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FCC CFR47 PART 22 SUBPART CERTIFICATION TEST DATA

Model Tested: SCH-A612
FCC ID (Requested): A3LSCHA612
Report No: FA-005-R1
Date issued: April 1, 2003

- Abstract -

All measurement reported herein accordance with FCC Rules, 47CFR Part2, Part22.

Prepared By	 JH CHOI - Test Engineer	Date	<u>April 1, 2003</u>
Checked By	 CW PARK - Manager	Date	<u>April 4, 2003</u>
Authorized By	 JK CHOI - Senior Manager	Date	<u>April 4, 2003</u>

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	2003-09-07
Dipole Antenna	3121C-DB4	9007-587	2003-11-08
	3121C-DB4	1454	2003-05-19
	3121C-DB4	1455	2003-05-19
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 : A3LSCHA612

Effective Radiated Power (E.R.P.)

Supply Voltage: 3.7 VDC

Modulation: CDMA

■ Reference level

Frequency (MHz)	Output (dBm)	Polarization	S/A (dBm)	P/M (dBm)	Ant gain (dBi)	Ref level (dBm)
835.89	24.50	H	-13.12	-13.22	0.00	-13.22
		V	-12.77	-12.87	0.00	-12.87

■ Result

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.70	-13.07	H2	178	24.65	0.292	Standard
835.89	-12.92	H2	177	24.80	0.302	Standard
848.31	-12.64	H2	178	25.08	0.322	Standard

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

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 : A3LSCHA612

Field Strength of SPURIOUS Radiation

Operating Frequency : 824.70MHz (Low), 835.89MHz (Middle), 848.37MHz (High)

Measured Output Power : 25.08 dBm = 0.322 W

Modulation Signal : CDMA

Limit : $43+10\log_{10}(W) = 38.08 \text{ dBc}$

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
1013	2	1649.40	-45.53	H1	61.35
	3	2474.10	-56.12	H1	66.11
	4	3298.80	-80.70	H1	84.07
	5	4123.50	-	-	-
	6	4948.20	-	-	-
363	2	1671.78	-41.41	V	55.63
	3	2507.67	-60.06	H2	70.08
	4	3343.56	-81.24	H2	84.07
	5	4179.45	-	-	-
	6	5015.34	-	-	-
777	2	1696.62	-39.90	H1	54.02
	3	2544.93	-56.59	H1	66.25
	4	3393.24	-78.75	H1	80.65
	5	4241.55	-	-	-
	6	5089.86	-	-	-

Note: This radiated spurious measurements were made up to - 130dBm noise level.

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.

