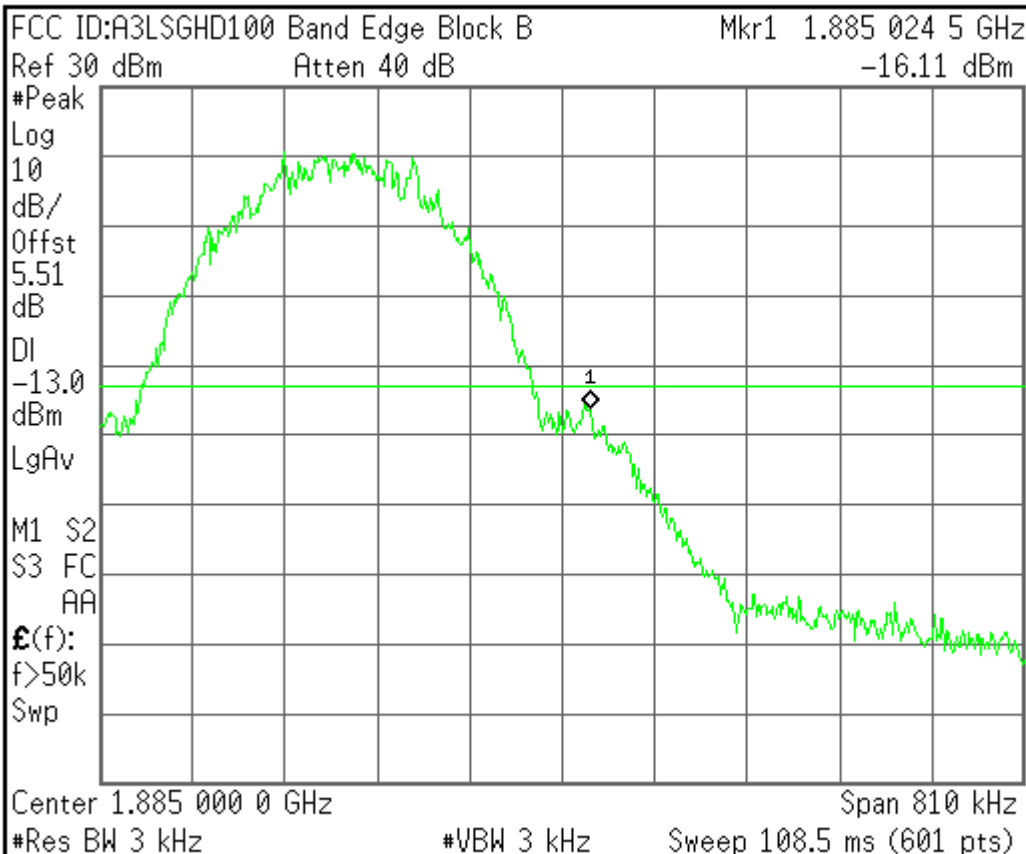
Agilent



Freq/Channel
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

Copyright 2000-2002 Agilent Technologies

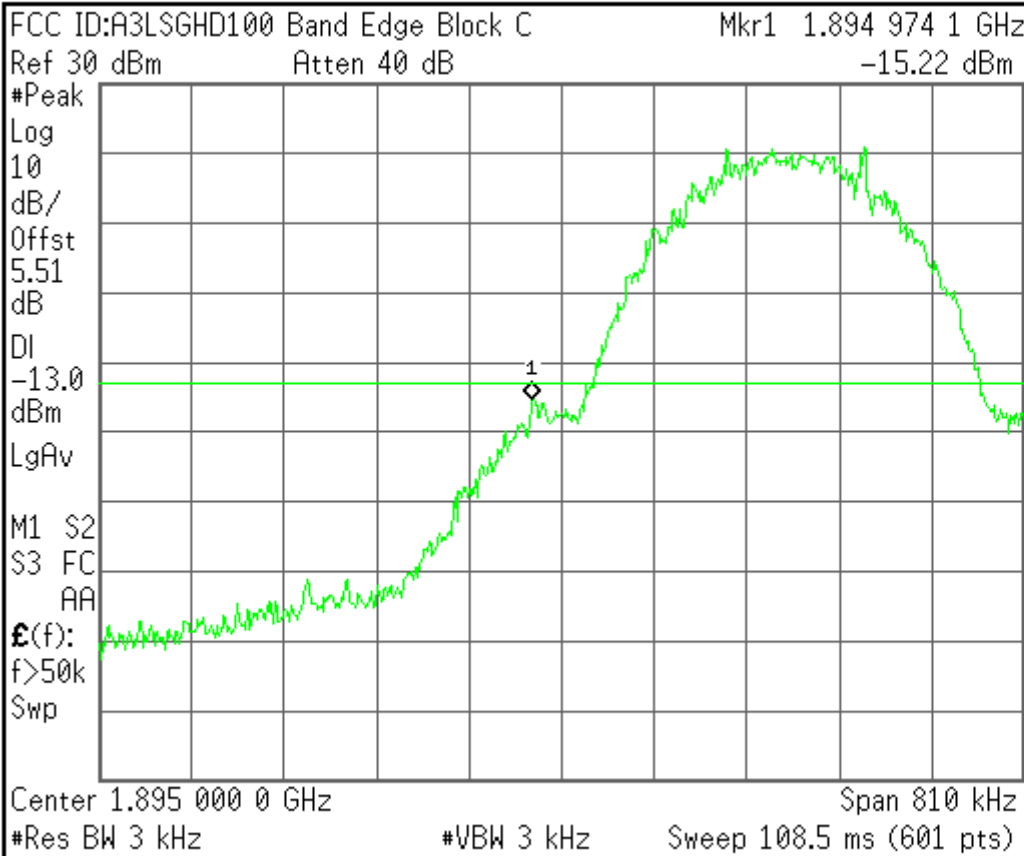
