



EMC Test Data

Client:	Electricity Metering, ABB Inc.	Job Number:	J47046
Model:	ALPHA Meter	T-Log Number:	T47058
		Proj Eng:	Juan Martinez
Contact:	Charles Cunningham		
Emissions Spec:	FCC 22 Subpart H	Class:	N/A
Immunity Spec:		Environment:	

EMC Test Data

For The

Electricity Metering, ABB Inc.

Model

ALPHA Meter



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	Proj Eng: Juan Martinez
Contact: Charles Cunningham	
Spec: FCC 22 Subpart H	Class: N/A

Section 2.1047: Modulation Characteristics

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 1/6/03

Test Engineer: jmartinez

Test Location: SVOATS #1

Config. Used: 1

Config Change: None

EUT Voltage: 5 Vdc

General Test Configuration

The EUT and all local support equipment were located on the table for testing. The Eut was connected directly to Test Receiver. A 20-dB attenuator was used between the EUT and Test Receiver.

Ambient Conditions:

Temperature: 23°C

Rel. Humidity: 31%

Summary of Results

Run	Test Performed	Limit	Result	Comment
1	Modulation limiting	22.915(b)(1) & 22.915 (c)	Pass	
Plot	Test Performed	Limit	Result	Comment
2	Frequency Response (300 - 3000 kHz)	22.915(d)(1)	Pass	
3	Frequency Response (3000 - 30.000 kHz)	22.915(d)(1)	Pass	

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



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Proj Eng: Juan Martinez

Contact: Charles Cunningham

Spec: FCC 22 Subpart H

Class: N/A

Run# 1: Modulation Limiting response.