Radiated Spurious & Harmonic Conversion Table

FCC ID : A3LSCHA612 Mode : CDMA

ERP : 25.08 dBm

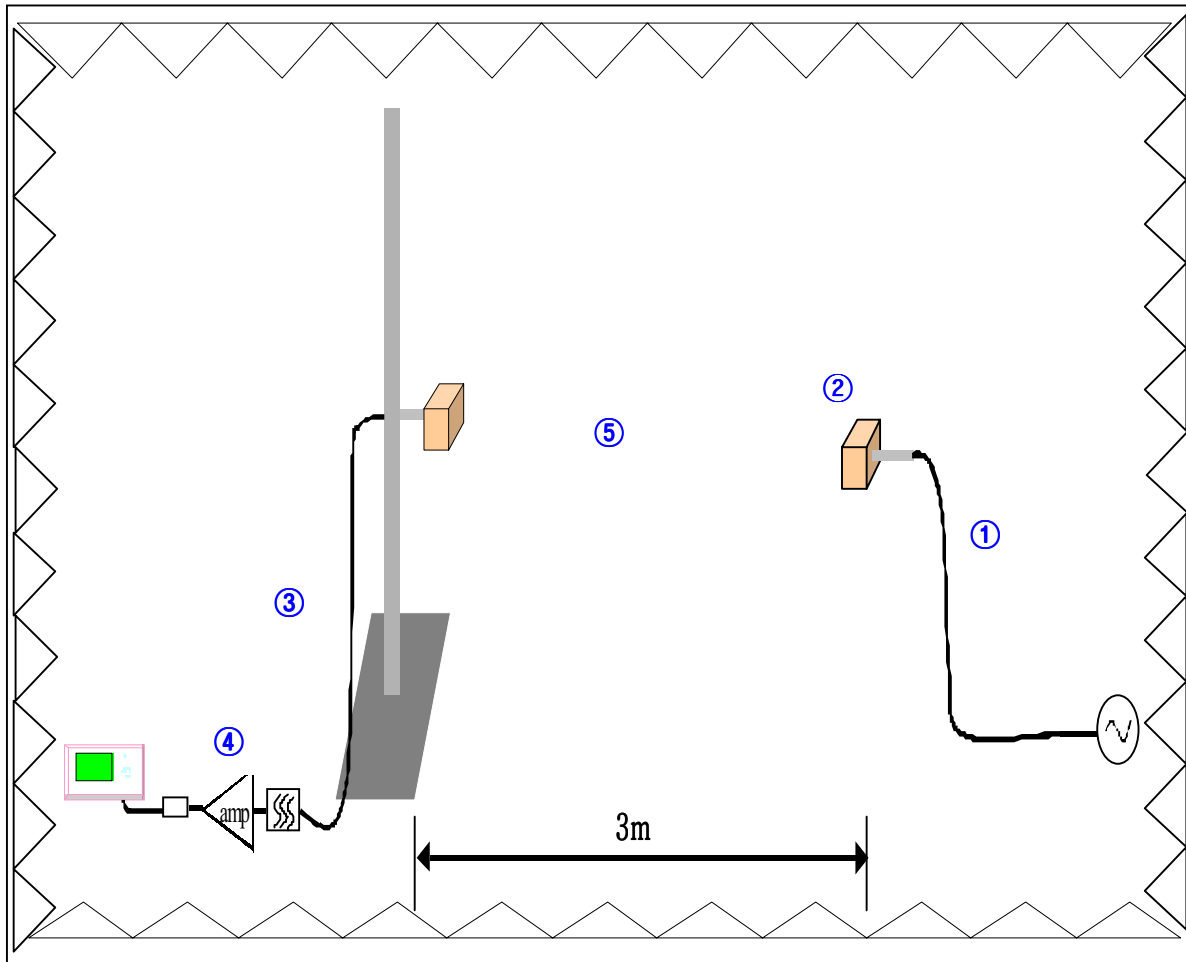
Date : 2008 : 03 : 21

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 + ④ - ③
 ⑧ = ERP*2.14 = ⑦

CH	차수	Frequency (MHz)	① Tx CL (dB)	② Horn Gain (dB)	Tx Level (Horn) S/G 0dBm	⑥ Tested Level Ant : H (dBm)	④ 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)
1013	2	1649.40	8.07	8.82	0.75	-45.53	-50.27	-34.13	-37.08	61.35	64.30
	3	2474.10	10.66	10.20	-0.46	-56.12	-66.53	-38.89	-48.73	66.11	75.95
	4	3298.80	13.27	9.98	-3.29	-80.70	-84.28	-56.85	-60.58	84.07	87.80
	5	4123.50	15.13	10.36	-4.77	-	-	-	-	-	-
	6	4948.20	17.44	11.16	-6.28	-	-	-	-	-	-
363	2	1671.78	8.17	8.94	0.77	-42.56	-41.41	-31.34	-28.41	58.56	55.63
	3	2507.67	10.83	10.20	-0.63	-60.06	-70.00	-42.86	-52.30	70.08	79.52
	4	3343.56	13.13	9.98	-3.15	-81.24	-83.85	-56.85	-59.71	84.07	86.93
	5	4179.45	15.50	10.62	-4.88	-	-	-	-	-	-
	6	5015.34	17.63	11.10	-6.53	-	-	-	-	-	-
777	2	1696.62	8.24	8.94	0.70	-39.90	-45.37	-26.80	-30.79	54.02	58.01
	3	2544.93	10.85	10.20	-0.65	-56.59	-69.11	-39.03	-51.02	66.25	78.24
	4	3393.24	13.67	9.94	-3.73	-78.75	-79.68	-53.43	-54.73	80.65	81.95
	5	4241.55	16.82	10.62	-6.20	-	-	-	-	-	-
	6	5089.86	18.26	11.10	-7.16	-	-	-	-	-	-

Radiated Spurious & Harmonic Configuration for Calibration



- ① Tx Cable loss
- ② Horn Ant Gain
- ③ Rx Cable loss + HPF Insertion loss + Attenuator
- ④ Pre-Amp gain
- ⑤ Air loss

FCC ID : A3LSCHA612

Frequency Stability (CDMA)