Agilent



Freq/Channel
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

Copyright 2000-2002 Agilent Technologies

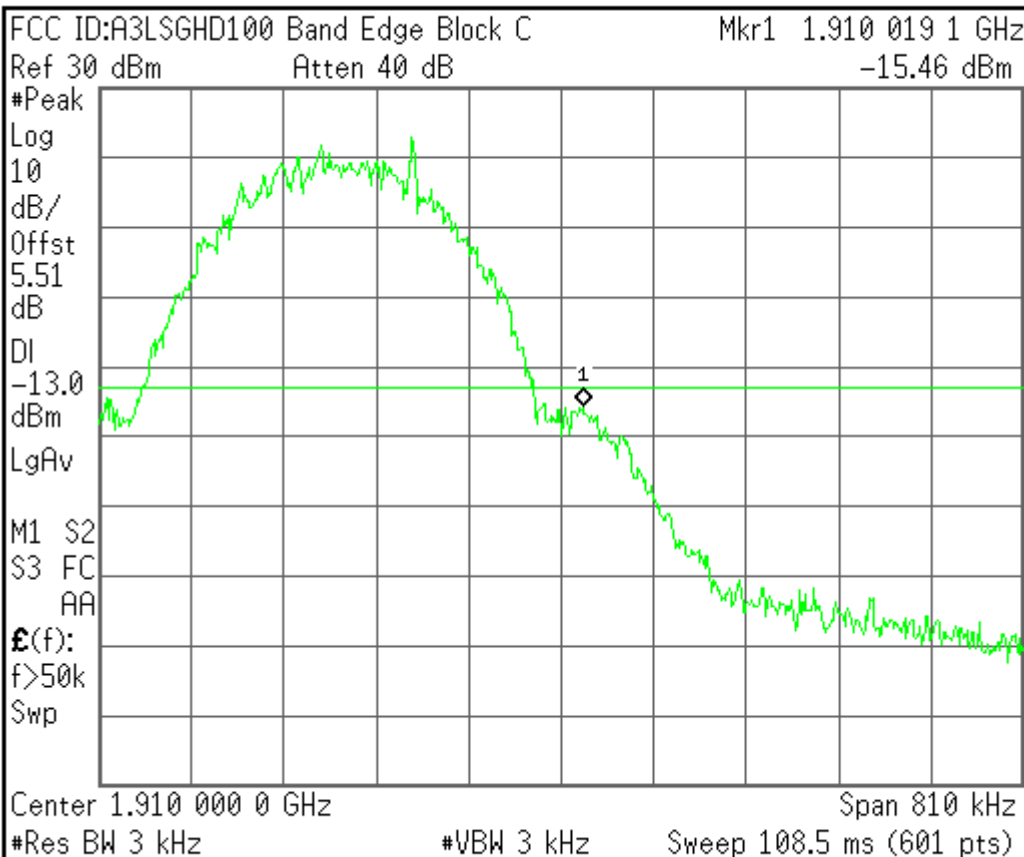
Agilent



Freq/Channel	
