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

FCC CFR47 PART 22 SUBPART CERTIFICATION TEST DATA

Model Tested: SCH-N213
FCC ID (Requested): A3LSCHN213
Report No: FA-015-R1
Date issued: July 04, 2003

- Abstract -

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

Prepared By



JH CHOI - Test Engineer

Date

July 04, 2003

Checked By



CW PARK - Manager

Date

July 7, 2003

Authorized By



JK CHOI - Senior Manager

Date

July 7, 2003

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 : A3LSCHN213

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	24.00	H	-13.36	-13.44	0.00	-13.44
		V	-12.19	-12.27	0.00	-12.27

■ Result

Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Azimuth (angle)	ERP (dBm)	ERP (W)	Battery
824.70	-13.68	H2	0	24.26	0.267	Standard
835.89	-12.40	H2	0	25.54	0.358	Standard
848.31	-14.67	H2	3	23.27	0.212	Standard

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

FCC ID : A3LSCHN213

Field Strength of SPURIOUS Radiation

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

Measured Output Power : 25.54 dBm = 0.358 W

Modulation Signal : CDMA

Limit : $43+10\log_{10}(W) = 38.54 \text{ dBc}$

■ Result

Channel	Harmonic	Frequency (MHz)	From EUT Tested level (dBm)	POL (H/V)	Result (dBc)
1013	2	1649.40	-55.51	H1	72.97
	3	2474.10	-92.43	H2	103.44
	4	3298.80	-	-	-
	5	4123.50	-	-	-
	6	4948.20	-	-	-
	7	5772.90	-	-	-
363	2	1671.78	-59.48	H2	76.46
	3	2507.67	-94.74	V	104.85
	4	3343.56	-	-	-
	5	4179.45	-	-	-
	6	5015.34	-	-	-
	7	5851.23	-	-	-
777	2	1696.62	-61.03	H1	76.89
	3	2544.93	-92.87	V	103.40
	4	3393.24	-	-	-
	5	4241.55	-	-	-
	6	5089.86	-	-	-
	7	5938.17	-	-	-

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

Radiated Spurious & Harmonic Conversion Table

FCC ID : A3LSCHN213 Mode : CDMA ERP : 25.54

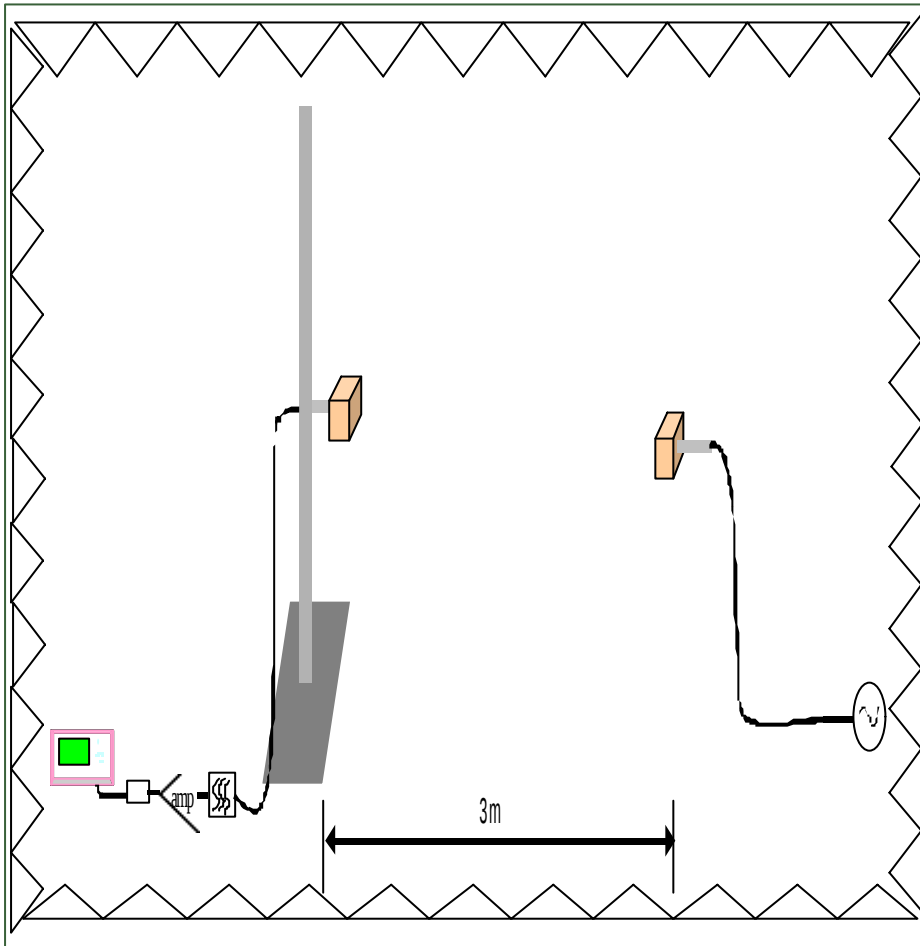
Date ; 2003 . 06 .17 ~ 07 . 03

Test Engineer : JH Choi

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	8.10	7.21	-0.89	-55.51	-59.24	-45.29	-47.79	72.97	75.47
	3	2474.10	10.87	8.87	-2.00	-92.43	-95.90	-75.76	-78.84	103.44	106.52
	4	3298.80	13.29	8.43	-4.86	-	-	-	-	-	-
	5	4123.50	15.06	9.89	-5.17	-	-	-	-	-	-
	6	4948.20	17.66	10.33	-7.33	-	-	-	-	-	-
	7	5772.90	19.81	10.86	-8.95	-	-	-	-	-	-
363	2	1671.78	8.18	7.21	-0.97	-59.48	-62.12	-48.78	-50.21	76.46	77.89
	3	2507.67	11.09	8.87	-2.22	-96.05	-94.74	-78.90	-77.17	106.58	104.85
	4	3343.56	13.31	8.43	-4.88	-	-	-	-	-	-
	5	4179.45	15.40	10.20	-5.20	-	-	-	-	-	-
	6	5015.34	17.85	10.34	-7.51	-	-	-	-	-	-
	7	5851.23	19.45	10.86	-8.59	-	-	-	-	-	-
777	2	1696.62	8.27	7.21	-1.06	-61.03	-73.48	-49.21	-60.32	76.89	88.00
	3	2544.93	11.25	8.87	-2.38	-93.39	-92.87	-76.81	-75.72	104.49	103.40
	4	3393.24	13.70	8.54	-5.16	-	-	-	-	-	-
	5	4241.55	15.25	10.20	-5.05	-	-	-	-	-	-
	6	5089.86	18.63	10.39	-8.24	-	-	-	-	-	-
	7	5938.17	19.58	10.86	-8.72	-	-	-	-	-	-

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 : A3LSCHN213

Frequency Stability (CDMA)