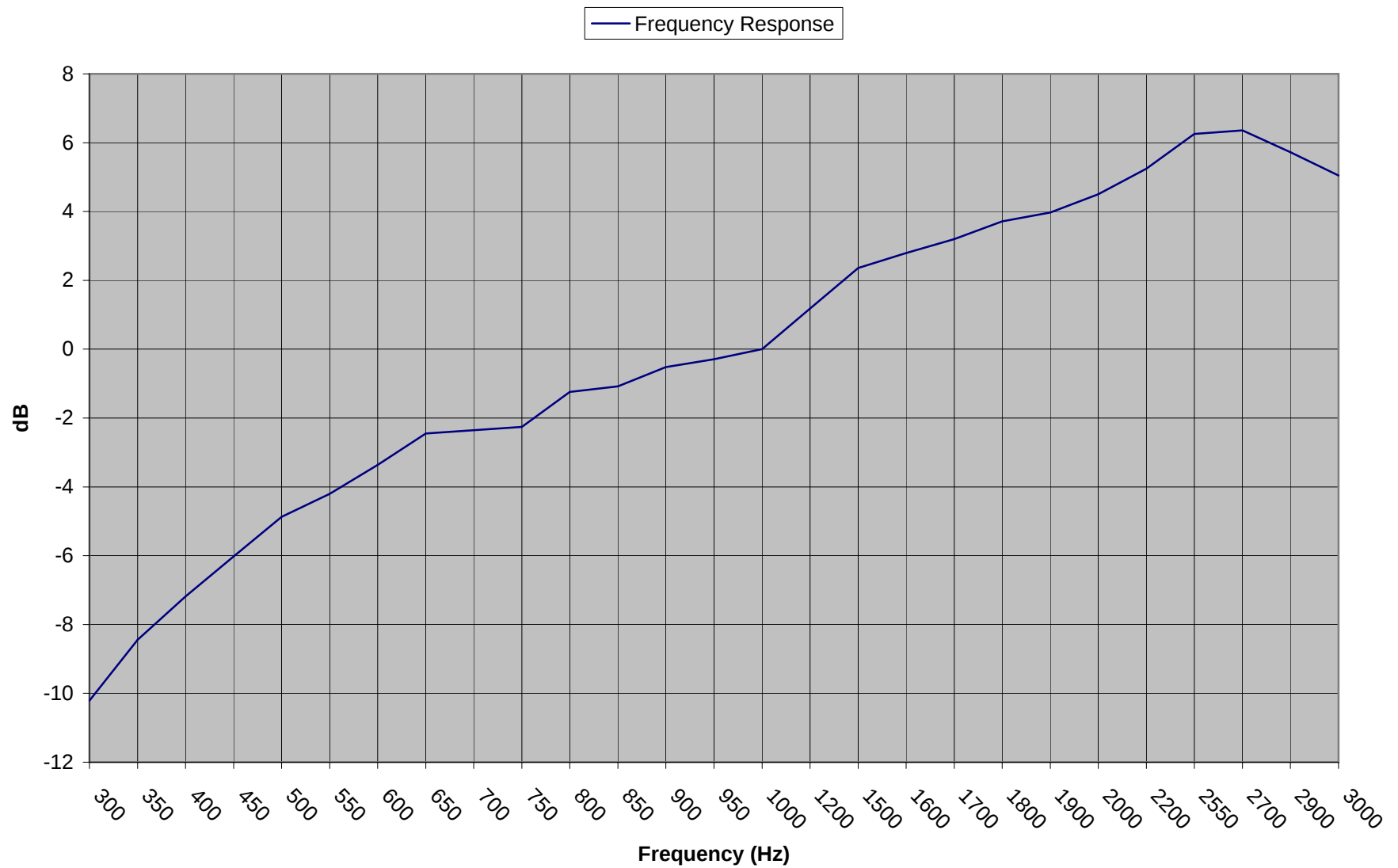
Modulation Limiting

Limiting	300 Hz	1kHz	2.5 kHz	3kHz	15 kHz
10%	-58.4	-77.7	-80	-74	-29.9
20%	-45.4	-69.4	-75.9	-61.9	Note 1
30%	-36.5	-62.9	-72	-69.1	Note 1
40%	-32.8	-58.1	-68.9	-66.6	Note 1
50%	-29.9	-54.4	-66	-63.2	Note 1
60%	Note 1	-51.4	-63.3	-60.4	Note 1
70%	Note 1	-48.6	-60.9	Note 1	Note 1
80%	Note 1	-46.4	-58.8	Note 1	Note 1
90%	Note 1	-44.4	-56.5	Note 1	Note 1
100%	Note 1	Note 1	-49.3	Note 1	Note 1
110%	Note 1	Note 1	Note 1	Note 1	Note 1
120%	Note 1	Note 1	Note 1	Note 1	Note 1

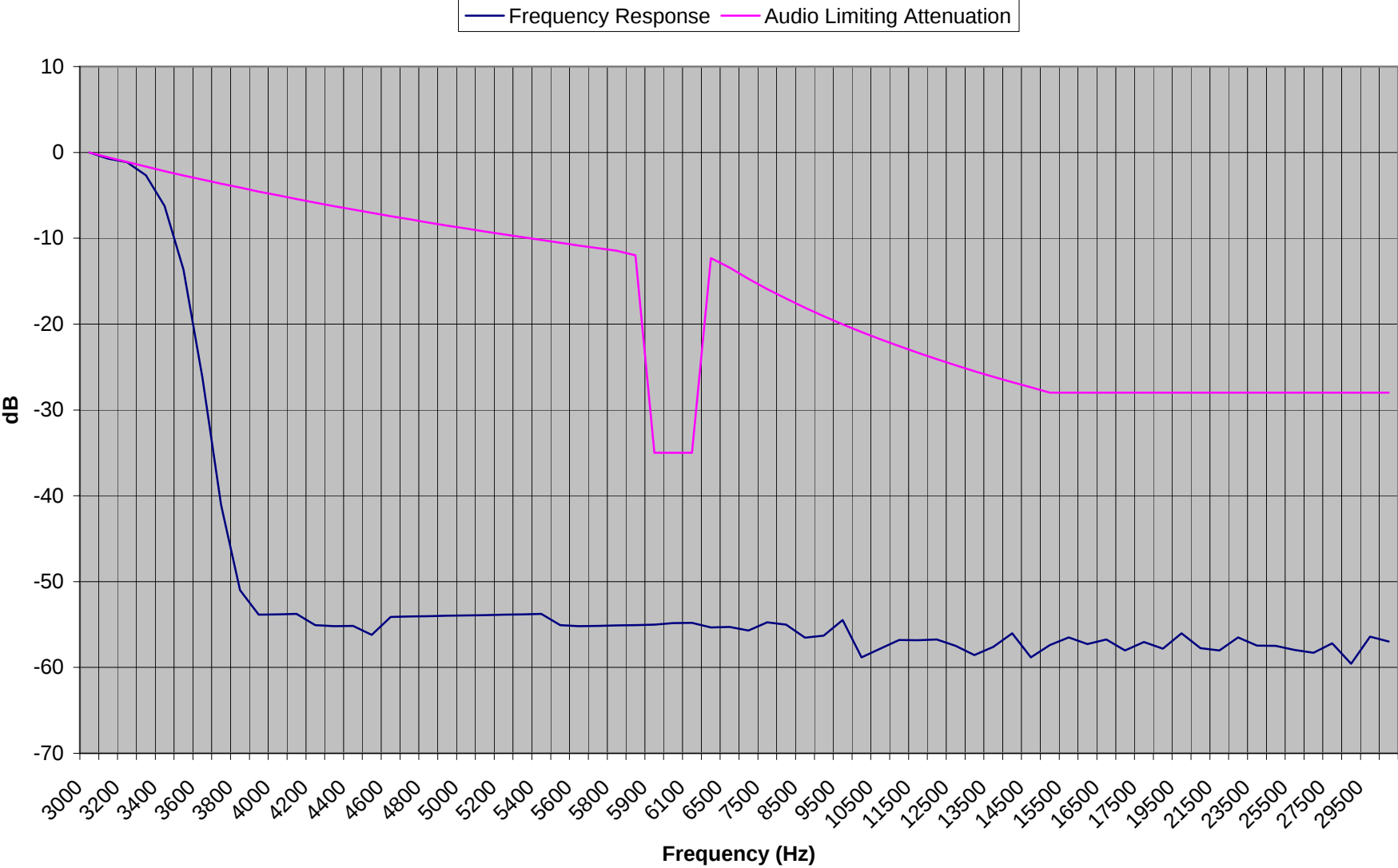
Input levels are in dBm units.