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

Copyright 2000-2002 Agilent Technologies

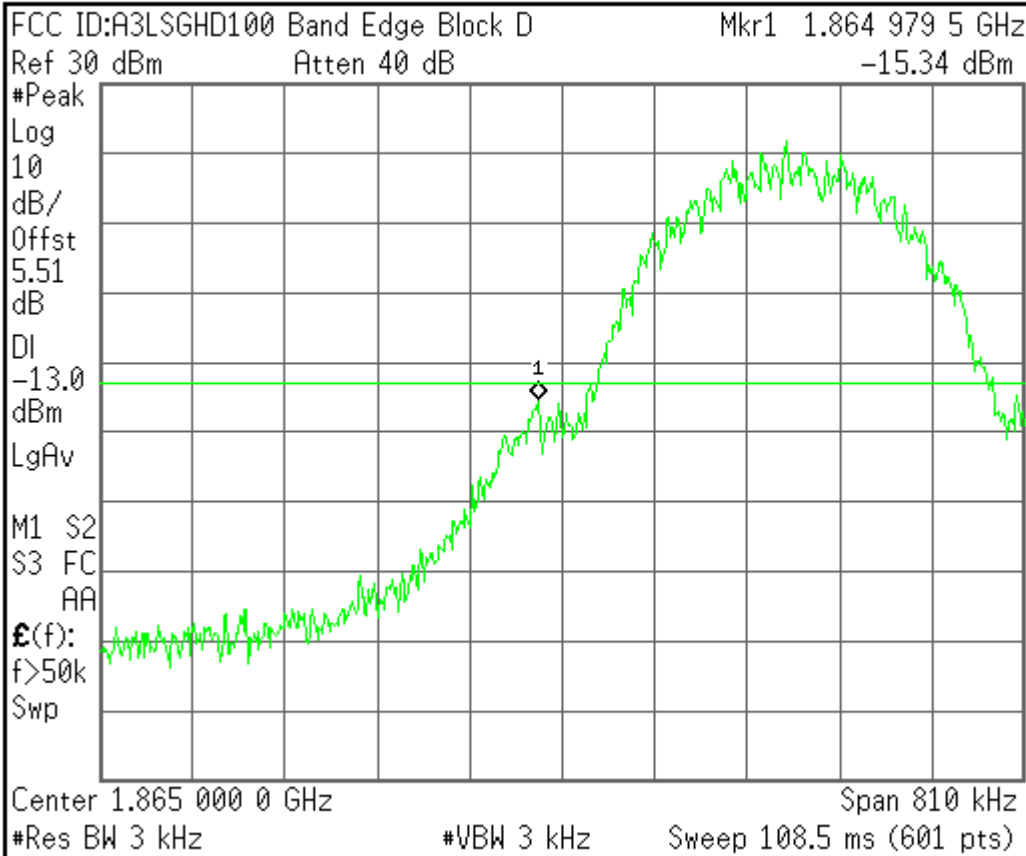
Agilent



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

