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FCC CFR47 PART 24 SUBPART CERTIFICATION TEST DATA

Model Tested: SGH-E105
FCC ID (Requested): A3LSGHE105
Report No: FA-007-R1
Date issued: May 22, 2003

- Abstract -

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

Prepared By		Date	May 22, 2003
	JH CHOI - Test Engineer		
Checked By		Date	May 22, 2003
	CW PARK - Manager		
Authorized By		Date	May 22, 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 : A3LSGHE105

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	-16.34	H1	131	31.01	1.262	Standard
1880.00	-17.00	H1	115	30.35	1.084	Standard
1909.80	-17.85	H1	117	29.50	0.891	Standard

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 : A3LSGHE105

Field Stength of SPURIOUS Radiation

Operating Frequency : 1850.2 MHz

Measured Output Power : 31.01 dBm = 1.262 W

Modulation Signal : PCS GSM

Limit : $43+10\log_{10}(W)$ = 44.01 dBc

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
512	2	3700.40	-56.50	H1	64.44
	3	5550.60	-60.69	H2	63.72
	4	7400.80	-59.47	H2	59.87
	5	9251.00	-54.31	H2	50.07
	6	11101.20	-69.77	H2	62.34
	7	12951.40	-71.52	H2	62.08
	8	14801.60	-74.77	H1	61.17
661	2	3760.00	-56.00	H1	63.97
	3	5640.00	-59.43	H2	63.04
	4	7520.00	-61.67	H1	62.11
	5	9400.00	-53.95	H2	50.54
	6	11280.00	-68.82	H1	60.47
	7	13160.00	-73.28	H2	63.28
	8	15040.00	-73.94	H2	62.27
810	2	3819.60	-54.57	H1	63.99
	3	5729.40	-59.97	H2	64.11
	4	7639.20	-59.37	H1	60.43
	5	9549.00	-57.81	H2	53.90
	6	11458.80	-72.05	V	63.82
	7	13368.60	—	—	—
	8	15278.40	—	—	—

Radiated Spurious & Harmonic Conversion Table

FCC ID : A3LSGHE105 Mode : GSM1900

ERP : 31.01dBm

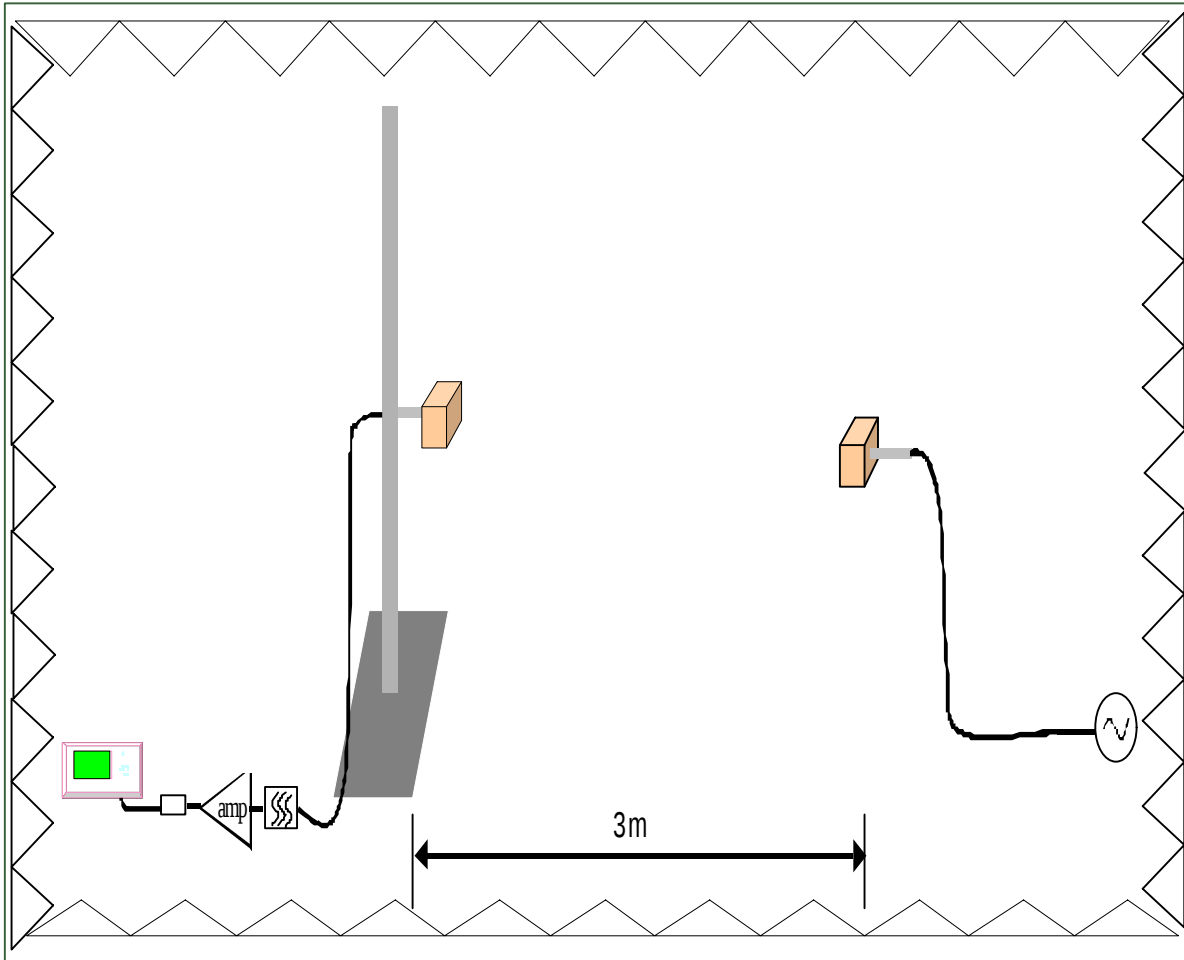
Date : 2003 . 05 . 13 .