Note 1: Although input levels are not stated, the input voltage was increase, but no deviation was produce beyond limiting point.

Frequency Response (.3 - 3000 MHz) Plot# 7



Frequency Response (3 - 30 kHz) Plot# 8





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Spec: FCC 22 Subpart H	Class: N/A

Section 2.1049: Occupied Bandwidth

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 1/6/03
Test Engineer: jmartinez
Test Location: SVOATS #1

Config. Used: 1
Config Change: None
EUT Voltage: 5 Vdc

General Test Configuration

The EUT and all local support equipment were located on the table for testing. The Eut was connected directly to Test Receiver. A 20-dB attenuator was used between the EUT and Test Receiver.

Ambient Conditions:

Temperature: 14°C
Rel. Humidity: 52%

Summary of Results

Plot	Test Performed	Limit	Result	Comment
4	Occupied Bandwidth	22.917(b)	Pass	Voice + SAT
5	Occupied Bandwidth	22.917(d)	Pass	Wideband data

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



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T-Log Number: T47058

Proj Eng: Juan Martinez

Contact: Charles Cunningham

Spec: FCC 22 Subpart H

Class: N/A

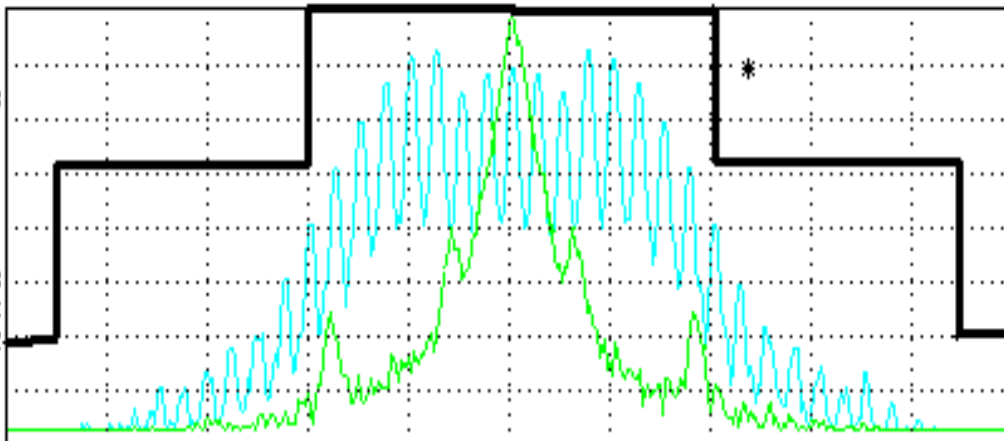
Plot# 4

09:27:30 APR 05, 2001

ACTV DET: PEAK
MEAS DET: PEAK QP AVG

LOG REF OFFST 1.2 dB
10 REF 28.2 dBm
dB/
ATN
40 dB

VA VB
SC FC
CORR



CENTER 834.9900 MHz

RL #IF BW 300 Hz

#AVG BW 300 Hz

SPAN 100.0 kHz

SWP 3.33 sec



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Spec: FCC 22 Subpart H	Class: N/A