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.86500000 GHz

Start Freq
1.86459500 GHz

Stop Freq
1.86540500 GHz

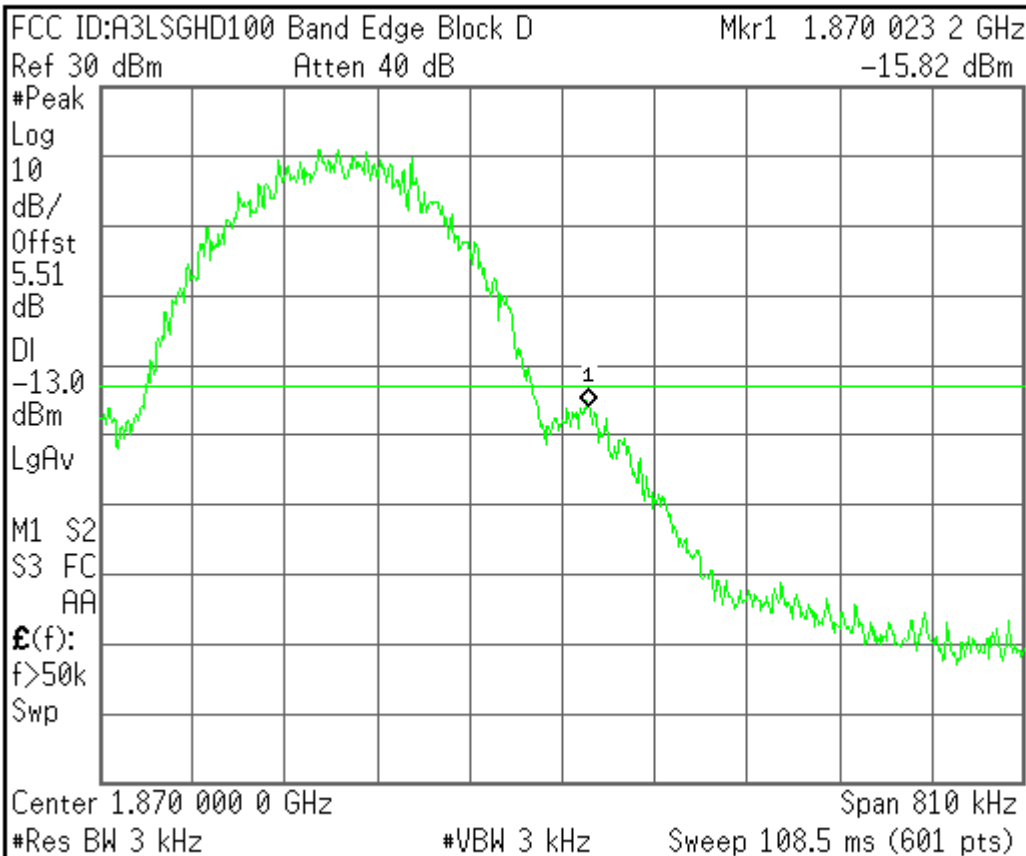
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.87000000 GHz