Operating Frequency : 835,890,000 Hz

Channel : 363

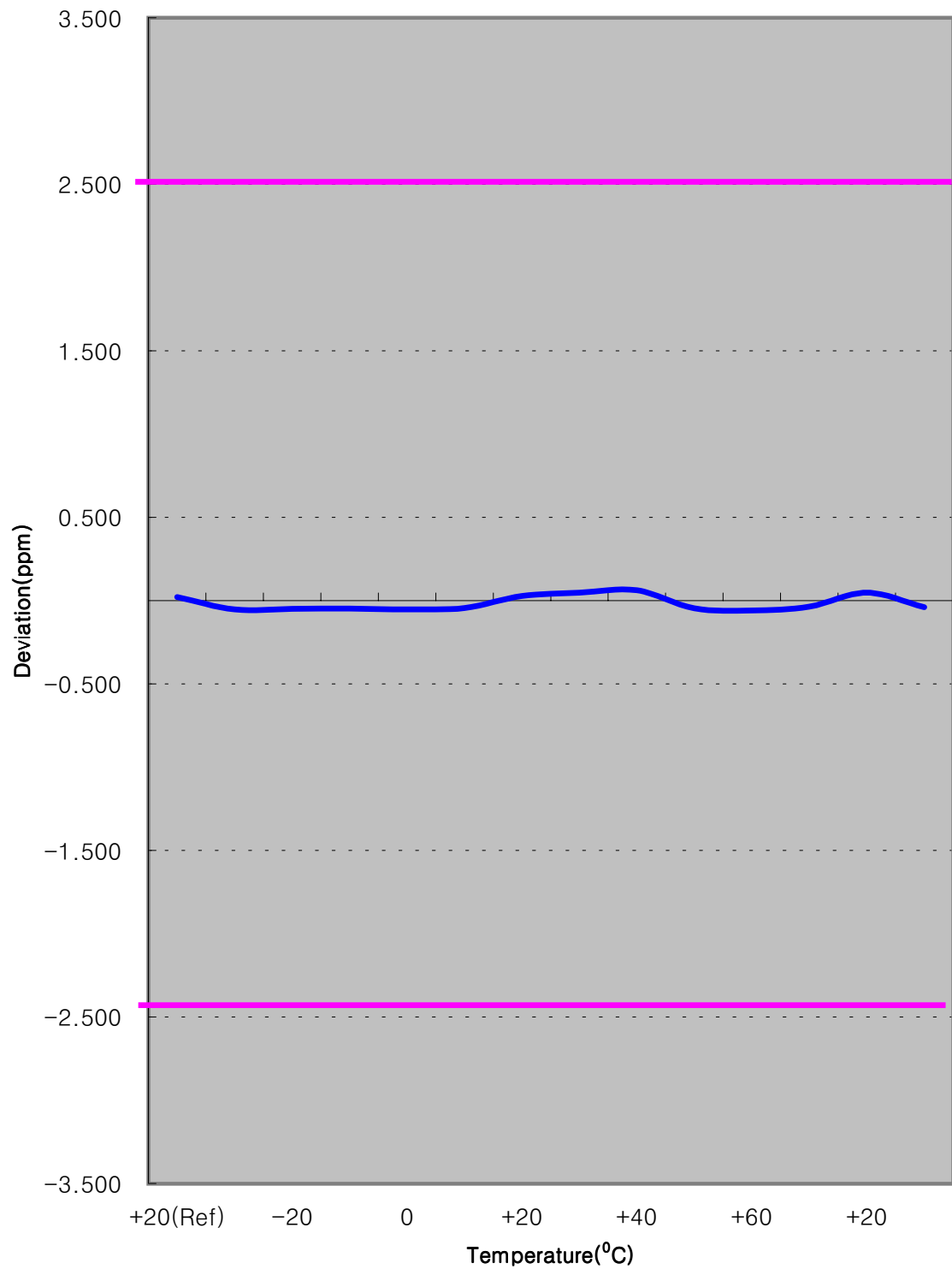
Reference voltage : 3.7VDC

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

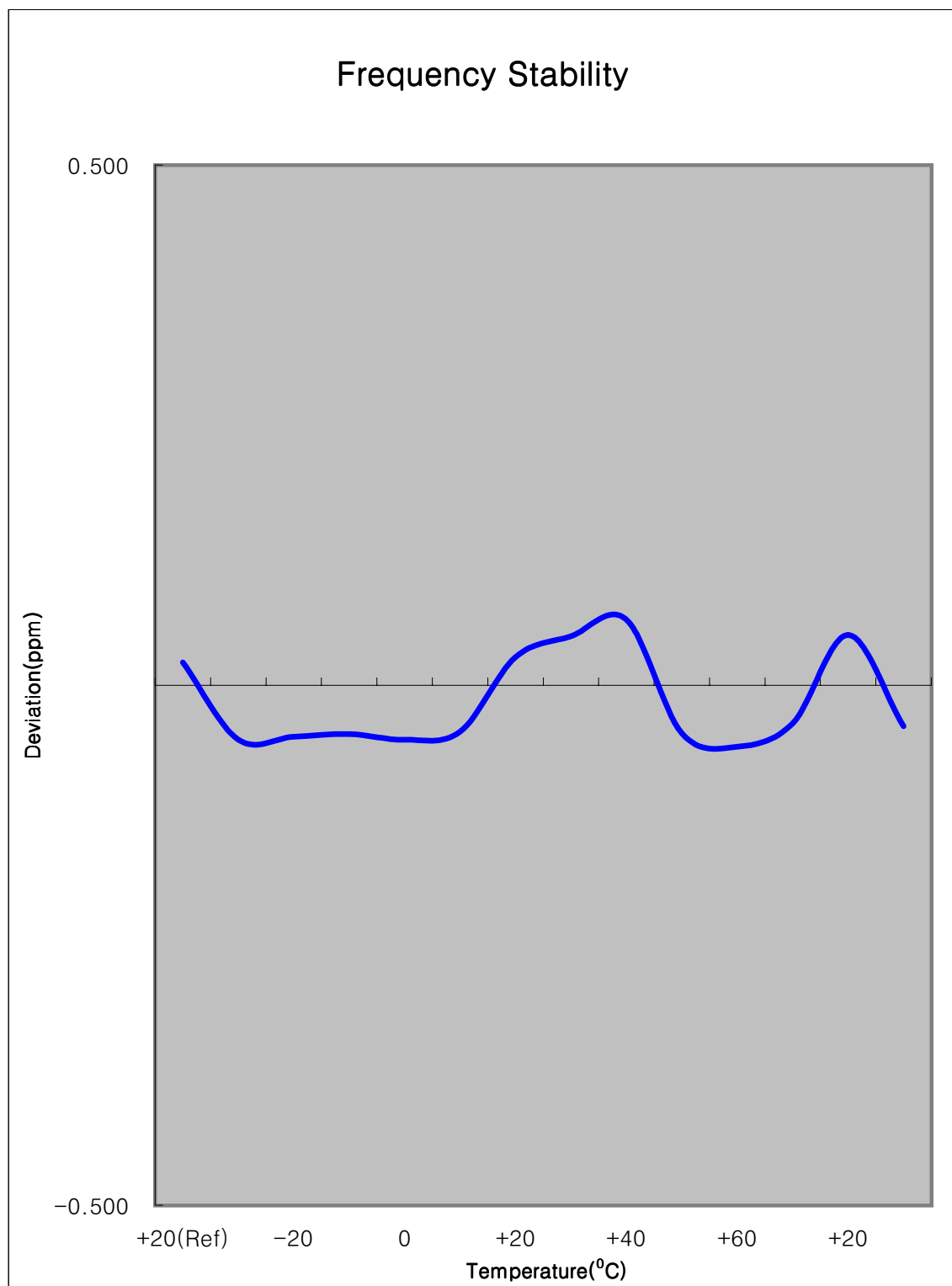
Voltage (%)	Power (V dc)	TEMP (OC)	Frequency error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	18.30	835,890,018	0.000002	0.022
100%		-30	-43.87	835,889,956	-0.000005	-0.052
100%		-20	-41.54	835,889,958	-0.000005	-0.050
100%		-10	-39.21	835,889,961	-0.000005	-0.047
100%		0	-43.89	835,889,956	-0.000005	-0.053
100%		+10	-37.24	835,889,963	-0.000004	-0.045
100%		+20	22.70	835,890,023	0.000003	0.027
100%		+30	39.20	835,890,039	0.000005	0.047
100%		+40	52.80	835,890,053	0.000006	0.063
100%		+50	-38.72	835,889,961	-0.000005	-0.046
100%		+60	-49.37	835,889,951	-0.000006	-0.059
85%	3.15	+20	-30.70	835,889,969	-0.000004	-0.037
115%	4.26	+20	40.40	835,890,040	0.000005	0.048
Batt. Endpoint	3.14	+20	-33.10	835,889,967	-0.000004	-0.040