Plot# 5

09:29:43 APR 05, 2001

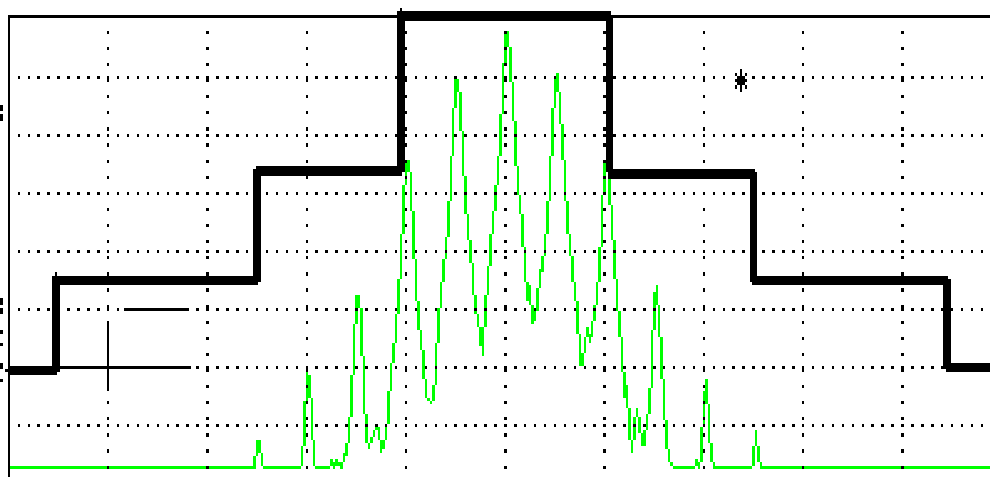
~~1/2~~

ACTV DET: PEAK
MEAS DET: PEAK QP AVG

LOG REF OFFST 1.2 dB
10 REF 28.2 dBm

dB/
ATTN
40 dB

VA SB
SC FC
CORR



CENTER 834.9900 MHz SPAN 200.0 kHz
RL #IF BW 300 Hz #AVG BW 300 Hz SWP 6.67 sec



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Spec: FCC 22 Subpart H	Class: N/A

Section 2.1051: Spurious emission at the Antenna Terminal

Test Specifics

Objective: The objective of this test session is to perform final qualification testing of the EUT with respect to the specification listed above.

Date of Test: 1/6/03
Test Engineer: jmartinez
Test Location: SVOATS #1

Config. Used: 1
Config Change: None
EUT Voltage: 5 Vdc

General Test Configuration

The EUT and all local support equipment were located on the table for testing. The Eut was connected directly to Test Receiver. A 20-dB attenuator was used between the EUT and Test Receiver.

Ambient Conditions: Temperature: 14°C
Rel. Humidity: 52%

Summary of Results

Plot	Test Performed	Limit	Result	Comment
6	Out-Of-Band	22.917(e)	Pass	Voice + SAT
7	Out-Of-Band	22.917(e)	Pass	Voice + SAT
8	Out-Of-Band	22.917(e)	Pass	Wideband data
9	Out-Of-Band	22.917(e)	Pass	Wideband data
10	Mobile Emission	22.917 (f)	Pass	Voice + SAT
11	Mobile Emission	22.917 (f)	Pass	Voice + SAT
12	Mobile Emission	22.917 (f)	Pass	Wideband data
13	Mobile Emission	22.917 (f)	Pass	Wideband data

Modifications Made During Testing:

No modifications were made to the EUT during testing

Deviations From The Standard

No deviations were made from the requirements of the standard.



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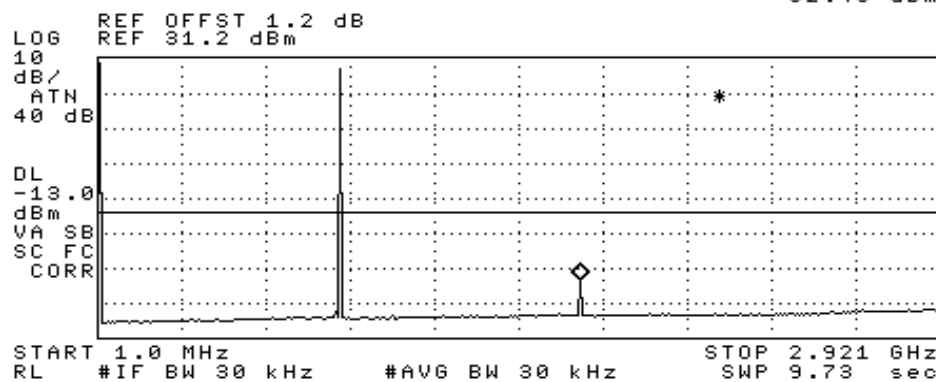
Spec: FCC 22 Subpart H