Test Engineer : JH Choi

- 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	채수	Frequency (MHz)	① Tx CL (dB)	② Horn Gain (dB)	Tx Level (Horn 출력) S/C 10dBm	⑤ 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	-56.50	-60.43	-33.43	-37.29	64.44	68.30
	3	5550.60	18.53	10.60	2.07	-60.69	-64.84	-32.71	-37.17	63.72	68.18
	4	7400.80	22.30	10.83	-1.47	-59.47	-62.00	-28.86	-32.22	59.87	63.23
	5	9251.00	26.05	11.56	-4.49	-54.31	-59.47	-19.06	-25.23	50.07	56.24
	6	11101.20	30.22	12.79	-7.43	-69.77	-70.99	-31.33	-33.58	62.34	64.59
	7	12951.40	35.07	12.66	-12.41	-71.52	-83.13	-31.07	-44.92	62.08	75.93
	8	14801.60	39.97	12.69	-17.28	-74.77	-	-30.16	-	61.17	-
661	2	3760.00	13.75	8.98	5.23	-56.00	-57.25	-32.96	-33.91	63.97	64.92
	3	5640.00	18.47	10.60	2.13	-59.43	-62.12	-32.03	-34.70	63.04	65.71
	4	7520.00	22.44	10.83	-1.61	-61.76	-61.67	-31.10	-31.81	62.11	62.82
	5	9400.00	26.83	11.60	-5.23	-53.95	-57.47	-19.53	-24.21	50.54	55.22
	6	11280.00	30.39	12.93	-7.46	-68.82	-72.01	-29.46	-33.47	60.47	64.48
	7	13160.00	37.44	12.64	-14.80	-73.28	-74.52	-32.27	-35.92	63.28	66.93
	8	15040.00	41.49	12.70	-18.79	-73.94	-88.18	-31.26	-44.26	62.27	75.27
810	2	3819.60	15.24	8.98	3.74	-54.57	-57.23	-32.98	-35.14	63.99	66.15
	3	5729.40	19.14	10.73	1.59	-59.97	-62.22	-33.10	-34.49	64.11	65.50
	4	7639.20	23.72	10.87	-2.85	-59.37	-59.60	-29.42	-30.13	60.43	61.14
	5	9549.00	28.73	11.67	-5.06	-57.81	-61.62	-22.89	-27.21	53.90	58.22
	6	11458.80	30.60	12.90	-7.70	-74.92	-72.05	-35.01	-32.81	66.02	63.82
	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 : A3LSGHE105

Frequency Stability (PCS GSM)

Operating Frequency : 1,880,000,000 Hz

Channel : 661

Reference voltage : 3.7VDC

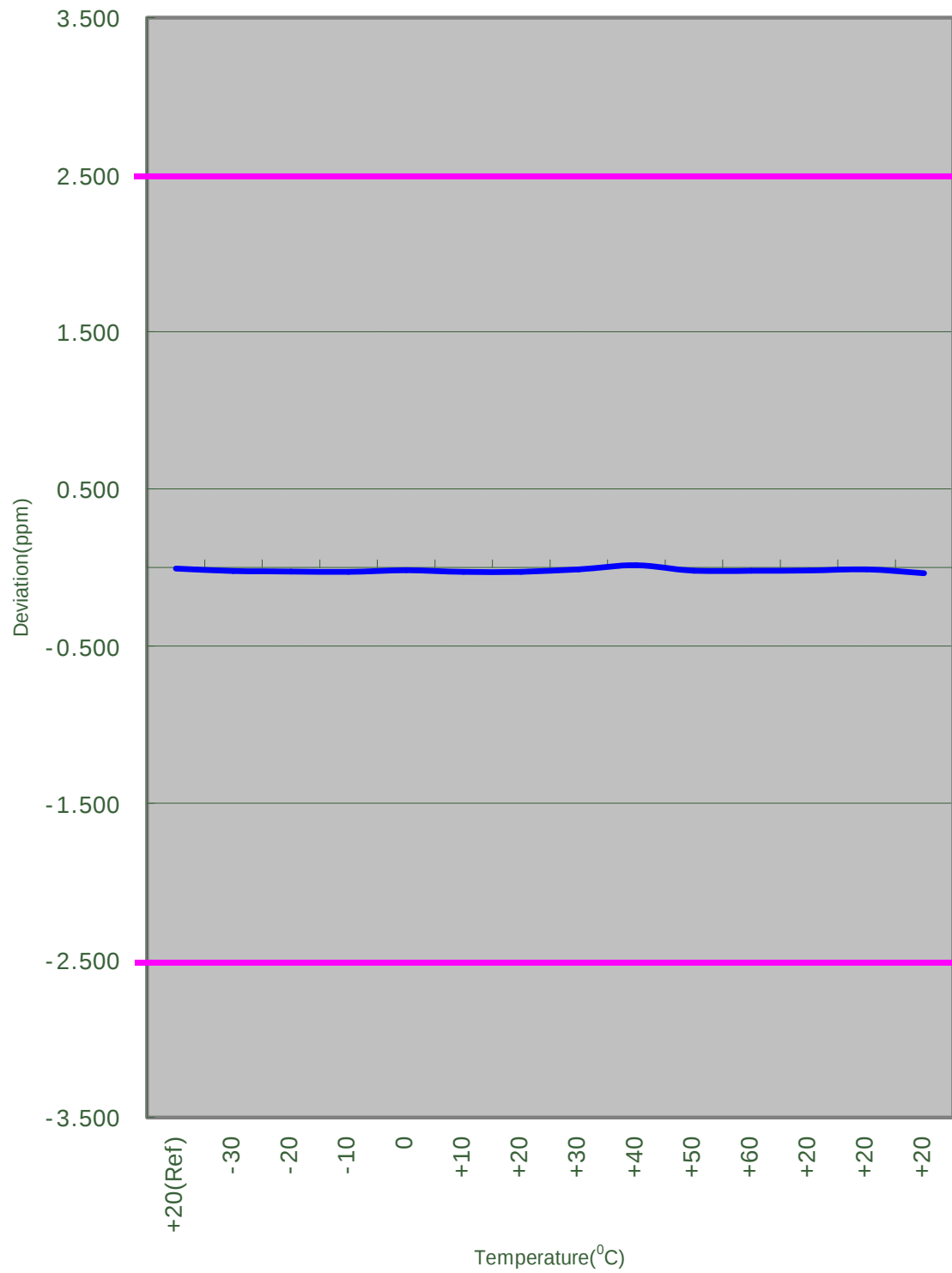
Deviation Limit : $\pm 0.00025\%$ or 2.5ppm

Voltage (%)	Power (V dc)	TEMP (OC)	Frequency error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-14.79	1,879,999,985	-0.000001	-0.008
100%		-30	-44.37	1,879,999,956	-0.000002	-0.024
100%		-20	-50.55	1,879,999,949	-0.000003	-0.027
100%		-10	-54.15	1,879,999,946	-0.000003	-0.029
100%		0	-33.04	1,879,999,967	-0.000002	-0.018
100%		+10	-52.19	1,879,999,948	-0.000003	-0.028
100%		+20	-51.05	1,879,999,949	-0.000003	-0.027
100%		+30	-24.04	1,879,999,976	-0.000001	-0.013
100%		+40	24.72	1,880,000,025	0.000001	0.013
100%		+50	-39.45	1,879,999,961	-0.000002	-0.021
100%		+60	-38.04	1,879,999,962	-0.000002	-0.020
85%	3.15	+20	-36.38	1,879,999,964	-0.000002	-0.019
115%	4.26	+20	-23.72	1,879,999,976	-0.000001	-0.013
Batt. Endpoint	3.12	+20	-68.79	1,879,999,931	-0.000004	-0.037