Start Freq
1.86959500 GHz

Stop Freq
1.87040500 GHz

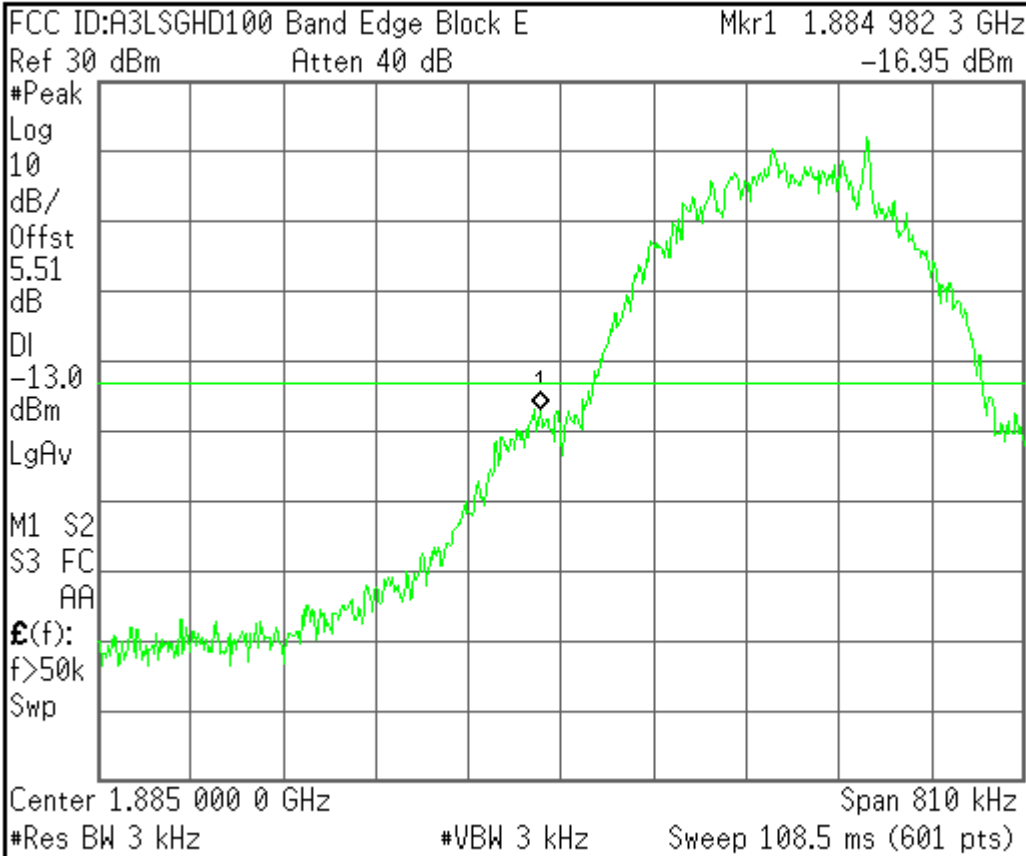
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.88500000 GHz