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

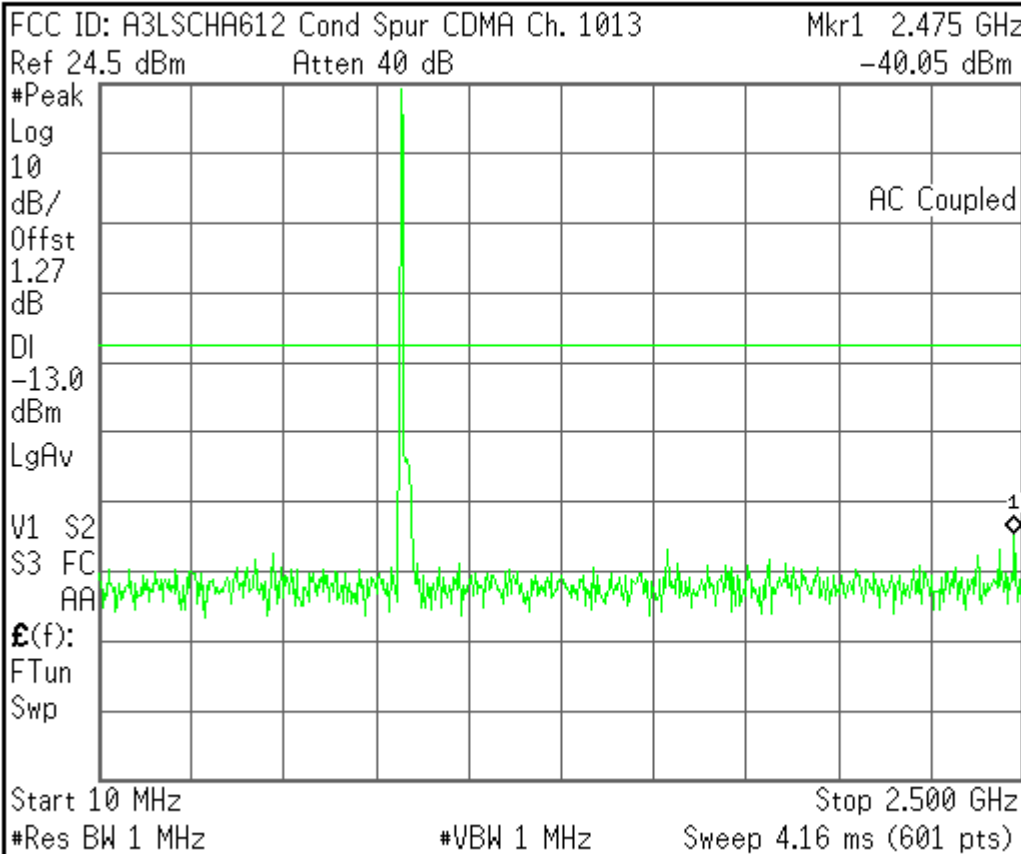
Frequency Stability



Zoom In



Agilent



Freq/Channel

Center Freq
 1.25500000 GHz

Start Freq
 10.0000000 MHz

Stop Freq
 2.50000000 GHz

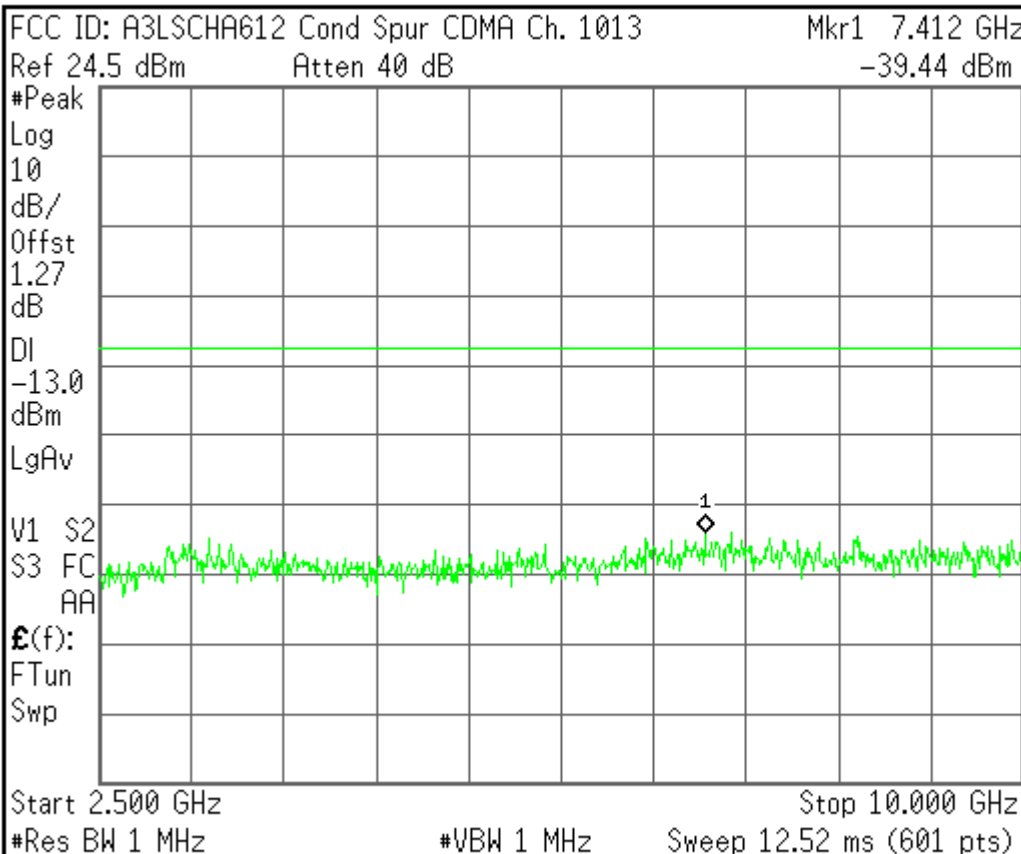
CF Step
 249.000000 MHz
 Auto Man

Freq Offset
 0.00000000 Hz

Signal Track
 On Off

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Agilent



Freq/Channel

Center Freq
 6.25000000 GHz

Start Freq
 2.50000000 GHz

Stop Freq
 10.0000000 GHz

CF Step
 750.000000 MHz