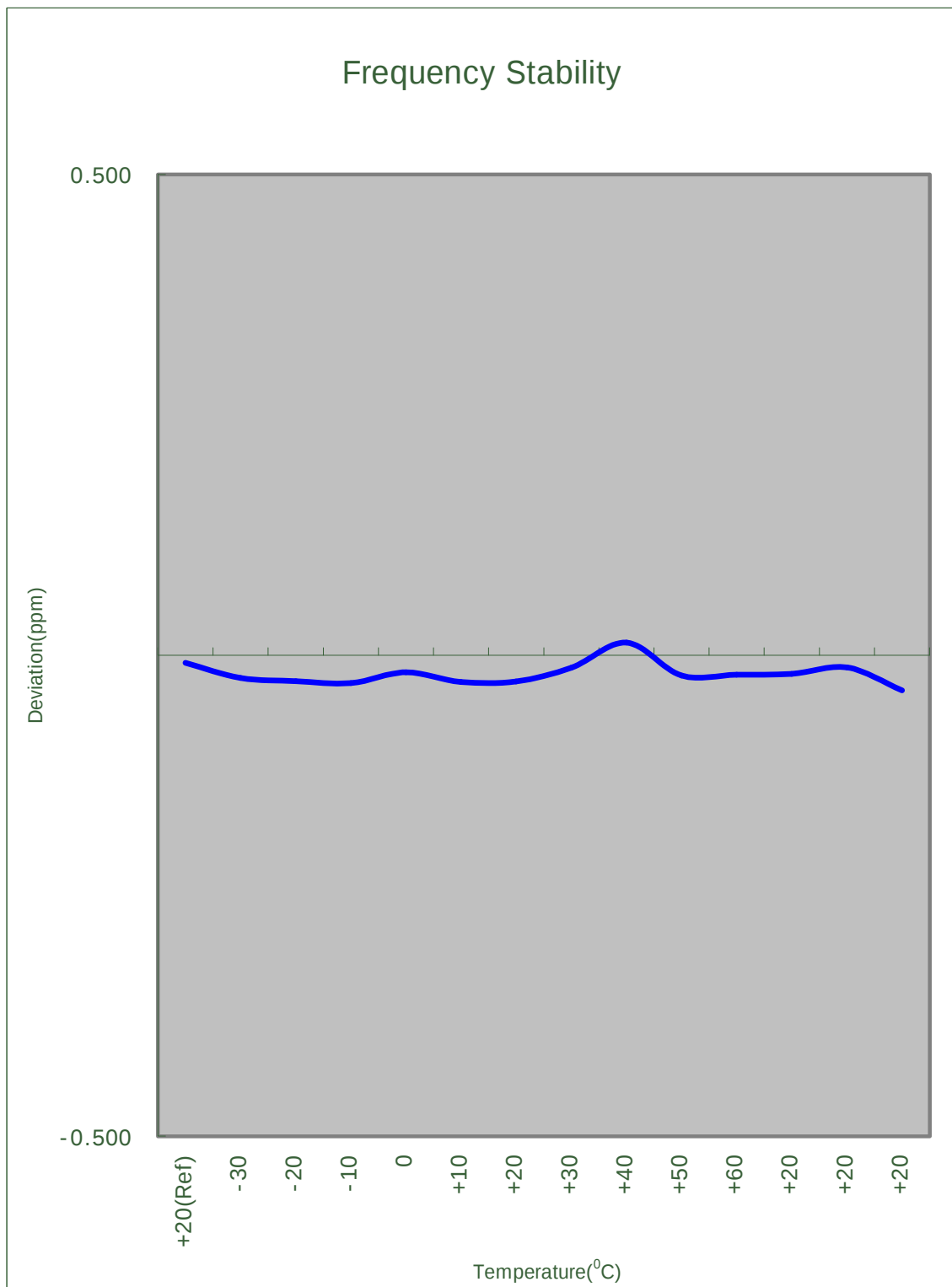
Note : The temperature is varied from -30°C to +60°C using an environmental chamber

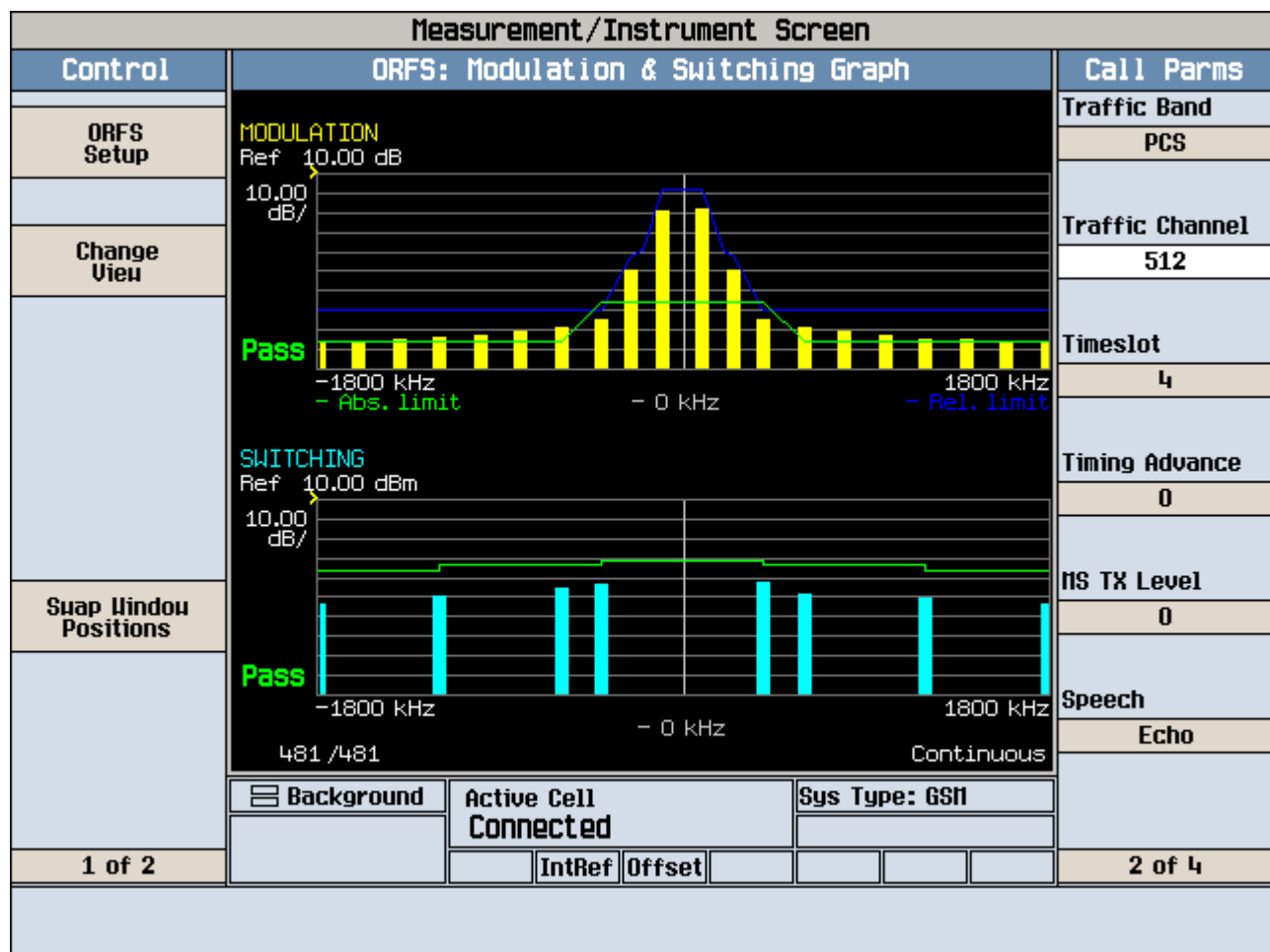
The EUT is tested down to the battery end point.