Operating Frequency : 835,890,000 Hz

Channel : 363

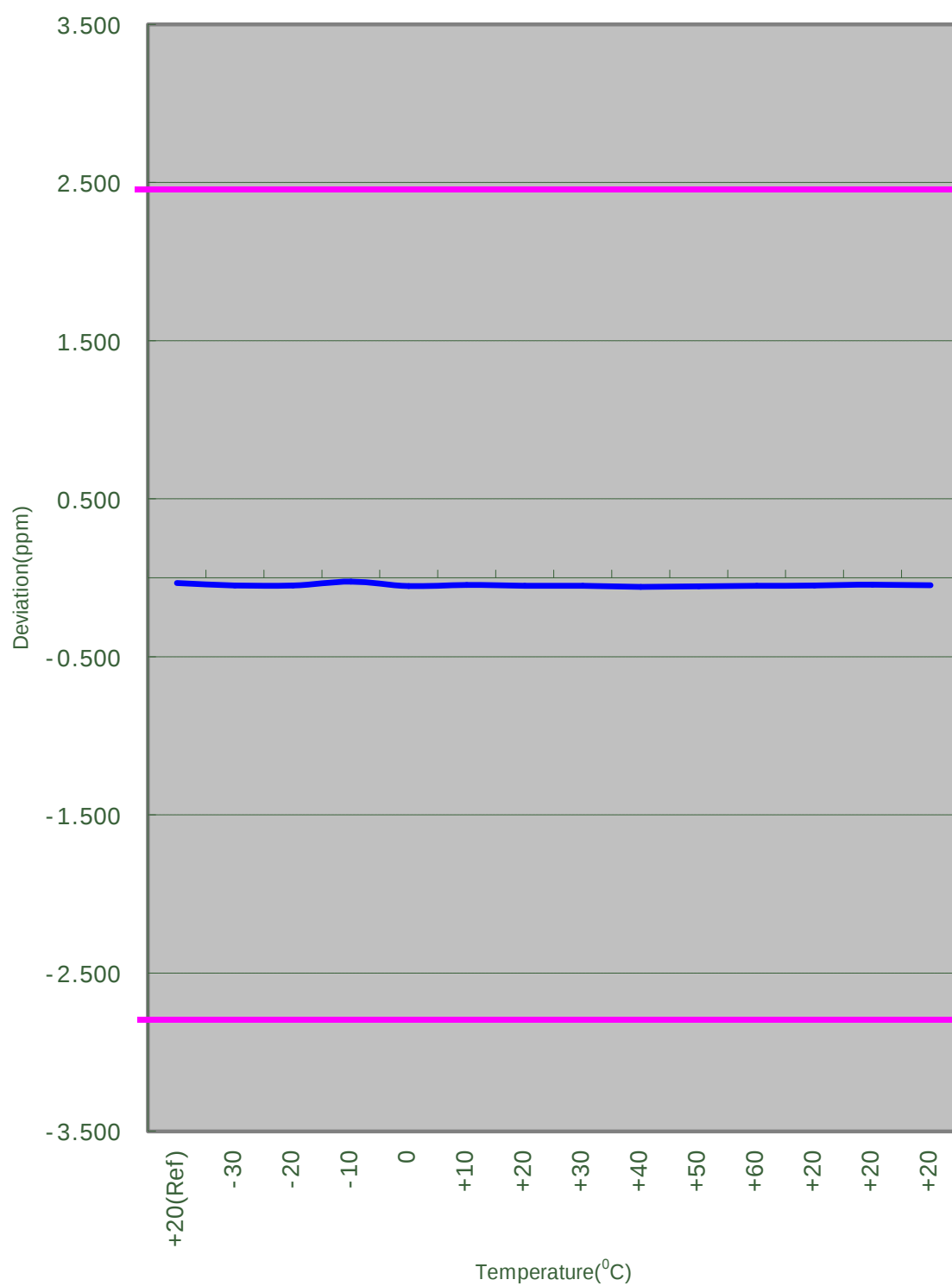
Reference voltage : 3.7VDC

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

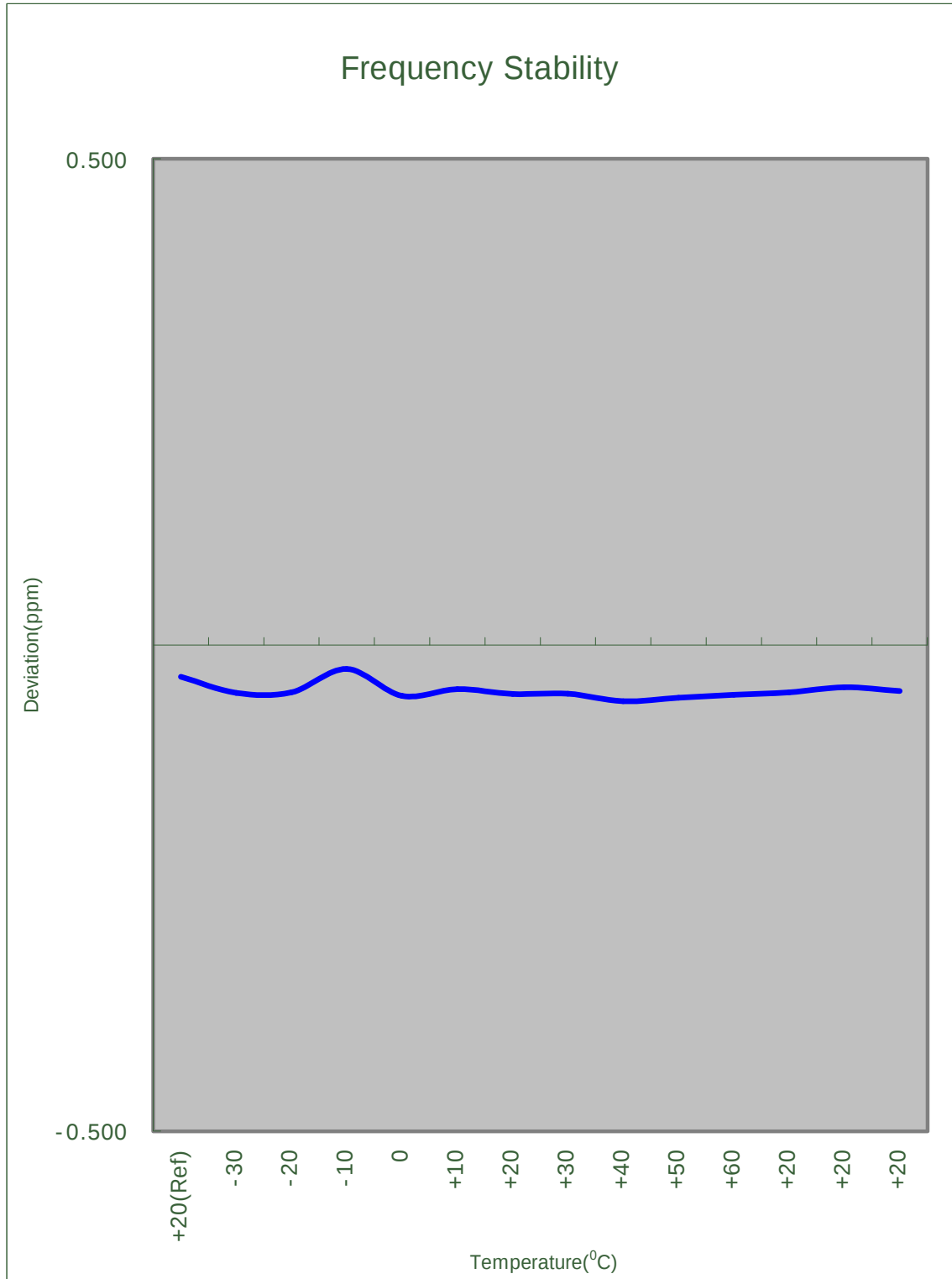
Voltage (%)	Power (V dc)	TEMP (OC)	Frequency error (Hz)	Frequency (Hz)	Deviation (%)	ppm
100%	3.70	+20(Ref)	-27.50	835,889,973	-0.000003	-0.033
100%		-30	-41.30	835,889,959	-0.000005	-0.049
100%		-20	-40.80	835,889,959	-0.000005	-0.049
100%		-10	-20.79	835,889,979	-0.000002	-0.025
100%		0	-43.72	835,889,956	-0.000005	-0.052
100%		+10	-38.10	835,889,962	-0.000005	-0.046
100%		+20	-42.20	835,889,958	-0.000005	-0.050
100%		+30	-41.90	835,889,958	-0.000005	-0.050
100%		+40	-48.40	835,889,952	-0.000006	-0.058
100%		+50	-45.30	835,889,955	-0.000005	-0.054
100%		+60	-42.80	835,889,957	-0.000005	-0.051
85%	3.15	+20	-40.70	835,889,959	-0.000005	-0.049
115%	4.26	+20	-36.40	835,889,964	-0.000004	-0.044
Batt. Endpoint	3.16	+20	-39.70	835,889,960	-0.000005	-0.047