 Auto Man

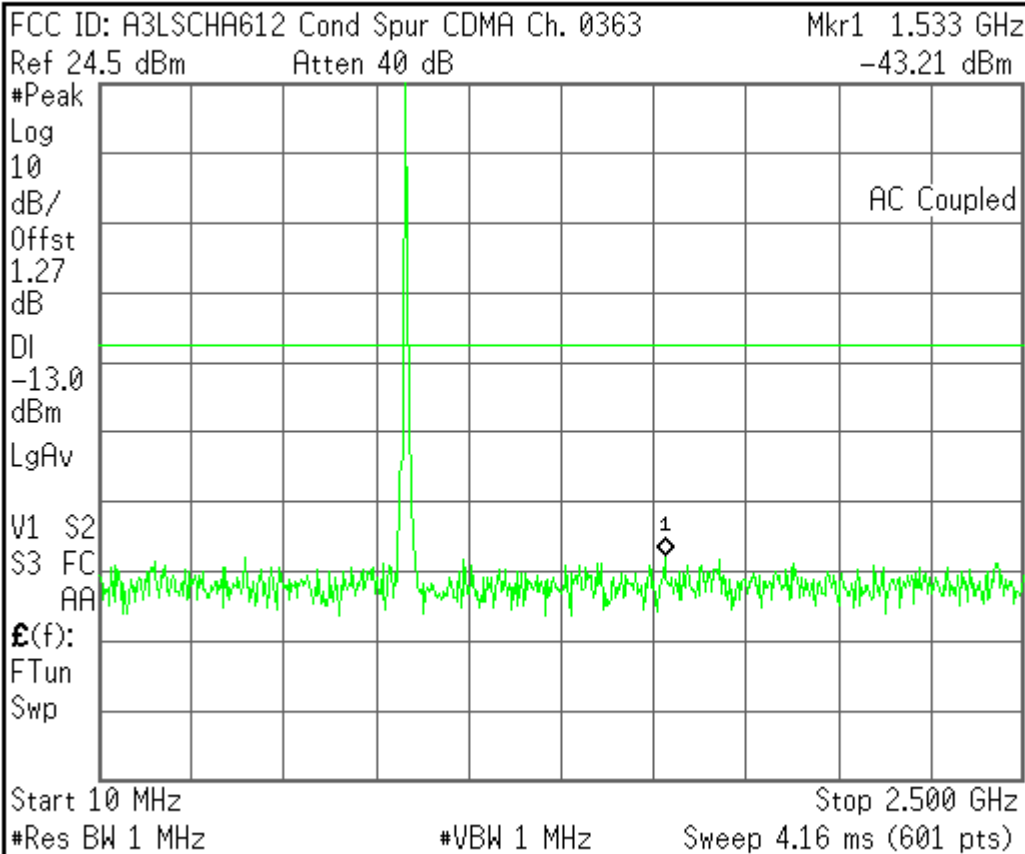
Freq Offset
 0.00000000 Hz

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

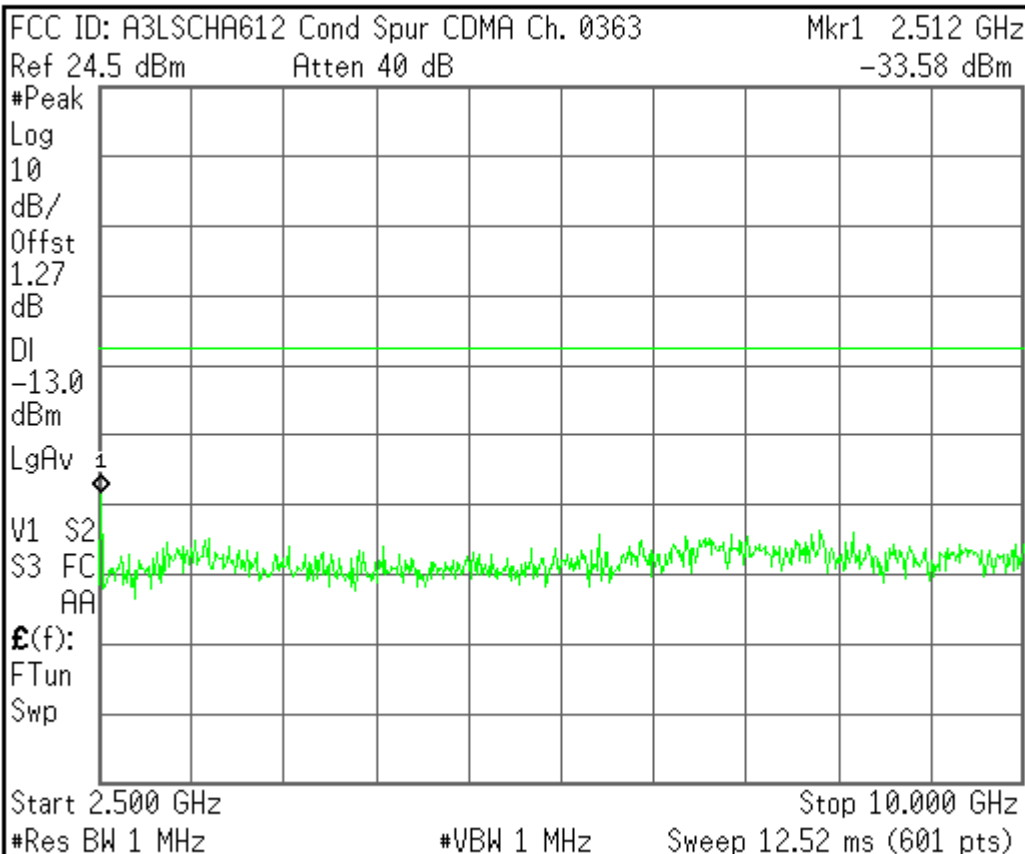
Freq Offset
 0.00000000 Hz

Signal Track
 On Off

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Freq/Channel



Center Freq
 6.25000000 GHz

Start Freq
 2.50000000 GHz

Stop Freq
 10.0000000 GHz

CF Step
 750.000000 MHz
 Auto Man

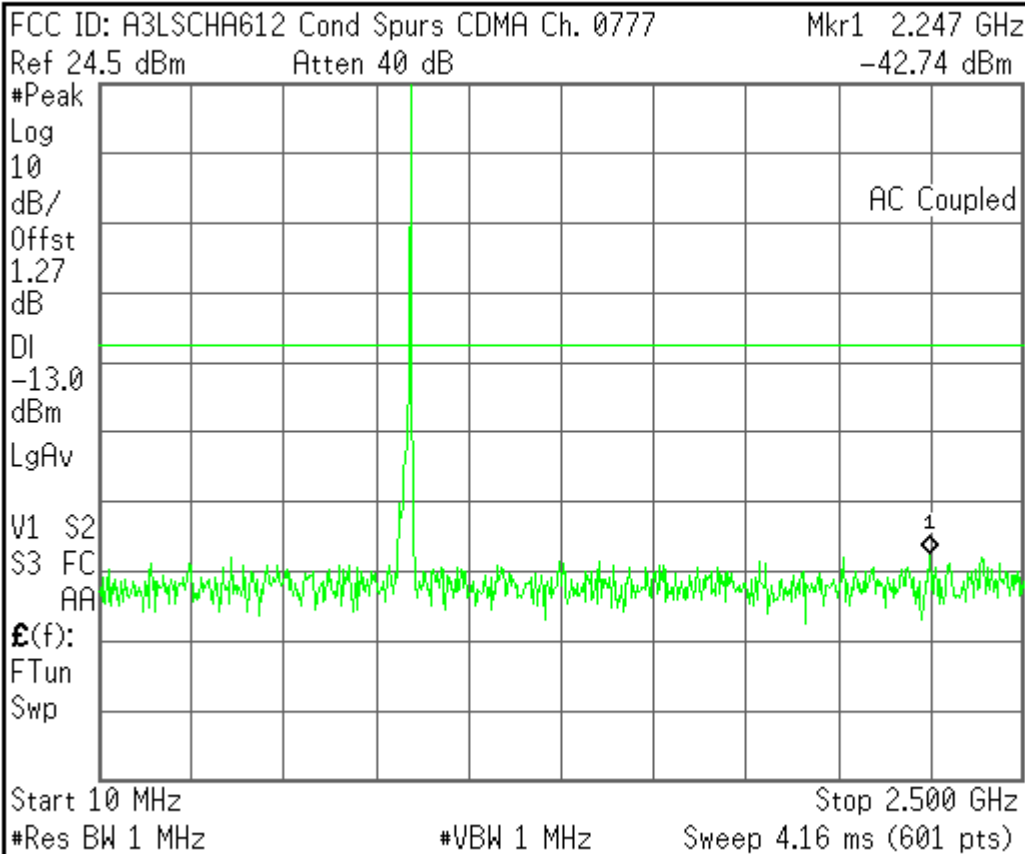
Freq Offset
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Signal Track
 On Off