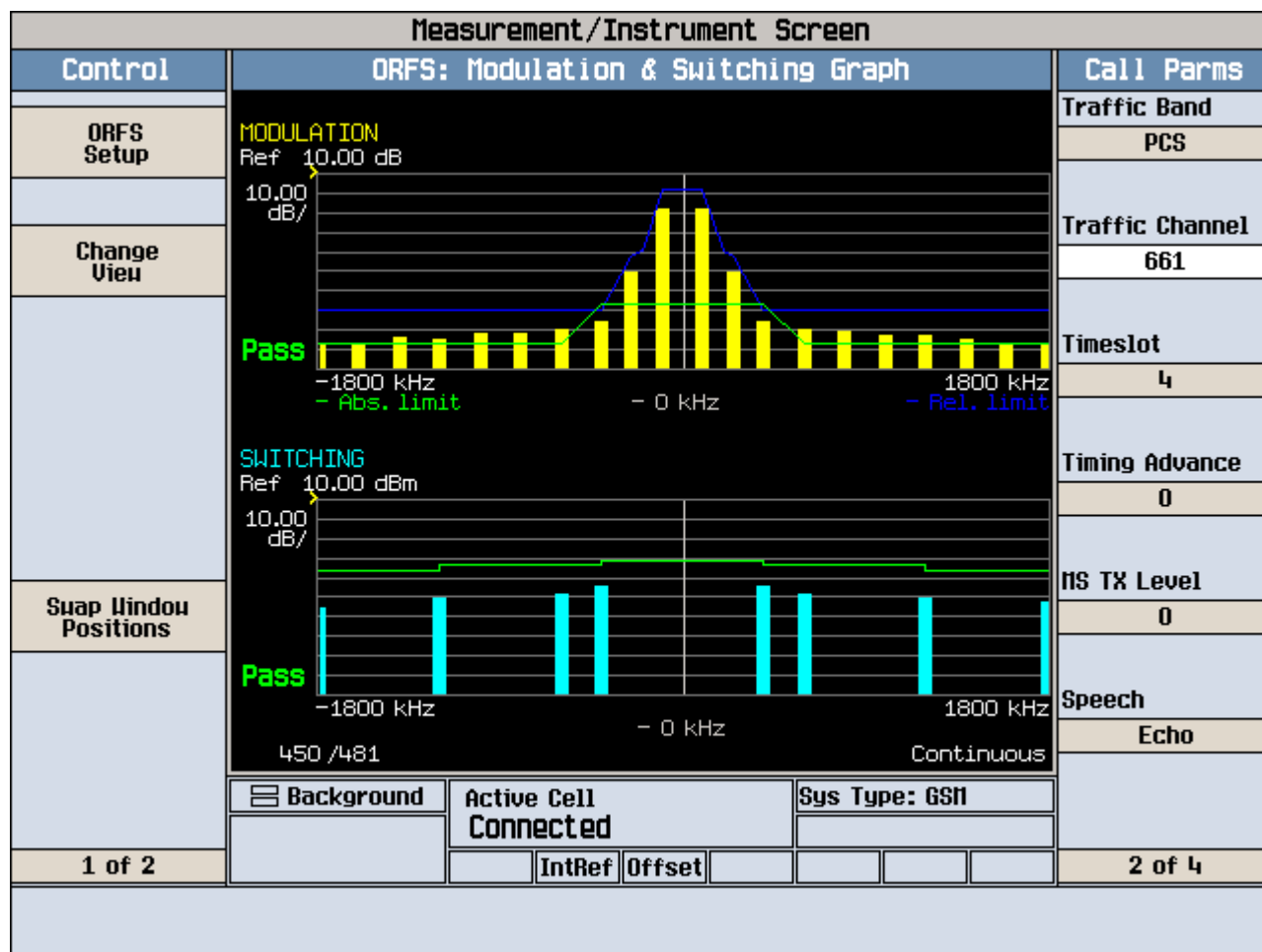
Frequency Stability

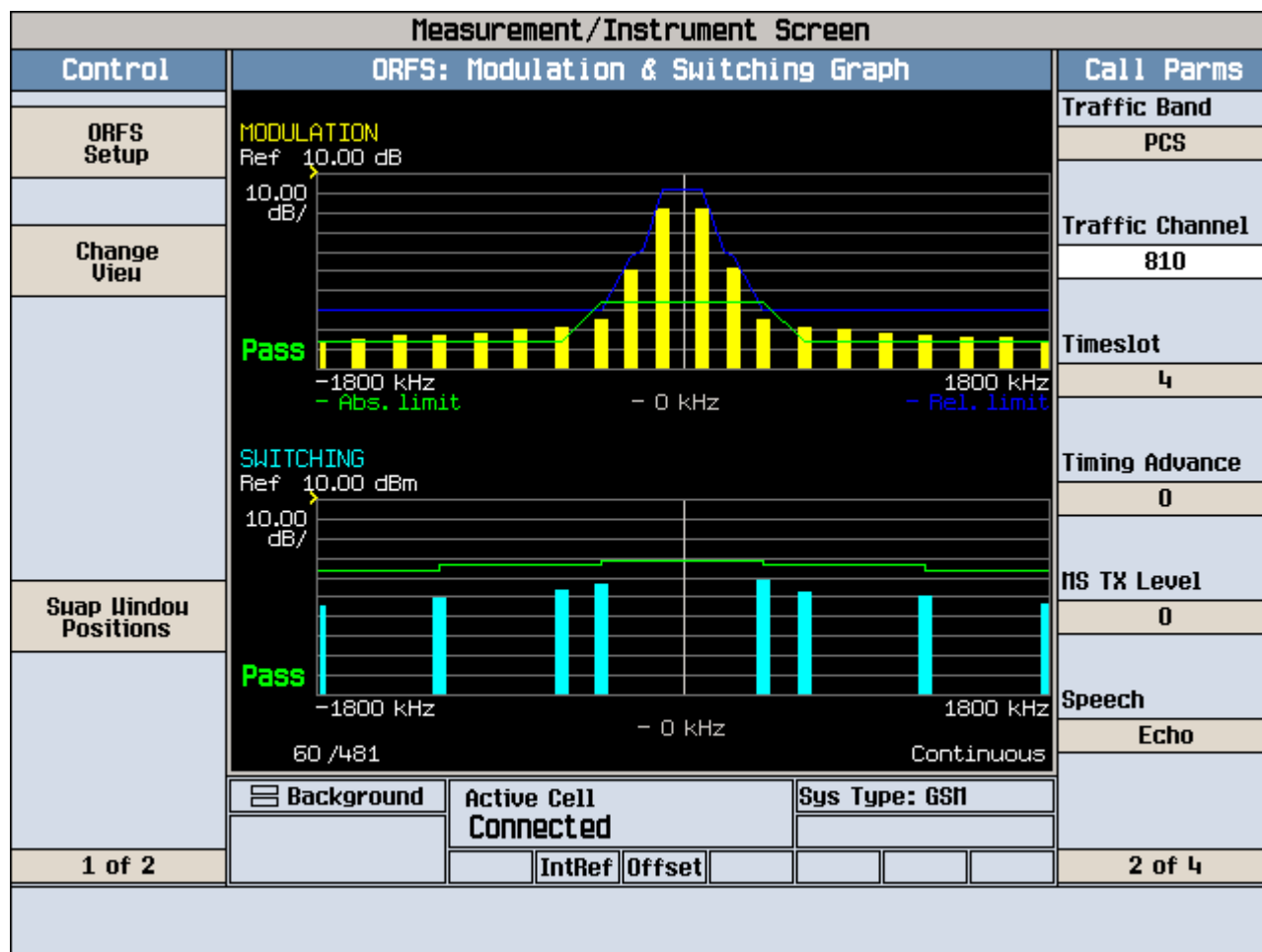


Zoom In

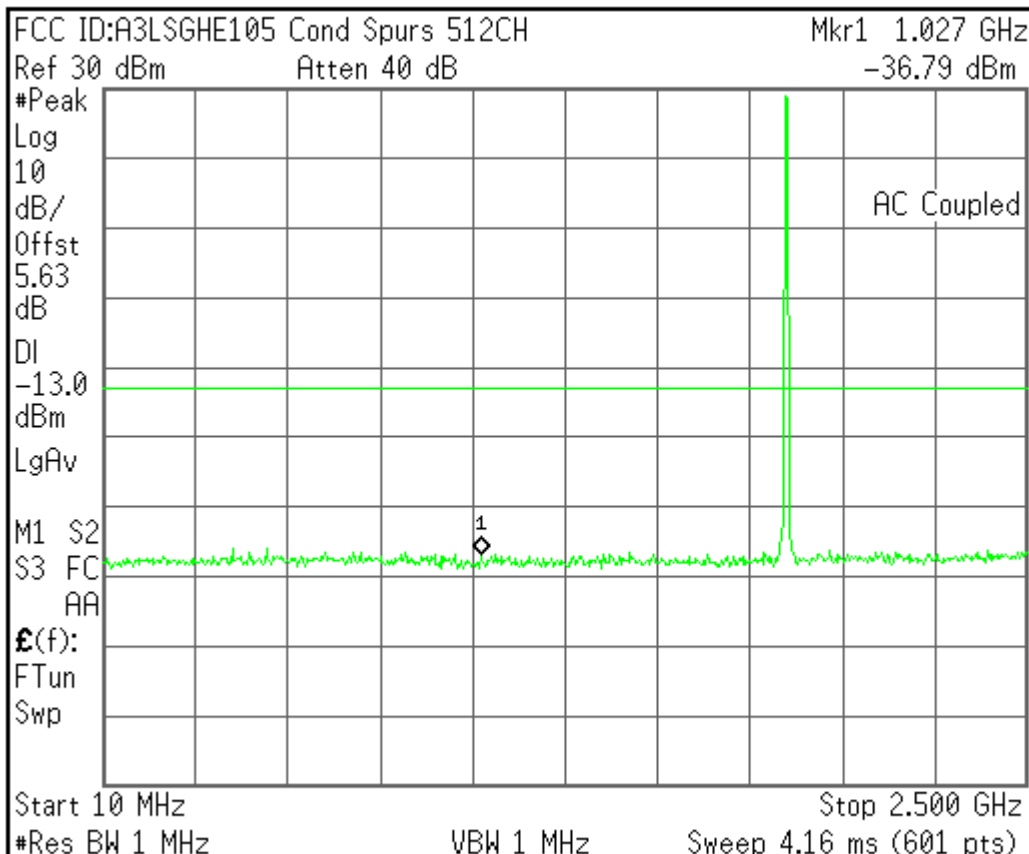








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Freq/Channel

Center Freq
 1.25500000 GHz

Start Freq
 10.0000000 MHz