Class: N/A

Plot# 6

10:00:40 APR 05, 2001

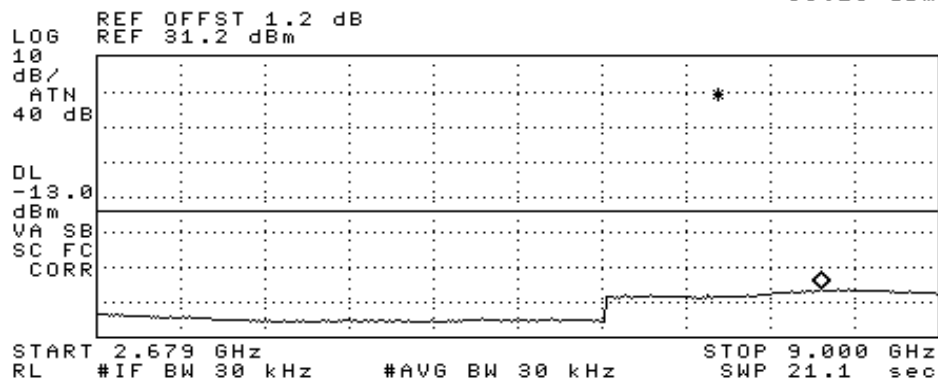
ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.673 GHz
-32.48 dBm