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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

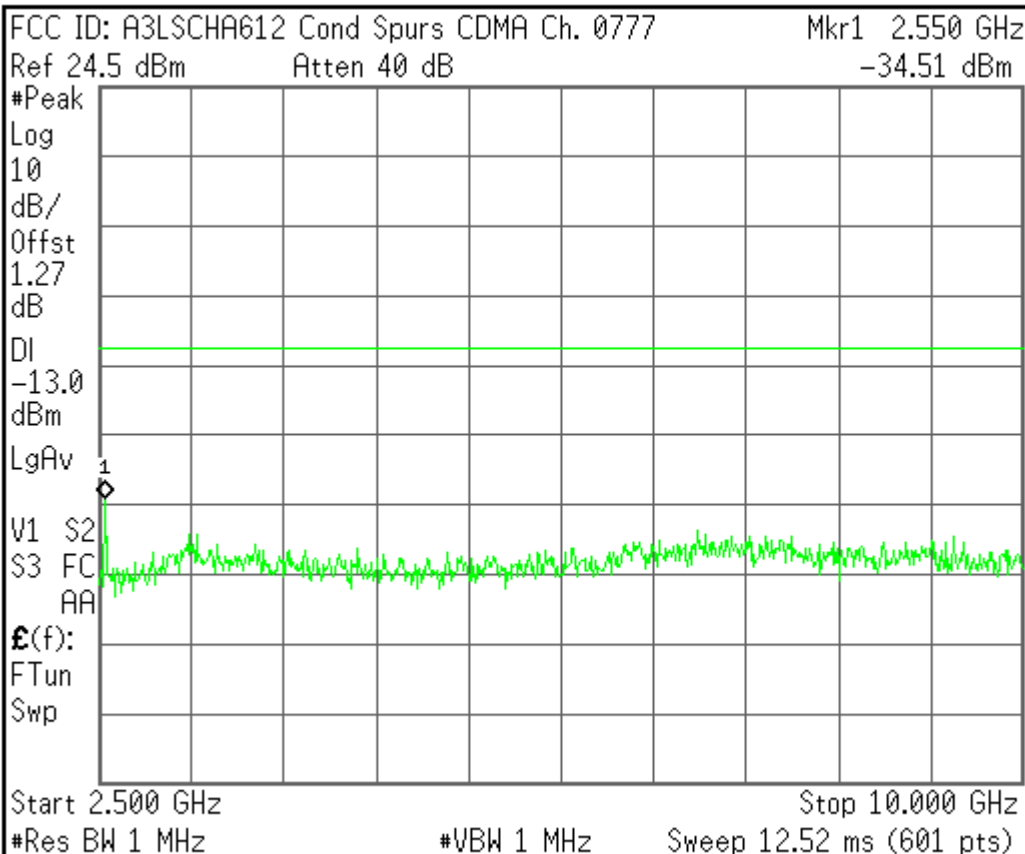
Freq Offset
 0.00000000 Hz

Signal Track
 On Off

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Freq/Channel



Center Freq
 6.25000000 GHz

Start Freq
 2.50000000 GHz

Stop Freq
 10.0000000 GHz

CF Step
 750.000000 MHz
 Auto Man

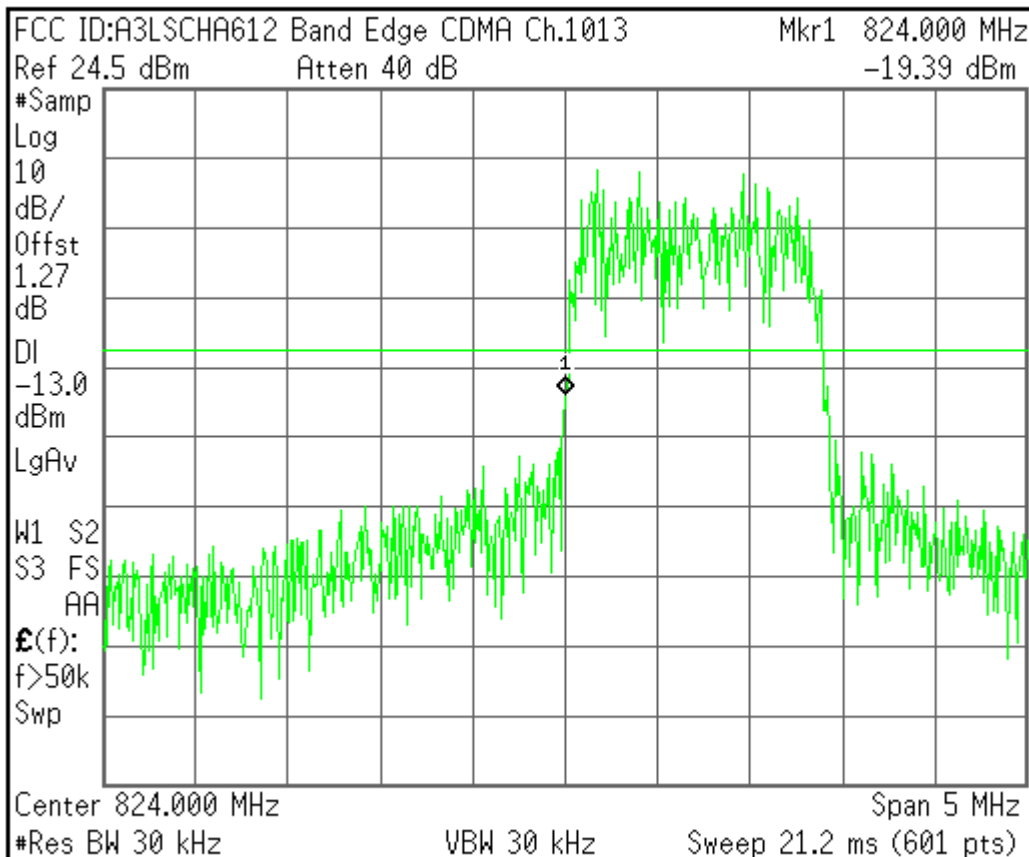
Freq Offset
 0.00000000 Hz

Signal Track
 On Off

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Freq/Channel

Center Freq

824.000000 MHz

Start Freq

821.500000 MHz

Stop Freq

826.500000 MHz

CF Step

500.000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

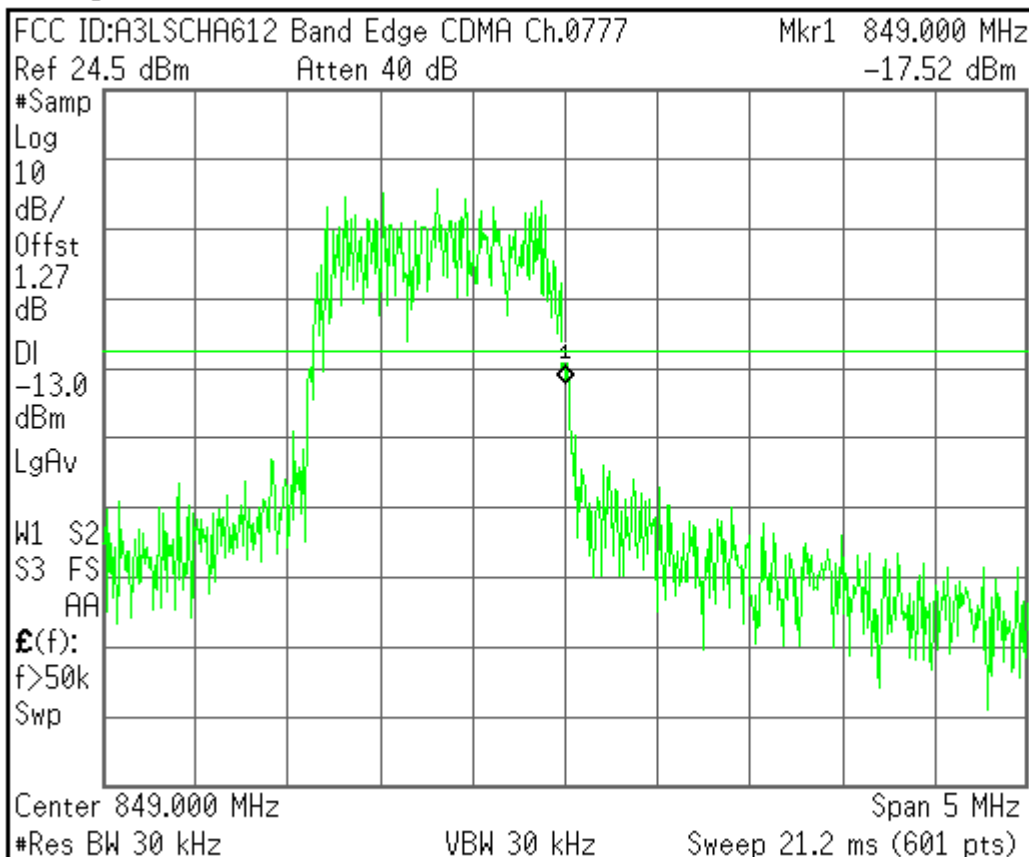