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

Frequency Stability



Zoom In



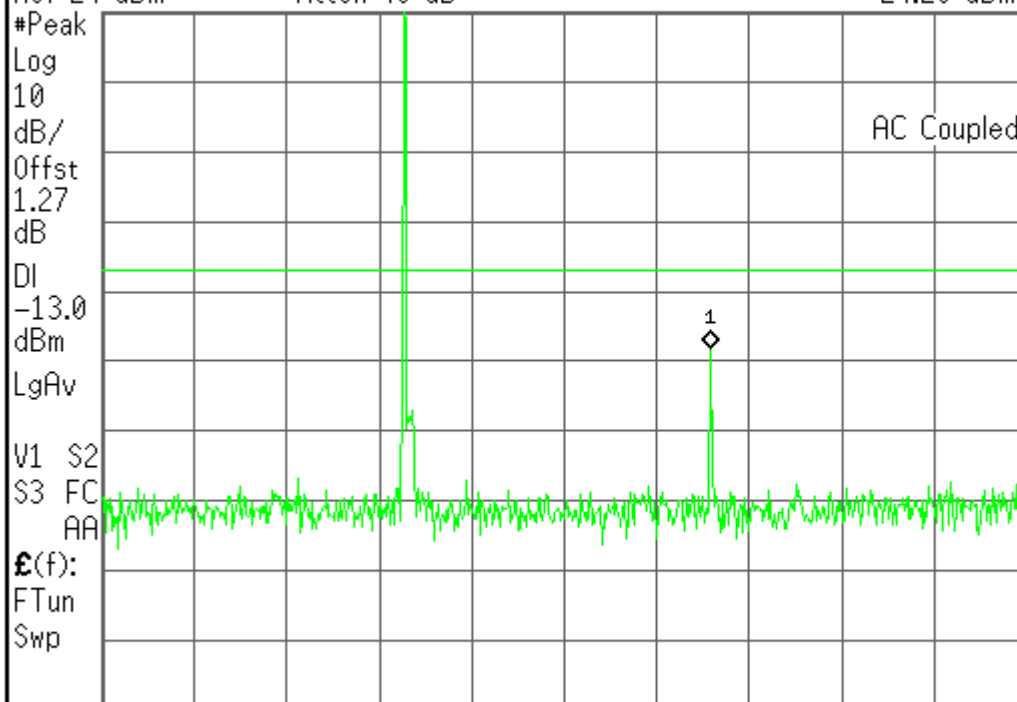
Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.1013 Mkr1 1.649 GHz

Ref 24 dBm Atten 40 dB -24.20 dBm



Start 10 MHz Stop 2.500 GHz

#Res BW 1 MHz #VBW 1 MHz Sweep 4.16 ms (601 pts)

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

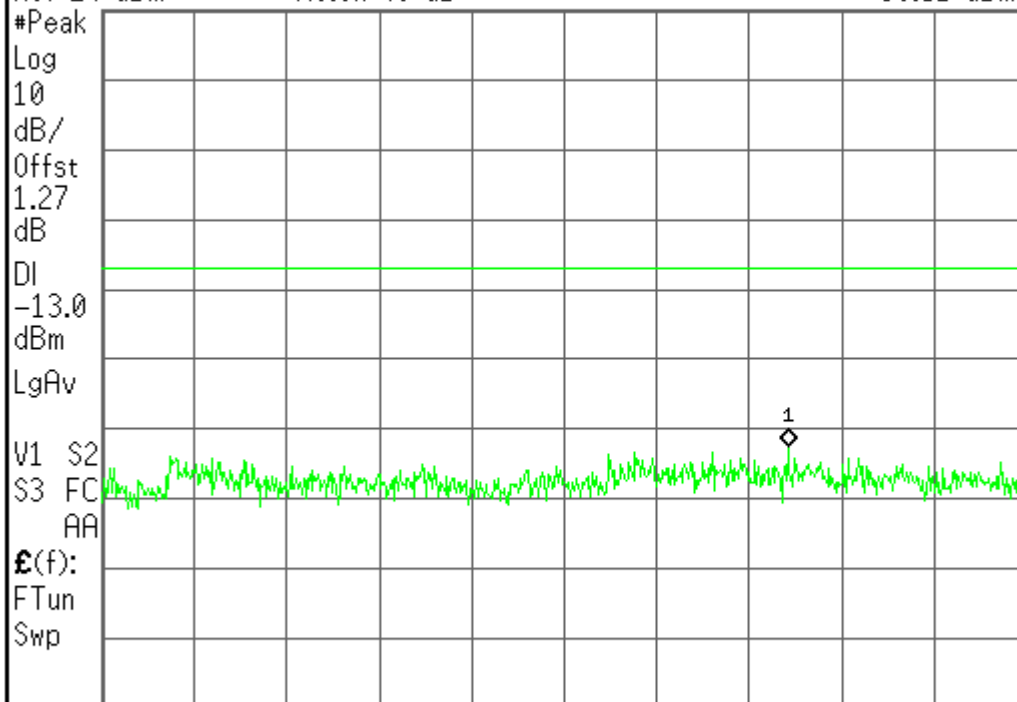
Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.1013 Mkr1 8.062 GHz

Ref 24 dBm Atten 40 dB -38.51 dBm



Start 2.500 GHz Stop 10.000 GHz

#Res BW 1 MHz #VBW 1 MHz Sweep 12.52 ms (601 pts)

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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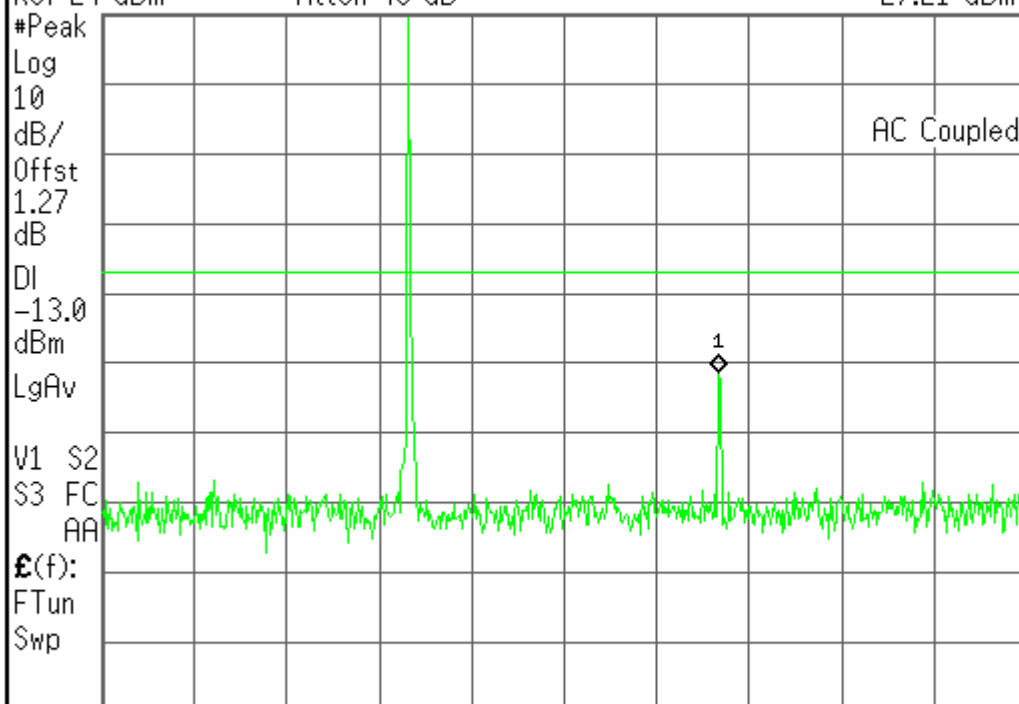
Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.0363 Mkr1 1.670 GHz