Stop Freq
 2.50000000 GHz

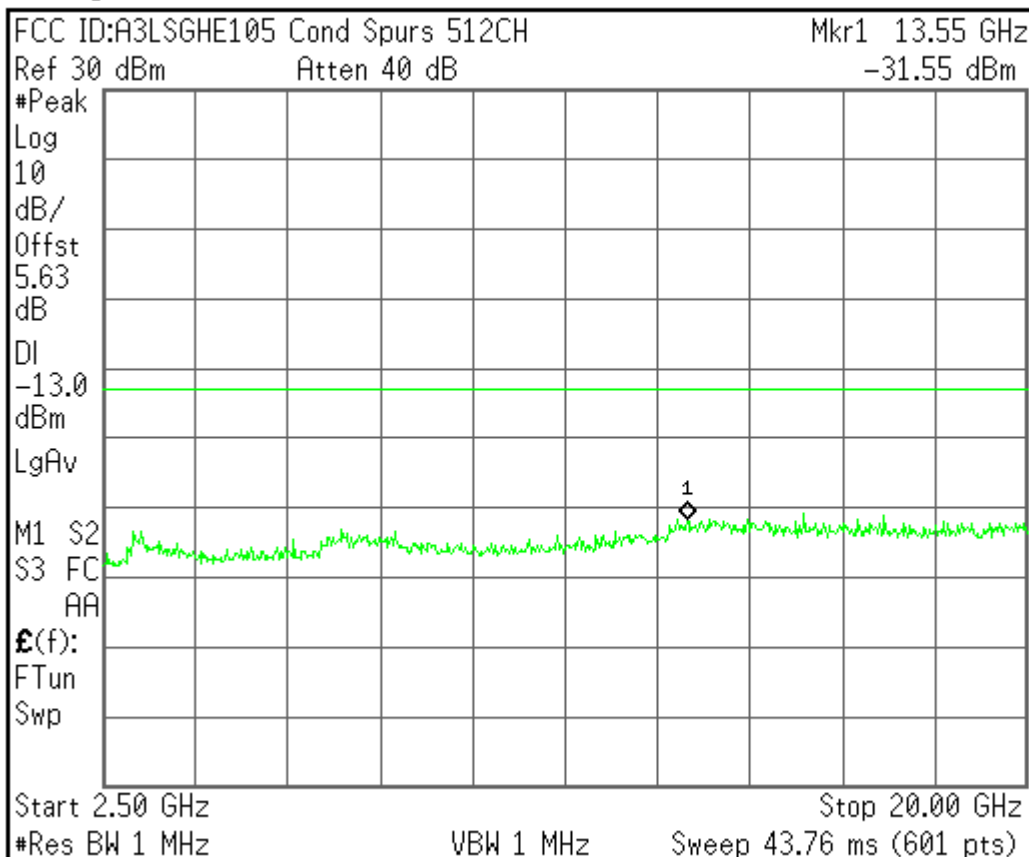
CF Step
 249.000000 MHz
 Auto Man

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

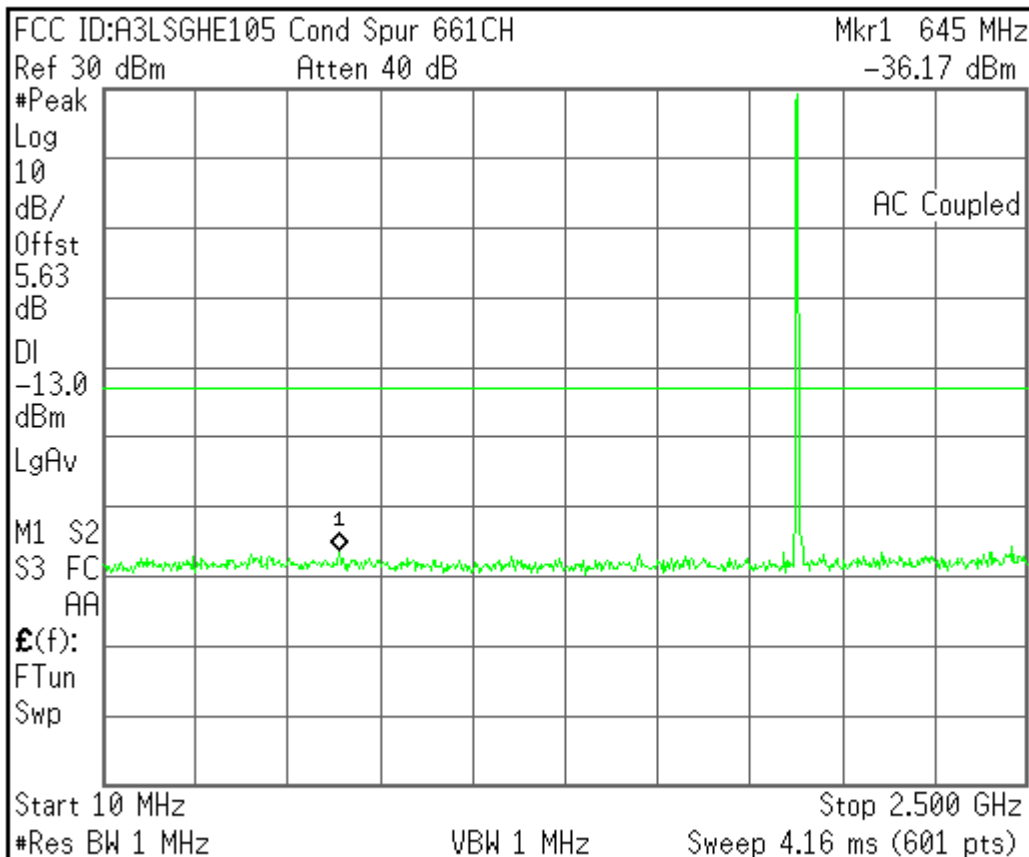
Freq Offset
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Signal Track