Start Freq
1.88459500 GHz

Stop Freq
1.88540500 GHz

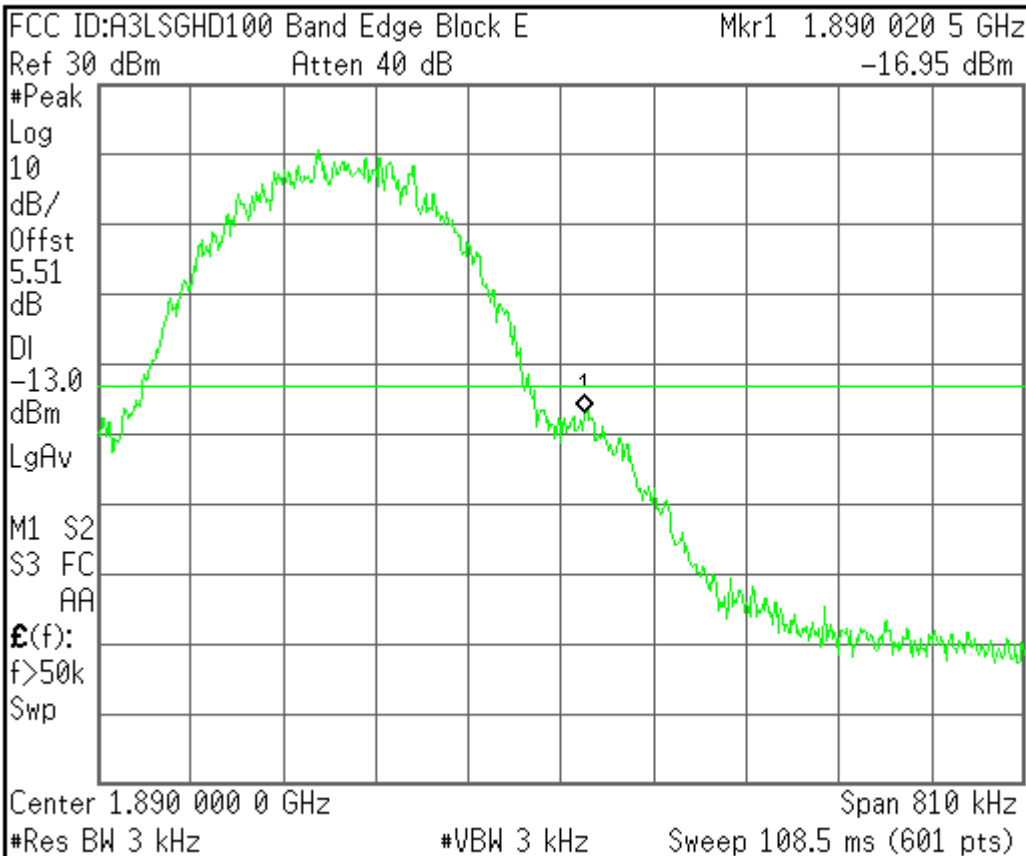
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.89000000 GHz

Start Freq
1.88959500 GHz

Stop Freq
1.89040500 GHz

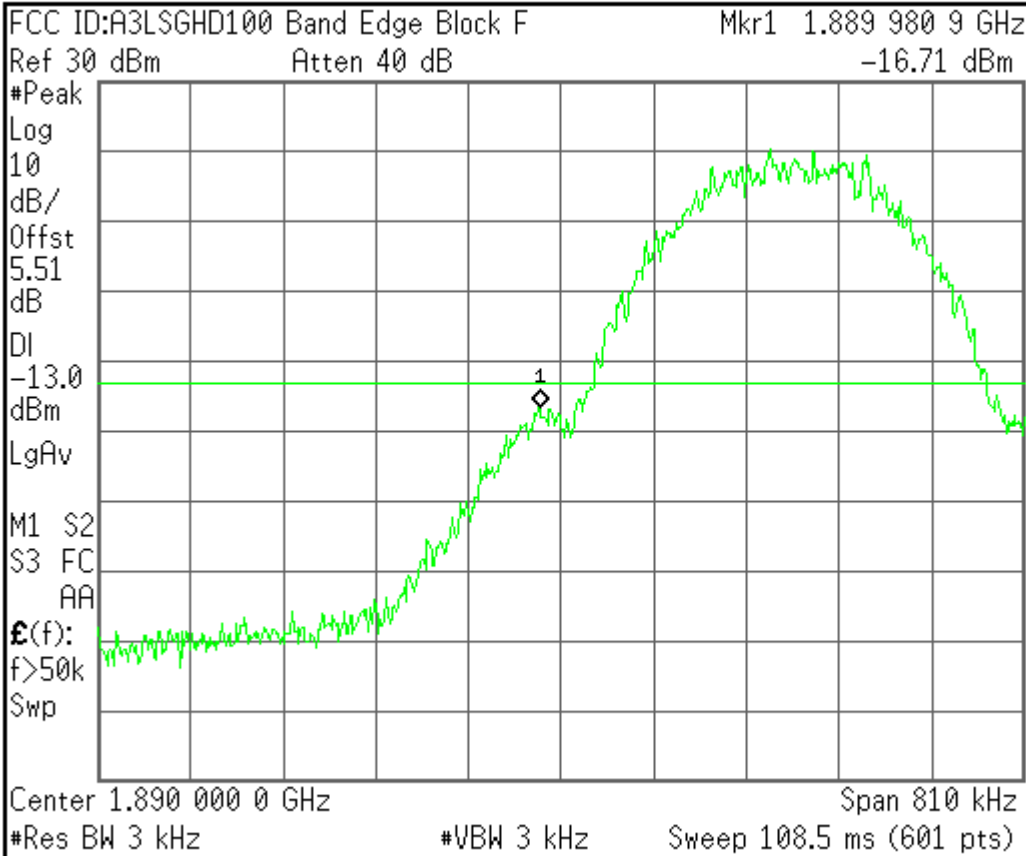
CF Step
81.00000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