Ref 24 dBm Atten 40 dB -27.21 dBm



Start 10 MHz Stop 2.500 GHz

#Res BW 1 MHz #VBW 1 MHz Sweep 4.16 ms (601 pts)

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

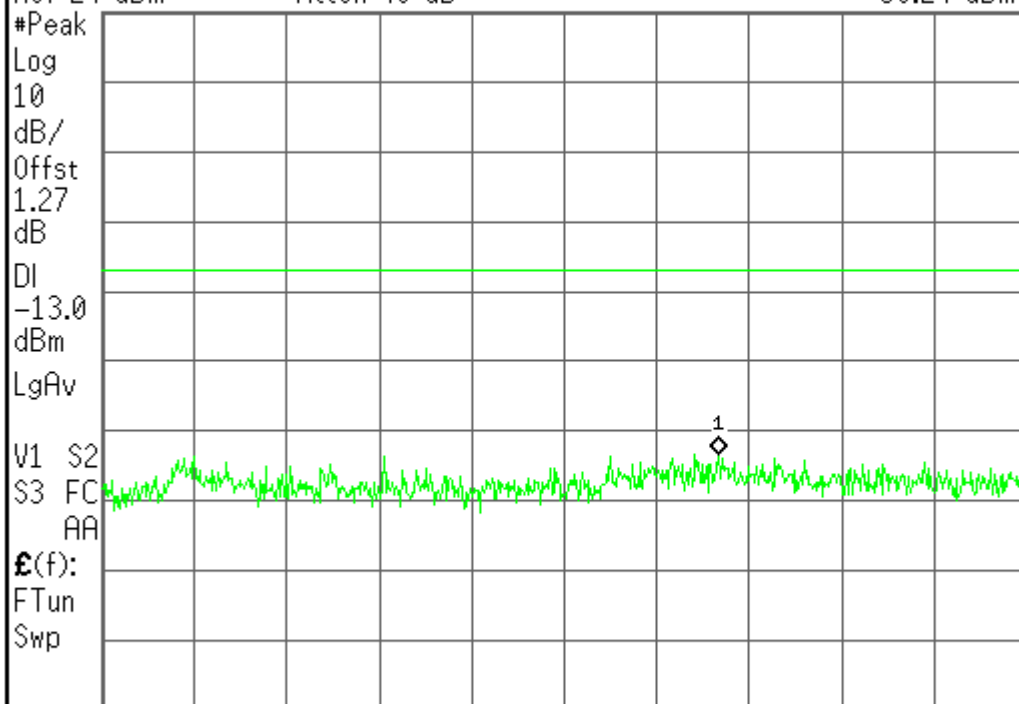
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L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.0363 Mkr1 7.500 GHz

Ref 24 dBm Atten 40 dB -39.24 dBm



Start 2.500 GHz Stop 10.000 GHz

#Res BW 1 MHz #VBW 1 MHz Sweep 12.52 ms (601 pts)

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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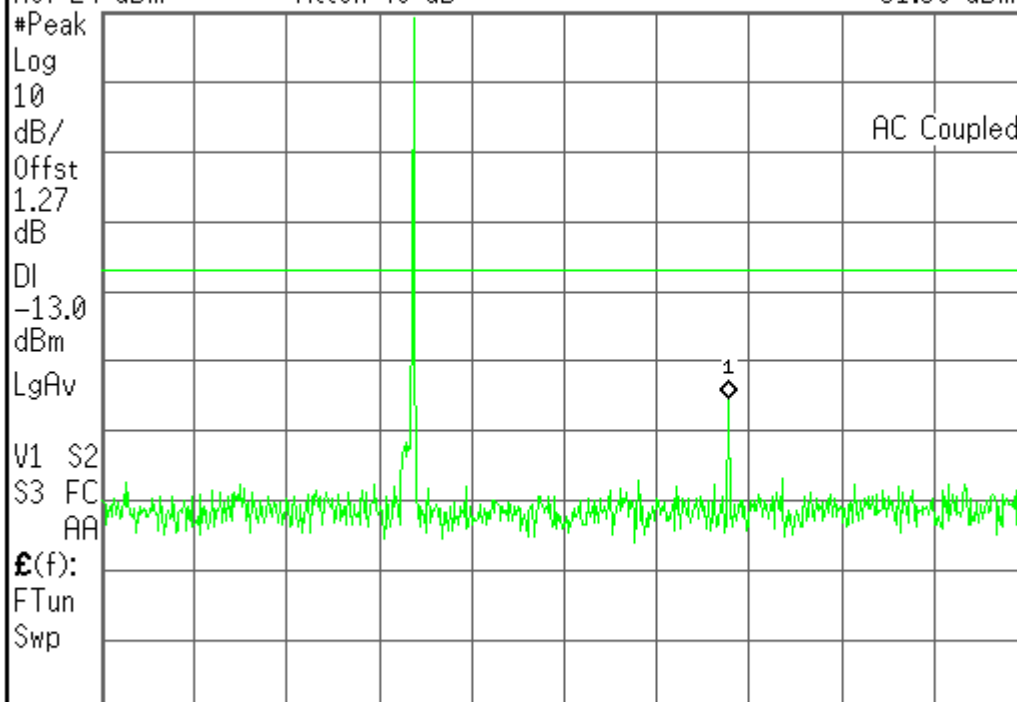
Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.0777 Mkr1 1.695 GHz

Ref 24 dBm Atten 40 dB -31.30 dBm



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

Start 10 MHz Stop 2.500 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 4.16 ms (601 pts)

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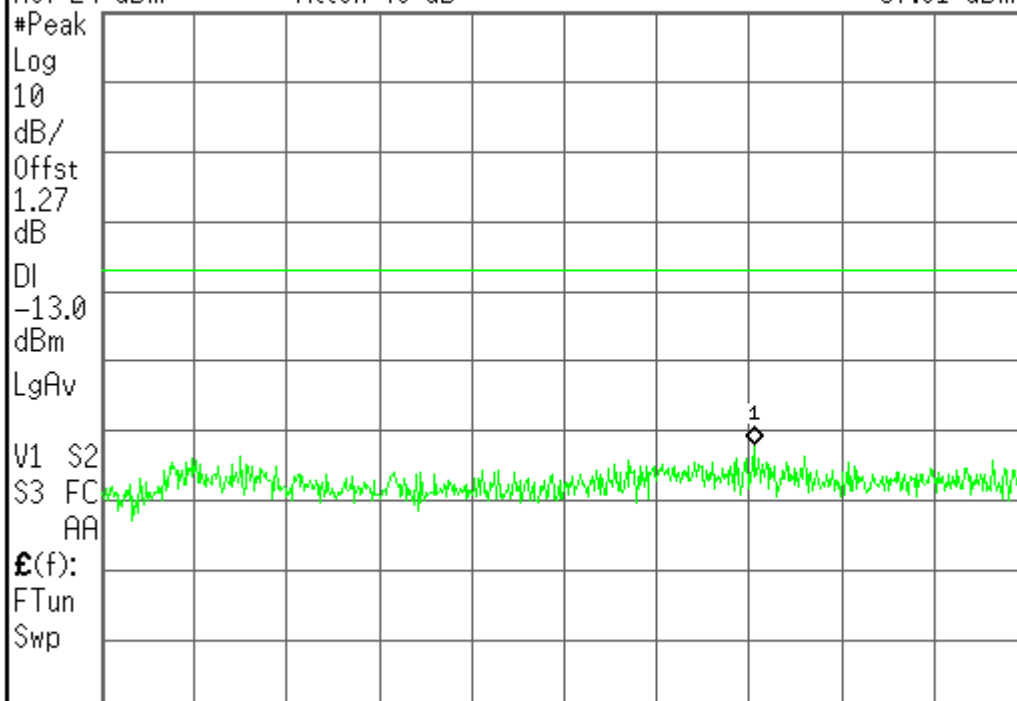
Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Cond Spur CDMA Ch.0777 Mkr1 7.788 GHz