 On Off

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Freq/Channel

Center Freq

1.25500000 GHz

Start Freq

10.0000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

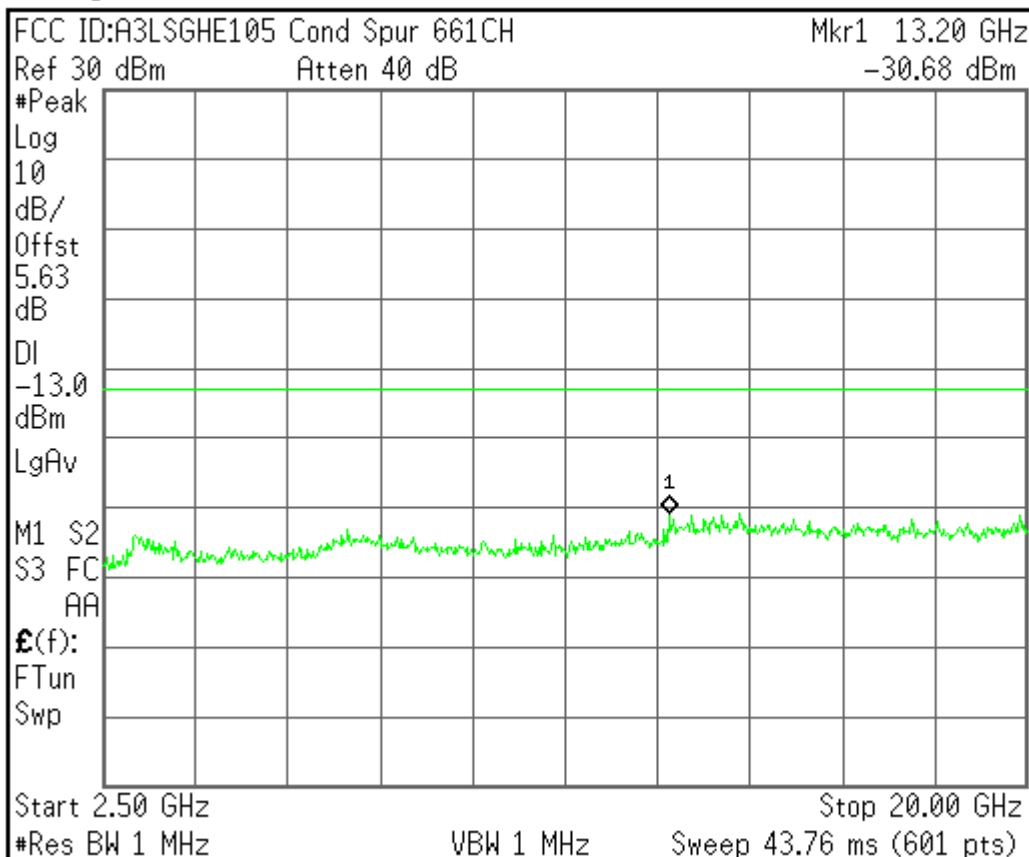
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Off