Plot# 7

09:59:50 APR 05, 2001

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 8.115 GHz
-35.13 dBm





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Spec: FCC 22 Subpart H

Class: N/A

Plot# 8

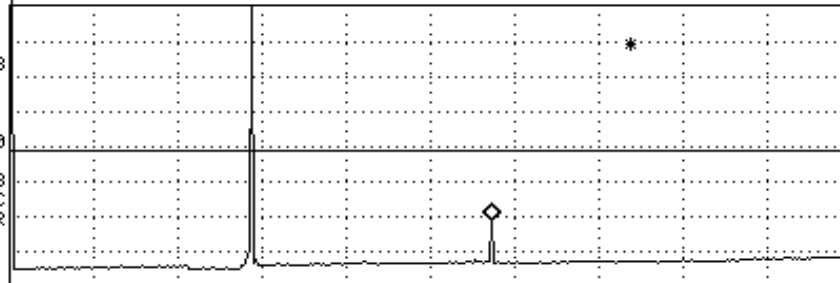
09:31:41 APR 05, 2001

MARKER
1.673 GHz
-32.92 dBm

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 1.673 GHz
-32.92 dBm

LOG REF OFFST 1.2 dB
10 REF 28.2 dBm
dB/
ATN
40 dB

DL
-13.0
dBm
VA SB
SC FC
CORR



START 1.0 MHz STOP 2.921 GHz
RL #IF BW 30 kHz #AVG BW 30 kHz SWP 9.73 sec

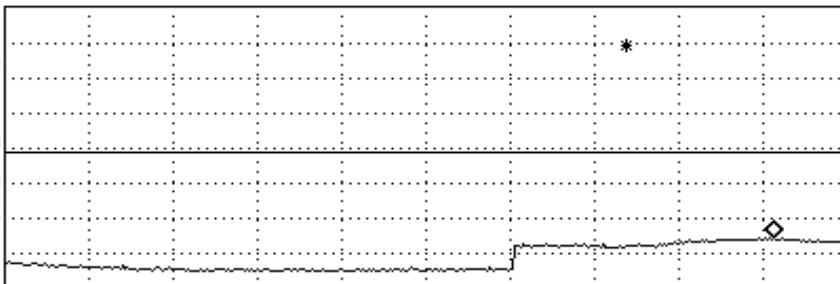
Plot# 9

09:32:51 APR 05, 2001

ACTV DET: PEAK
MEAS DET: PEAK QP AVG
MKR 8.447 GHz
-37.23 dBm

LOG REF OFFST 1.2 dB
10 REF 28.2 dBm
dB/
ATN
40 dB

DL
-13.0
dBm
VA SB
SC FC
CORR



START 2.679 GHz STOP 9.000 GHz
RL #IF BW 30 kHz #AVG BW 30 kHz SWP 21.1 sec



EMC Test Data

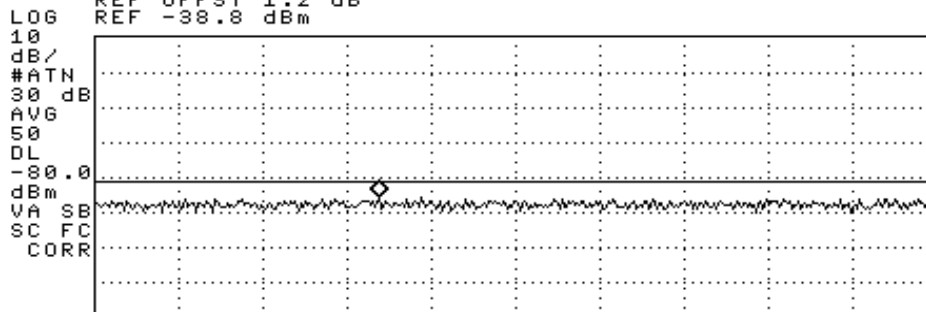
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Spec: FCC 22 Subpart H	Class: N/A

Plot# 10

10:06:13 APR 05, 2001

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 873.39 MHz
-84.66 dBm

LOG REF OFFST 1.2 dB
REF -38.8 dBm



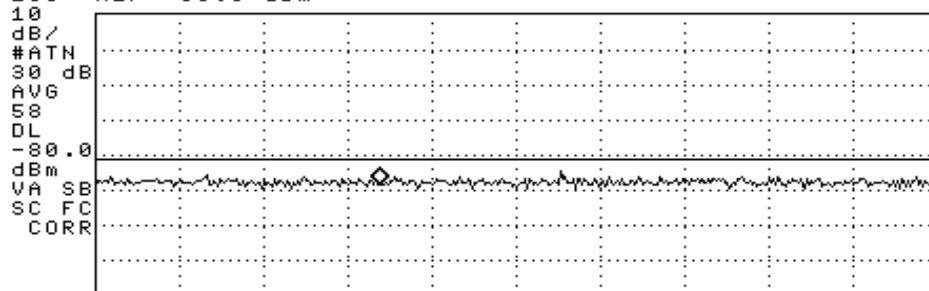
START 869.00 MHz STOP 882.00 MHz
RL #IF BW 3.0 kHz #AVG BW 30 kHz SWP 4.33 sec

Plot# 11

10:10:59 APR 05, 2001

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 886.05 MHz
-87.32 dBm

LOG REF OFFST 1.2 dB
REF -38.8 dBm



START 882.00 MHz STOP 894.00 MHz
RL #IF BW 3.0 kHz #AVG BW 30 kHz SWP 4.00 sec



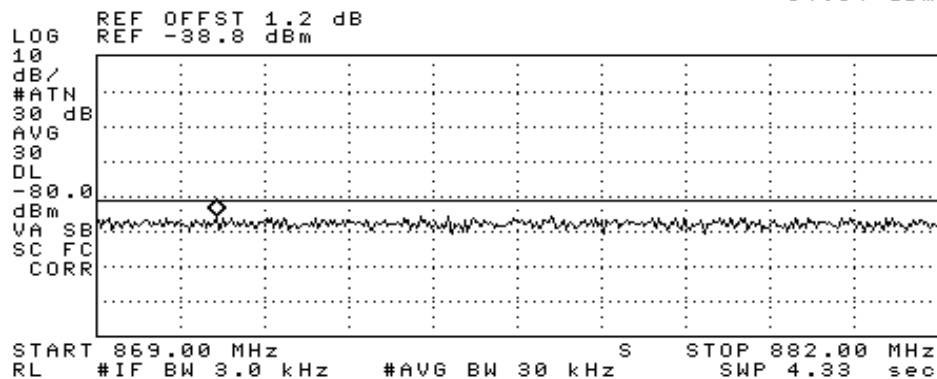
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Contact: Charles Cunningham	Proj Eng: Juan Martinez
Spec: FCC 22 Subpart H	Class: N/A

Plot# 12

09:56:13 APR 05, 2001

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 870.85 MHz
-84.34 dBm



Plot# 13

09:53:10 APR 05, 2001

ACTV DET: SMPL
MEAS DET: PEAK QP AVG
MKR 887.91 MHz
-84.08 dBm