Ref 24 dBm Atten 40 dB -37.91 dBm



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

Start 2.500 GHz Stop 10.000 GHz
#Res BW 1 MHz #VBW 1 MHz Sweep 12.52 ms (601 pts)

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L

Freq/Channel

FCC ID:A3LSCHN213 Power Out CDMA Ch.1013

Ref 24 dBm

Atten 40 dB

#Samp

Log

10

dB/

Offst

1.27

dB

LgAv

100

W1 S2

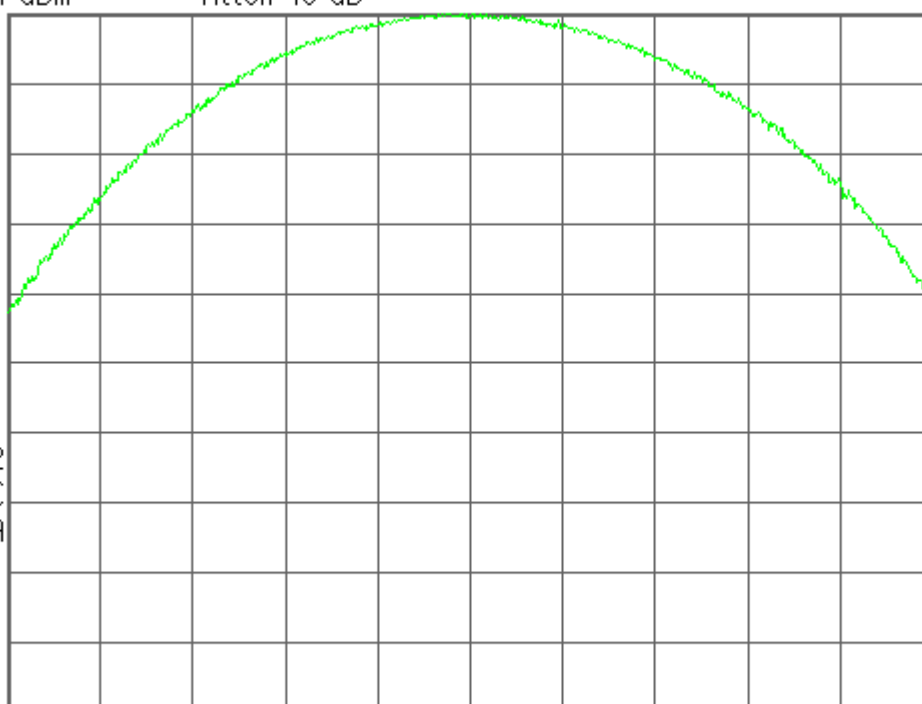
S3 FC

AA

$E(f)$:

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

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Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Power Out CDMA Ch.0363

Ref 24 dBm

Atten 40 dB

#Samp

Log

10

dB/

Offst

1.27

dB

LgAv

100

W1 S2

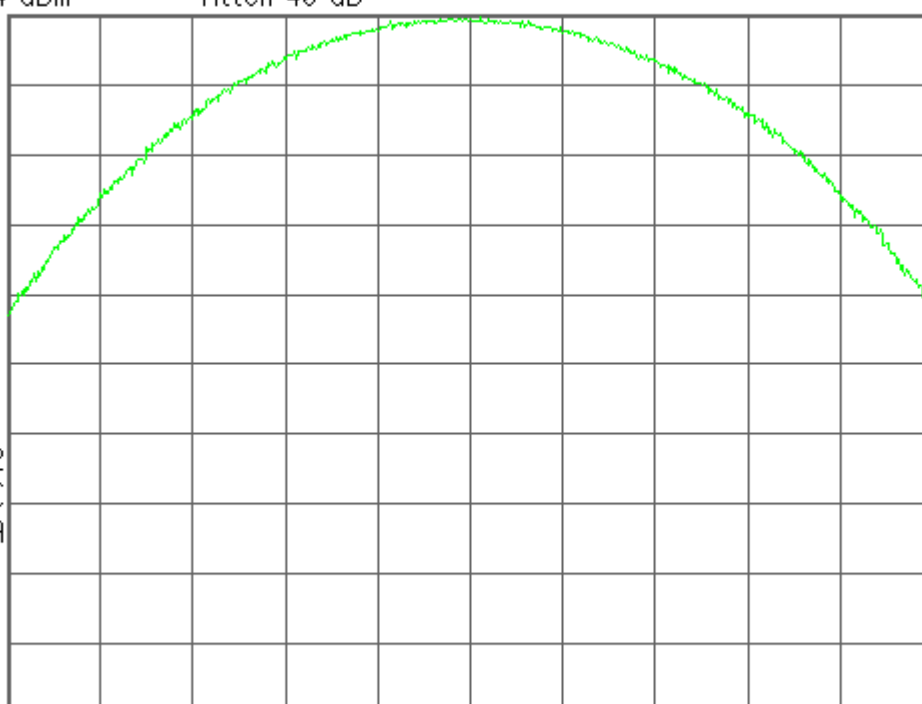
S3 FC

AA

$E(f)$:

FTun

Swp



Center 835.89 MHz

Span 10 MHz

#Res BW 3 MHz

VBW 3 MHz

Sweep 1 ms (601 pts)

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

File Operation Status, A:\P01013.GIF file saved

Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Power Out CDMA Ch.0777

Ref 24 dBm

Atten 40 dB

#Samp

Log

10

dB/

Offst

1.27

dB

LgAv

100

W1 S2

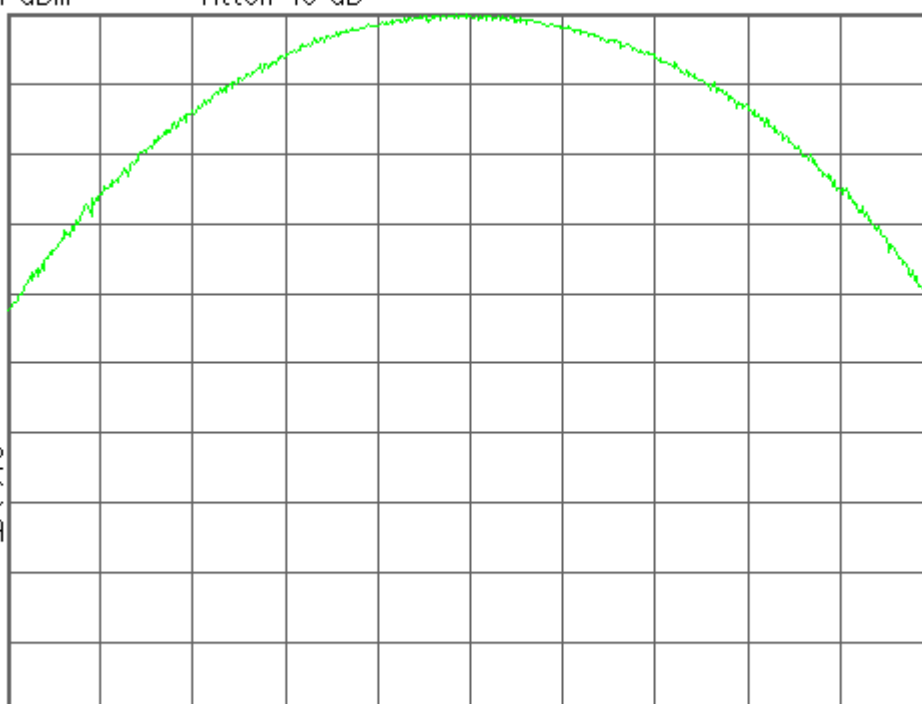
S3 FC

AA

$E(f)$:

FTun

Swp



Center 848.31 MHz

Span 10 MHz

#Res BW 3 MHz

VBW 3 MHz

Sweep 1 ms (601 pts)

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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L

Freq/Channel

Ch Freq 835.89 MHz

Trig Free

Channel Power



FCC ID:A3LSCHN213 Power Out CDMA Ch.0363

Ref 24 dBm

Atten 40 dB

#Avg

Log

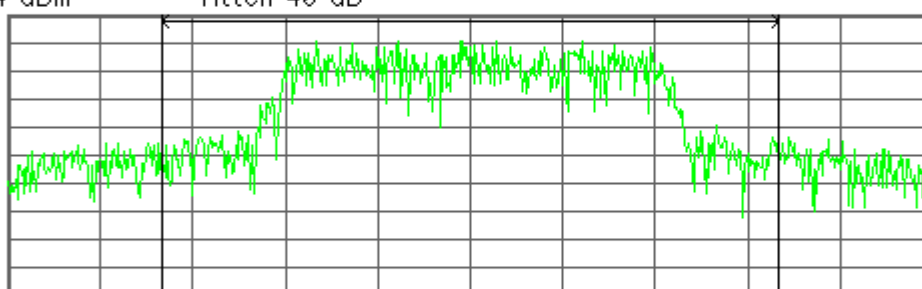
10

dB/

Offst

1.27

dB



Center 835.890 MHz

Span 3 MHz

Res BW 27 kHz

#VBW 270 kHz

Sweep 12.04 ms (601 pts)

Center Freq

835.890000 MHz

Start Freq

834.390000 MHz

Stop Freq

837.390000 MHz

CF Step

300.000000 kHz

Auto

Man

Freq Offset

0.00000000 Hz

Signal Track

On

Off

Channel Power

24.08 dBm /2.0000 MHz

Power Spectral Density

-38.93 dBm/Hz

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R L

Peak Search

FCC ID:A3LSCH-N213 Band Edge CH1013

Mkr1 824.000 MHz

Ref 24 dBm

Atten 40 dB

-25.897 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

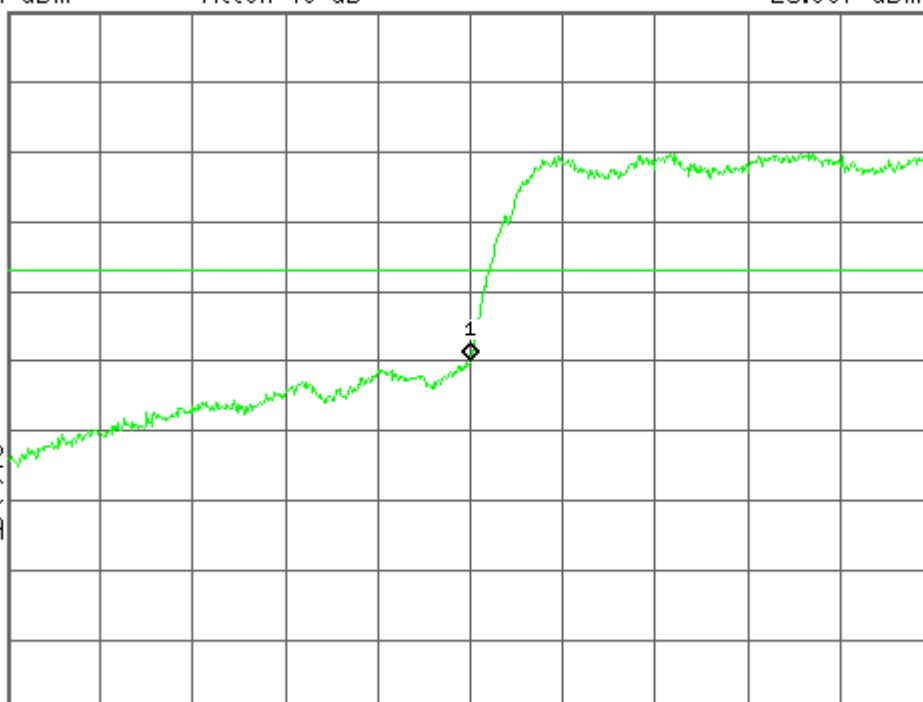
S3 FC

AA

 $\mathcal{E}(f)$:

f>50k

Swp



Center 824.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Next Peak

Next Pk Right

Next Pk Left

Min Search

Pk-Pk Search

Mkr → CF

More
1 of 2

Undefined header



Agilent

R L

Peak Search

FCC ID:A3LSCH-N213 Band Edge CH0311

Mkr1 835.000 MHz

Ref 24 dBm

Atten 40 dB

-15.066 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

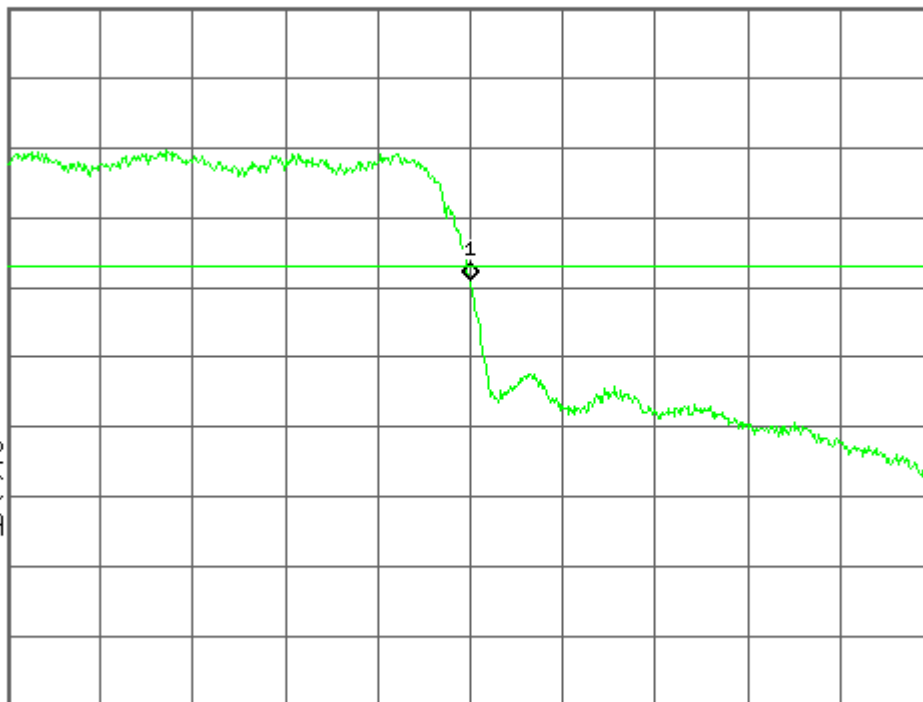
S3 FC

AA

 $\mathcal{E}(f)$:

f>50k

Swp



Center 835.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Next Peak

Next Pk Right

Next Pk Left

Min Search

Pk-Pk Search

Mkr → CF

More
1 of 2

Undefined header

Agilent

R L

Freq/Channel

FCC ID:A3LSCH-N213 Band Edge CH0356

Mkr1 835.000 MHz

Ref 24 dBm

Atten 40 dB

-19.374 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

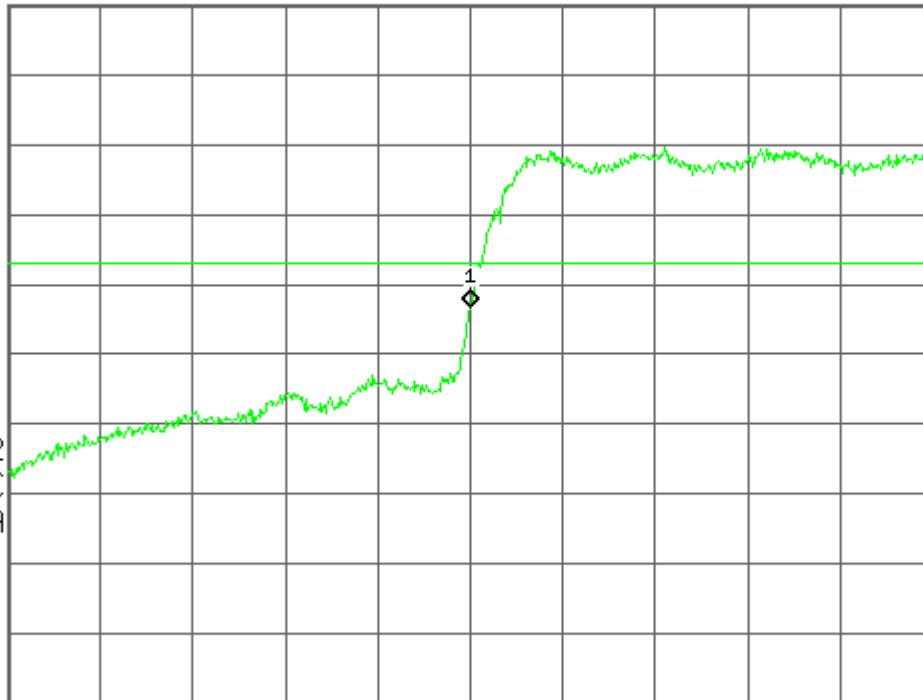
S3 FC

AA

$\mathcal{E}(f)$:

f>50k

Swp



Center 835.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Center Freq
835.000000 MHz

Start Freq
834.000000 MHz

Stop Freq
836.000000 MHz

CF Step
200.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Undefined header

Agilent

R L

Freq/Channel

FCC ID:A3LSCH-N213 Band Edge CH0644

Mkr1 845.000 MHz

Ref 24 dBm

Atten 40 dB

-18.743 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

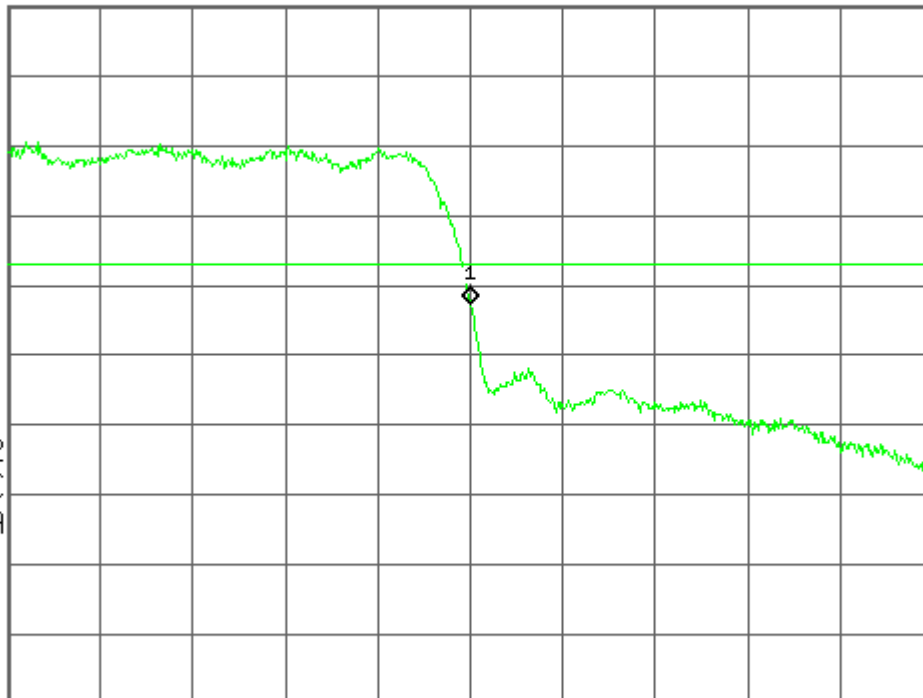
S3 FC

AA

$\mathcal{E}(f)$:

f>50k

Swp



Center 845.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Center Freq
845.000000 MHz

Start Freq
844.000000 MHz

Stop Freq
846.000000 MHz

CF Step
200.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Undefined header



Agilent

R L

Freq/Channel

FCC ID:A3LSCH-N213 Band Edge CH0689

Mkr1 845.000 MHz

Ref 24 dBm

Atten 40 dB

-14.050 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

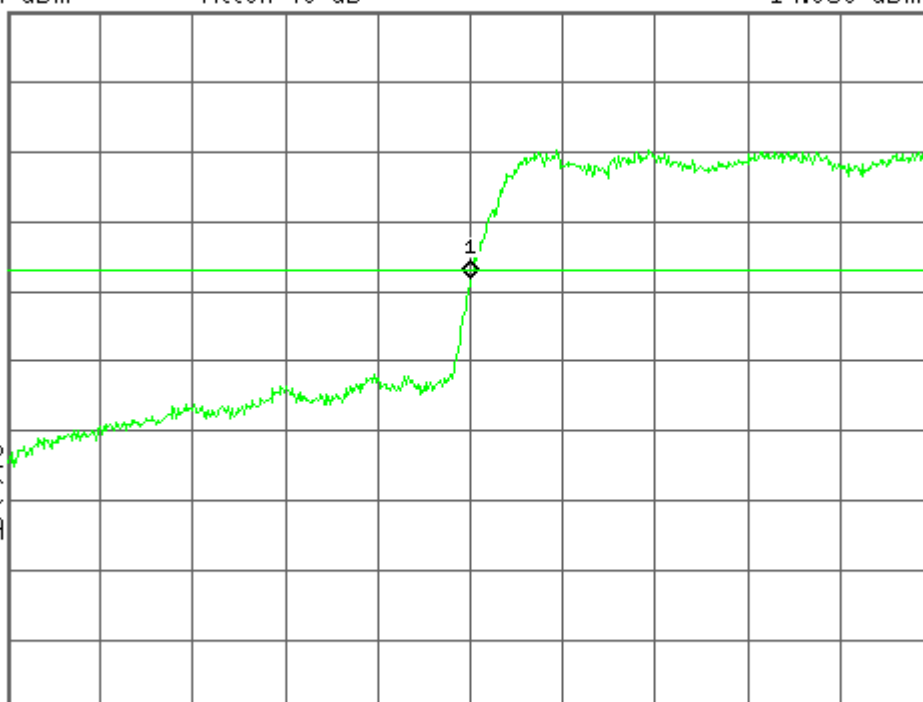
S3 FC

AA

 $\mathcal{E}(f)$:

f>50k

Swp



Center 845.000 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Center Freq
845.000000 MHz**Start Freq**
844.000000 MHz**Stop Freq**
846.000000 MHz**CF Step**
200.000000 kHz
Auto Man**Freq Offset**
0.00000000 Hz**Signal Track**
On Off