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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

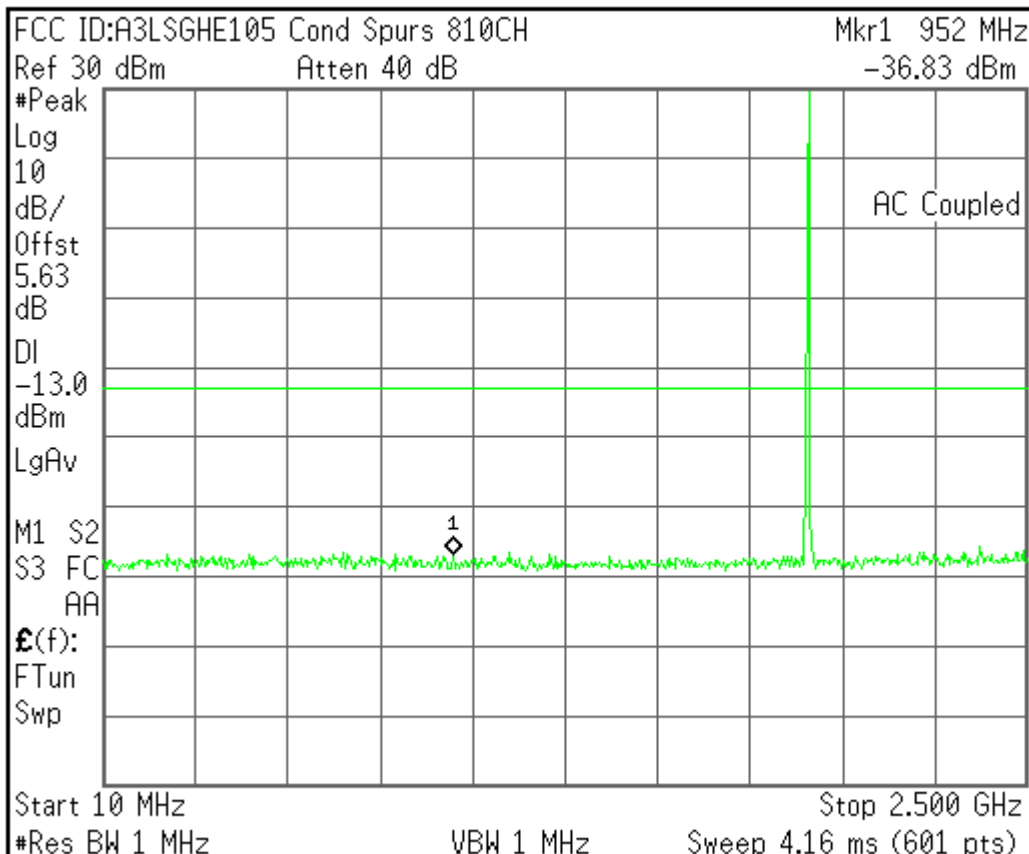
On

Off

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Freq/Channel

Center Freq

1.25500000 GHz

Start Freq

10.0000000 MHz

Stop Freq

2.50000000 GHz

CF Step

249.000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

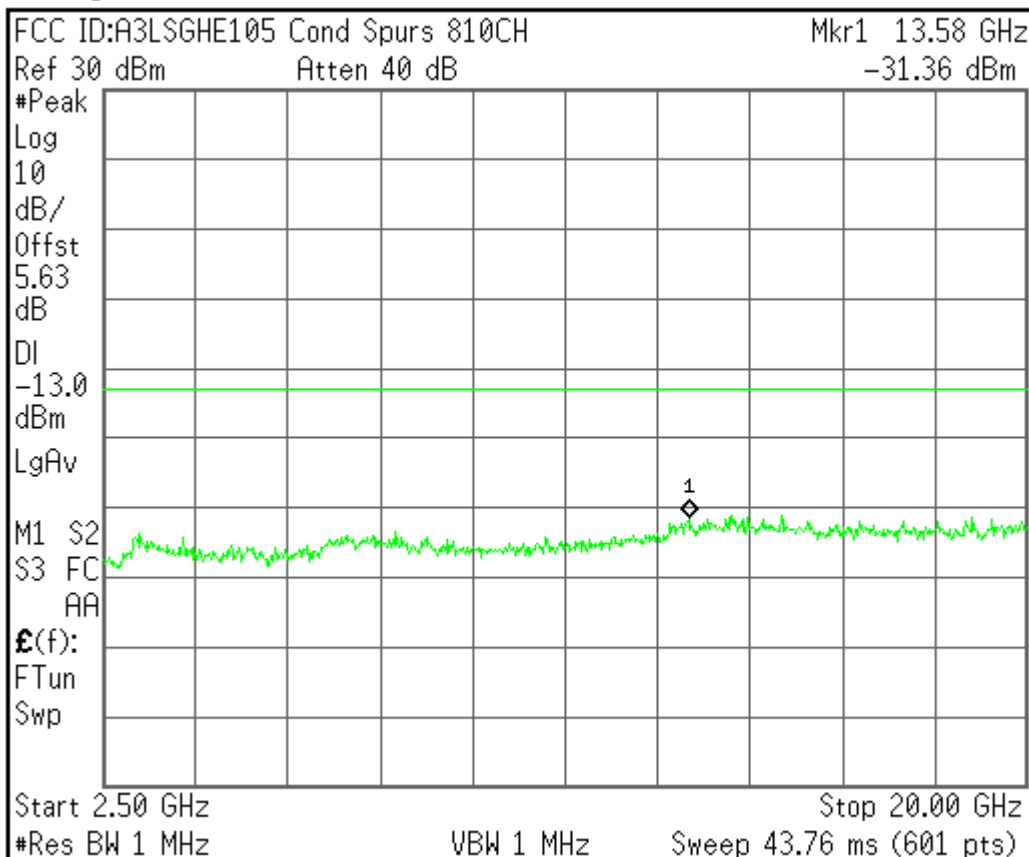
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Freq/Channel