On

Off

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Freq/Channel

Center Freq

849.000000 MHz

Start Freq

846.500000 MHz

Stop Freq

851.500000 MHz

CF Step

500.000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

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Agilent

FCC ID: A3LSCHA612 Power Out CDMA Ch. 1013

Ref 24.5 dBm

Atten 40 dB

#Samp

Log

10

dB/

Offst

1.27

dB

LgAv

100

V1 S2

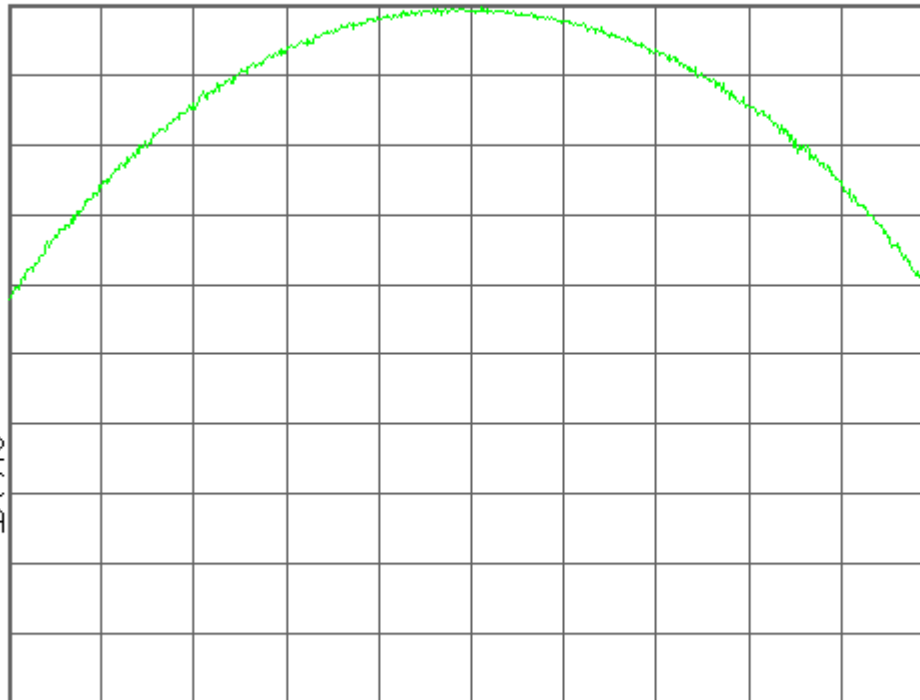
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 824.70 MHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

Freq/Channel

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

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FCC ID: A3LSCHA612 Power Out CDMA Ch. 0777