Undefined header



Agilent

R L

Freq/Channel

FCC ID:A3LSCH-N213 Band Edge CH0694

Mkr1 846.500 MHz

Ref 24 dBm

Atten 40 dB

-18.386 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

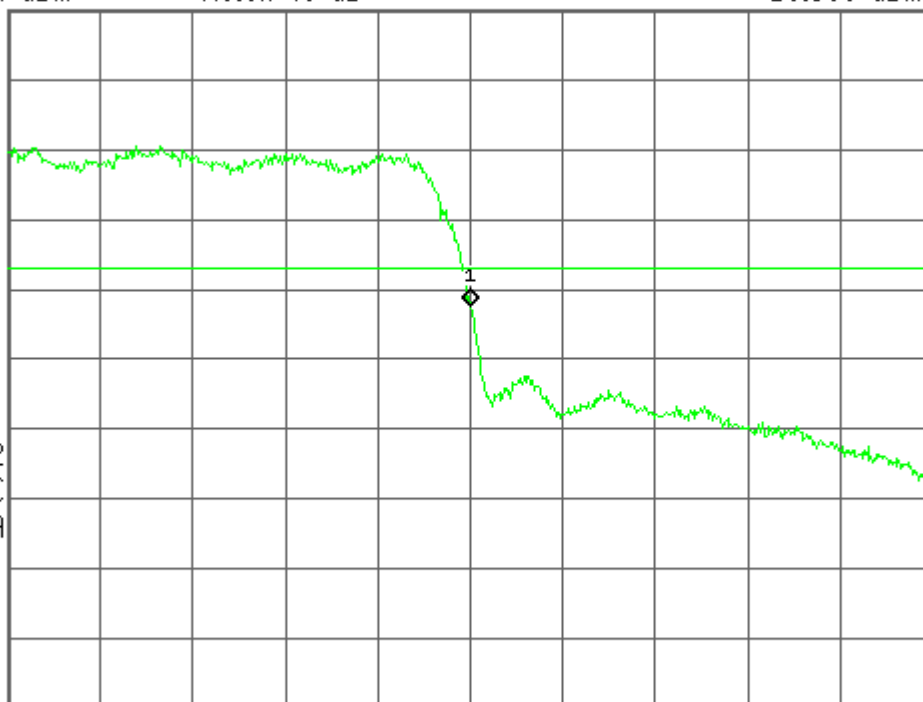
S3 FC

AA

 $\mathcal{E}(f)$:

f>50k

Swp



Center 846.500 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Center Freq
846.500000 MHz**Start Freq**
845.500000 MHz**Stop Freq**
847.500000 MHz**CF Step**
200.000000 kHz
Auto Man**Freq Offset**
0.00000000 Hz**Signal Track**
On Off

Undefined header

Agilent

R L

Freq/Channel

FCC ID:A3LSCH-N213 Band Edge CH0739

Mkr1 846.500 MHz

Ref 24 dBm

Atten 40 dB

-14.330 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

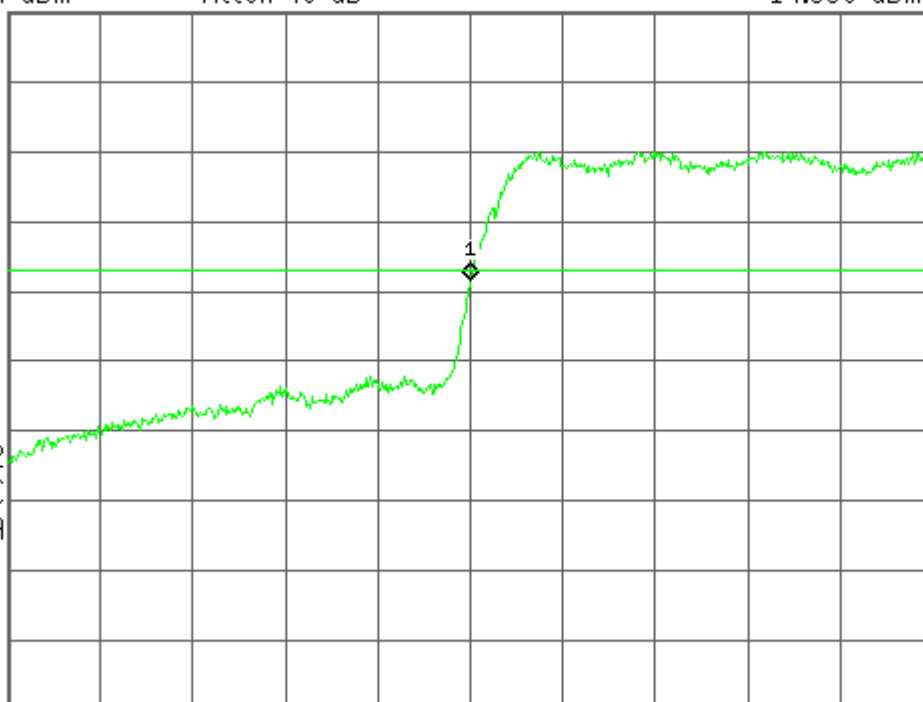
S3 FC

AA

$\mathcal{E}(f)$:

f>50k

Swp



Center 846.500 MHz

Span 2 MHz

#Res BW 13 kHz

#VBW 13 kHz

Sweep 45.16 ms (601 pts)

Center Freq
846.500000 MHz

Start Freq
845.500000 MHz

Stop Freq
847.500000 MHz

CF Step
200.000000 kHz
Auto Man

Freq Offset
0.00000000 Hz

Signal Track
On Off

Undefined header

Agilent

L

Freq/Channel

FCC ID:A3LSCHN213 Band Edge CH0777

Mkr1 849.000 MHz

Ref 24 dBm

Atten 40 dB

-20.808 dBm

#Samp

Log

10

dB/

Offst

1.27

dB

DI

-13.0

dBm

LgAv

100

V1 S2

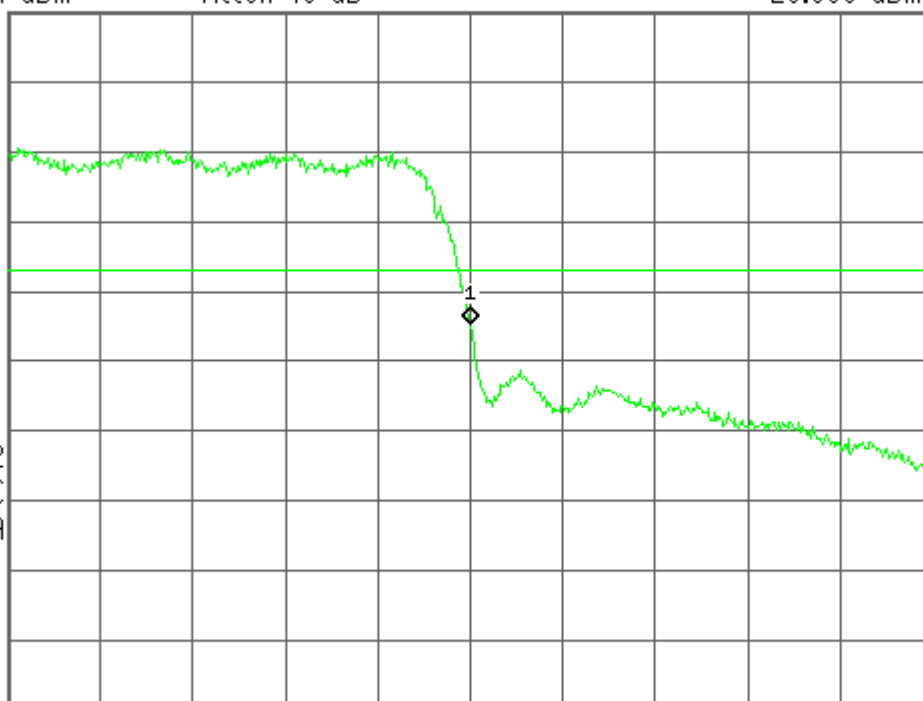
S3 FC

AA

$\mathcal{E}(f)$:

f>50k

Swp



Center 849.000 MHz

Span 2 MHz

#Res BW 13 kHz

VBW 13 kHz

Sweep 45.16 ms (601 pts)

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

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