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

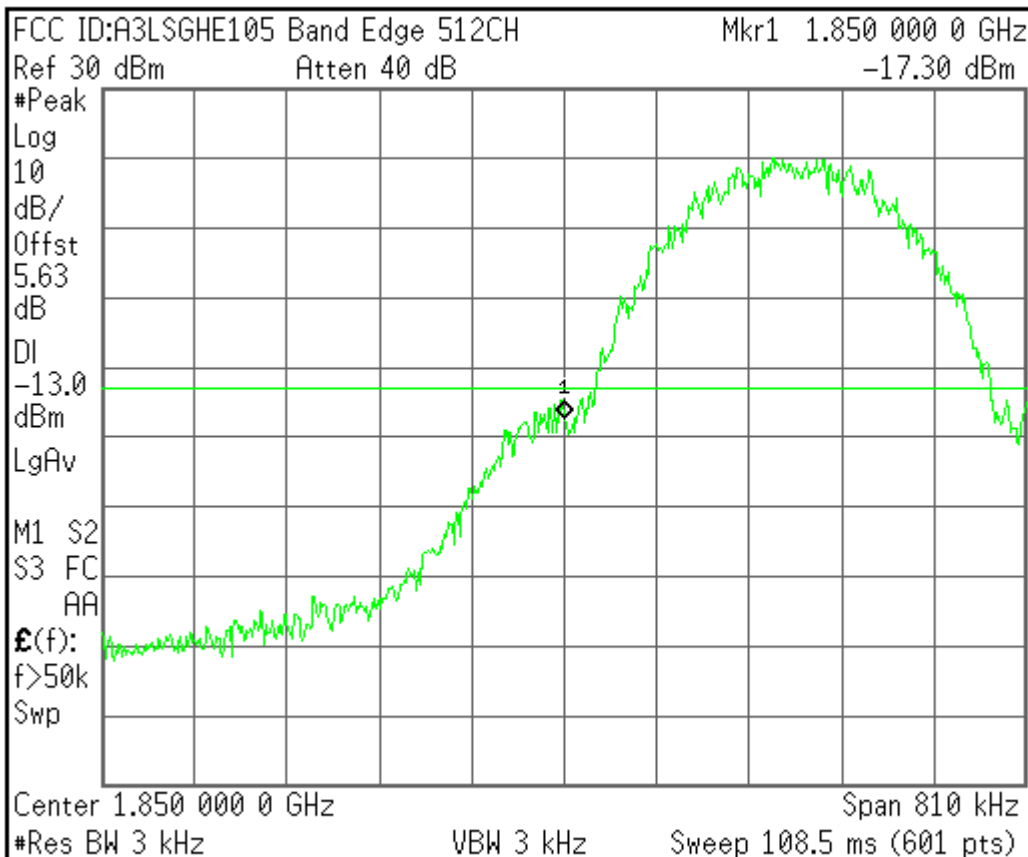
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Freq/Channel

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

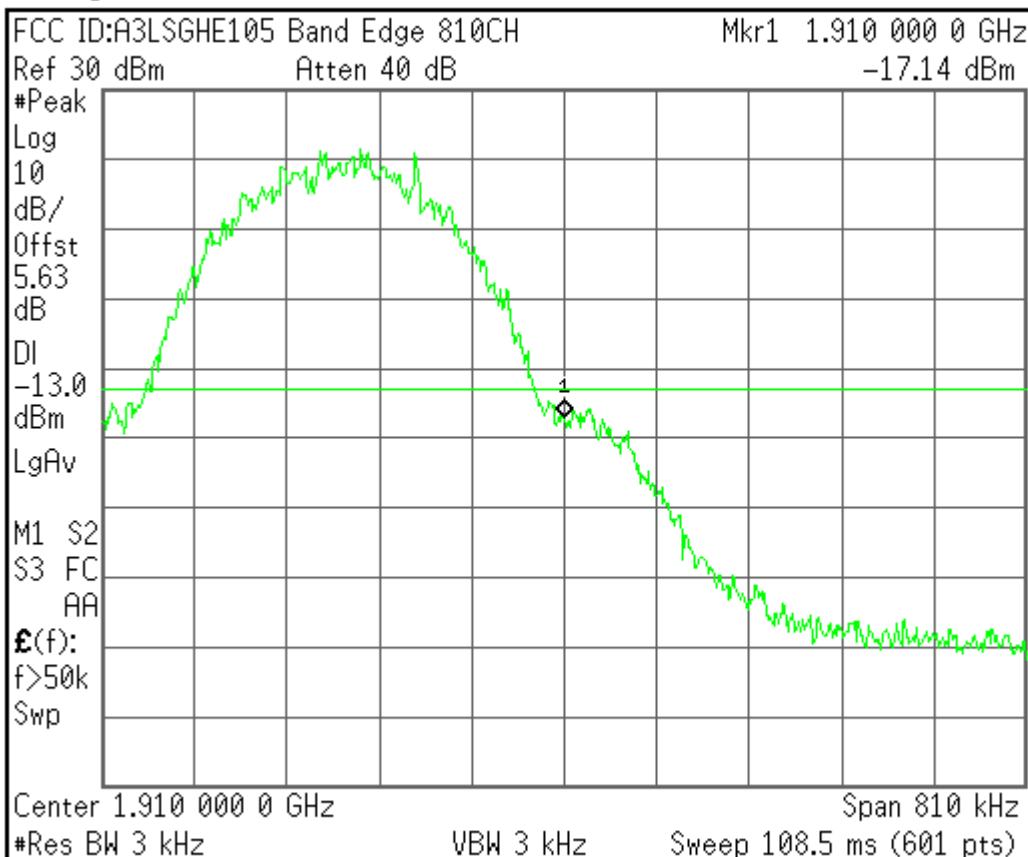
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Freq/Channel

Center Freq

1.91000000 GHz

Start Freq

1.90959500 GHz

Stop Freq

1.91040500 GHz

CF Step

81.00000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

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