Ref 24.5 dBm

Atten 40 dB

#Samp

Log

10

dB/

Offst

1.27

dB

LgAv

100

V1 S2

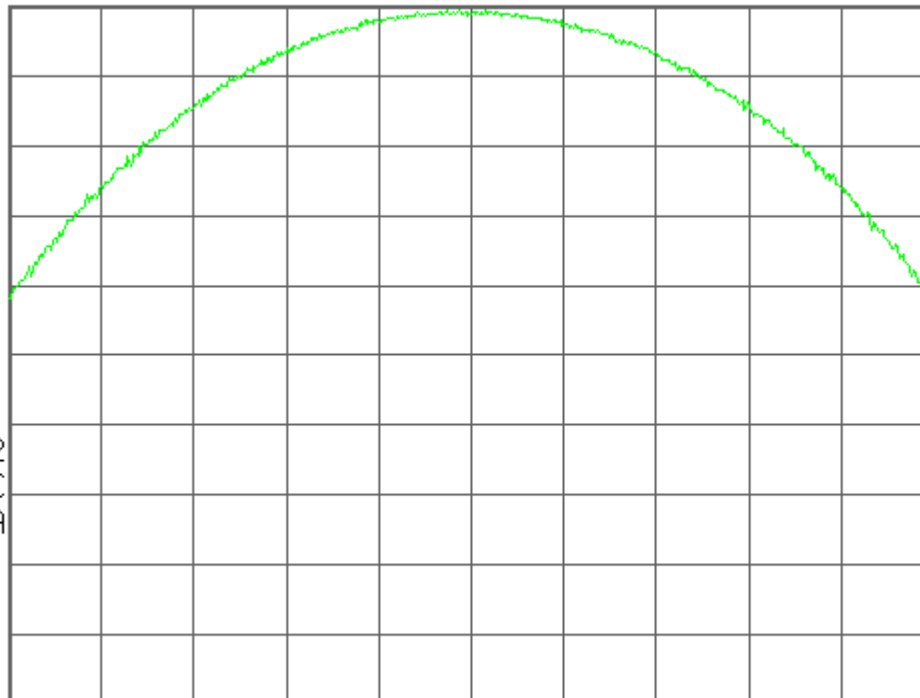
S3 FC

AA

$\mathcal{E}(f)$:

FTun

Swp



Center 848.31 MHz

Span 10 MHz

#Res BW 3 MHz

#VBW 3 MHz

Sweep 1 ms (601 pts)

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

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FCC ID: A3LSCHA612 Power Out CDMA Ch. 0363

Ref 24.5 dBm

Atten 40 dB

#Samp

Log

10

dB/

LgAv

100

V1 S2

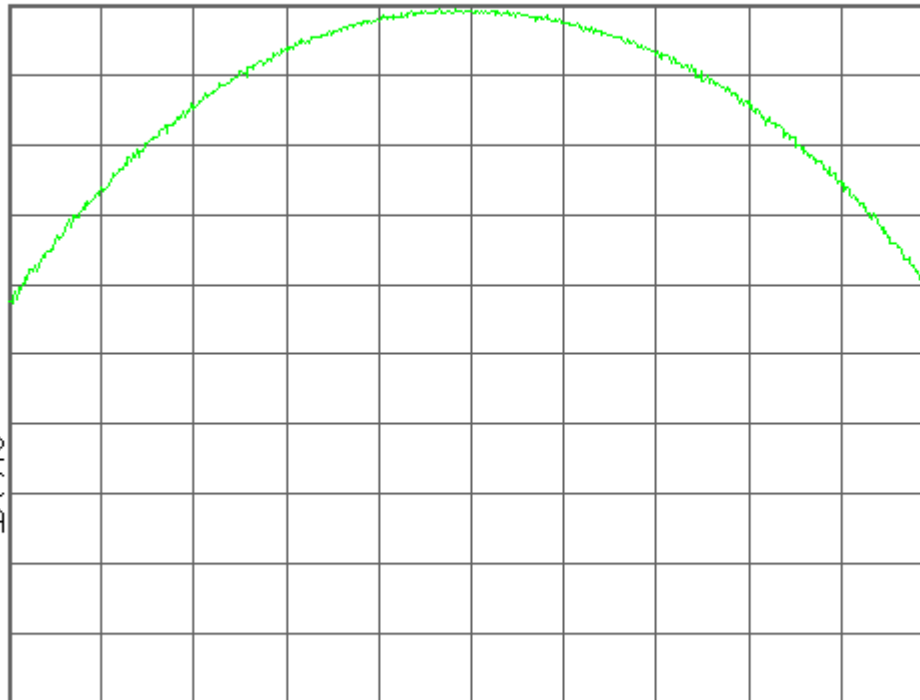
S3 FC

AA

E(f):

FTun

Swp



Center 835.89 MHz

Span 10 MHz

*Res BW 3 MHz

*VBW 3 MHz

Sweep 1 ms (601 pts)

Freq/Channel

Center Freq

835.890000 MHz

Start Freq

830.890000 MHz

Stop Freq

840.890000 MHz

CF Step

1.00000000 MHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

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Ch Freq 835.89 MHz Trig Free

Channel Power

FCC ID: A3LSCHA612 Power Out CDMA Ch. 0363

Ref 24.5 dBm

Atten 40 dB

#Avg

Log

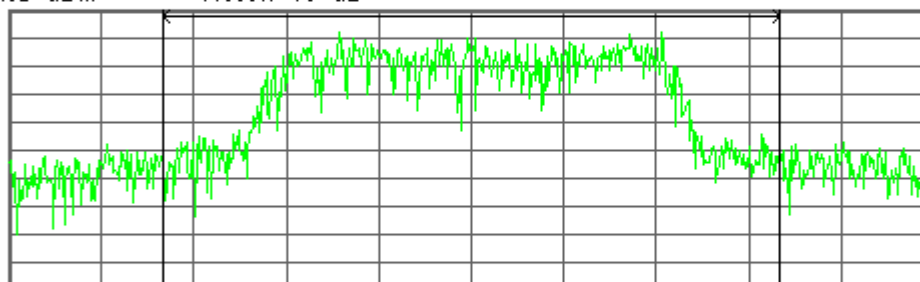
10

dB/

Offst

1.27

dB



Center 835.890 MHz

Span 3 MHz

*Res BW 30 kHz

*VBW 300 kHz

Sweep 9.76 ms (601 pts)

BW/Avg

Res BW

30.0000000 kHz

Auto

Man

Video BW

300.000000 kHz

Auto

Man

VBW/RBW

1.00000

Average

On

Off

Avg/VBW Type

Pwr (RMS)

Auto

Man

Channel Power

24.52 dBm /2.0000 MHz

Power Spectral Density

-38.49 dBm/Hz

Span/RBW

Auto

Man

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