Center Freq
1.89000000 GHz

Start Freq
1.88959500 GHz

Stop Freq
1.89040500 GHz

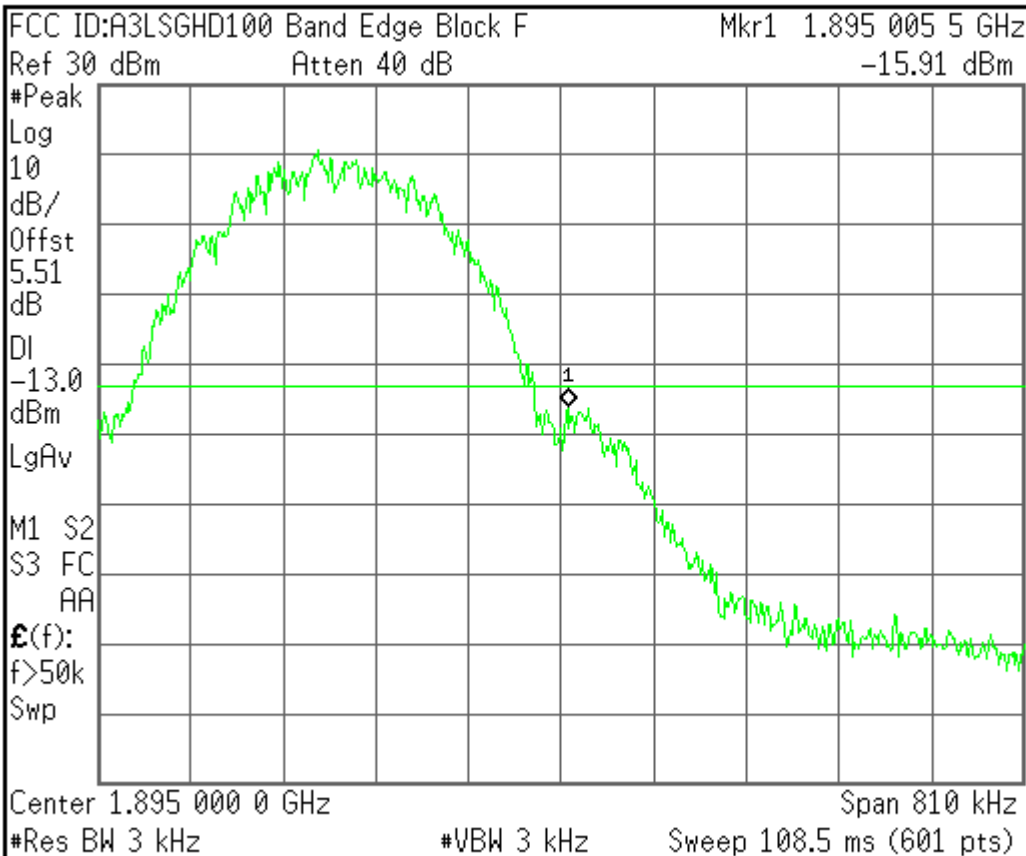
CF Step
81.0000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Copyright 2000-2002 Agilent Technologies

Agilent



Freq/Channel

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

Copyright 2000-2002 Agilent Technologies