

APPLICATION FOR CERTIFICATION

On Behalf of

Avnera Corporation

AM1G USB SENDER

Model Number: AVRB7101A

FCC ID: V3CAVRB7101A

Prepared for : Avnera Corporation
16505 NW Bethany Court, Suite 100 Beaverton, Oregon
97006, United States

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number : ACS-F08398
Date of Test : Aug.26~27, 2008
Date of Report : Sep.22, 2008

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TEST REPORT CERTIFICATION

Applicant : Avnera Corporation
Manufacturer : Beautiful Enterprise Co., Ltd
EUT Description : AMIG USB SENDER
FCC ID : V3CAVRB7101A
(A) MODEL NO. : AVRB7101A
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : DC 5V
(D) TEST VOLTAGE : DC 5V From PC AC 120V/60Hz

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart B Class B 2007, ANSI C63.4-2003

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart B Class B limits for radiated and conducted emissions. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of tests. Also, this report shows that EUT is technically compliant with FCC requirements.

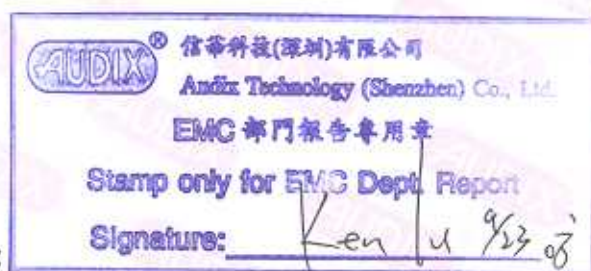
This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

Date of Test : Aug.26~27, 2008

Prepared by : YoYo Wang
YoYo Wang / Assistant

Reviewer : Jany Yu
Jamy Yu / Senior Engineer

Approved & Authorized Signer : Ken Lu / Deputy Manager



1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	Standard	Limits	Results
Power Line Conducted Emission Test	FCC Part 15: 2006 ANSI C63.4: 2003	Class B	PASS
Radiated Emission Test	FCC Part 15: 2006 ANSI C63.4: 2003	Class B	PASS

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Description	:	AM1G USB SENDER
Model Number	:	AVRB7101A
FCC ID	:	V3CAVRB7101A
Applicant	:	Avnera Corporation 16505 NW Bethany Court, Suite 100 Beaverton, Oregon 97006, United States
Manufacturer	:	Beautiful Enterprise Co., Ltd 26th Floor, Beautiful Group Tower, 77 Connaught Road Central, Hong Kong
Date of Test	:	Aug.26~27, 2008
Date of Receipt	:	Aug.24, 2008
Sample Type	:	Prototype production

2.2. Tested Supporting System Details

2.2.1.NOTEBOOK

M/N	:	PP09S
S/N	:	N/A
Manufacturer	:	DELL
FCC	:	By DoC
Power Adaptor	:	Manufacturer: DELL, M/N: LA65NS1-00 Cable: Unshielded, Detachable, 4.0m (Bond one ferrite core)

2.2.2. HDD

EMC CODE	:	ACS-EMC-HDD03
M/N	:	F12-UF
S/N	:	A0100215-5390030
Manufacturer	:	Terasys
Data Cable	:	Shielded, Detachable, 1.8m
FCC ID	:	By DoC
BSMI ID	:	4912A022

2.2.3.iPod

EMC CODE	:	ACS-EMC-IP03
M/N	:	A1199
S/N	:	YM711H3LVQ5
Manufacturer	:	APPLE
Data Cable	:	Shielded, Detachable, 1.0m
FCC ID	:	By DoC
BSMI ID	:	R33057

2.3. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Rd., 52 Block, Shenzhen
Science & Industrial Park, Nantou,
Shenzhen, Guangdong, China

3m Anechoic Chamber : Jun. 13, 2006 File on Federal
Communication Commission
Registration Number: 90454

3m & 10m Anechoic Chamber : Jan. 31, 2007 File on Federal
Communication Commission
Registration Number: 794232

EMC Lab. : Accredited by DATech, German
Registration Number: DAT-P-091/99-01
Dec. 20, 2007

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Apr.01, 2008

2.4. Measurement Uncertainty

No.	Item	MU	Remark
1	Uncertainty for Conducted Emission Test	2.02dB	
2	Uncertainty for Radiation Emission test in 3m chamber	3.44 dB	Polarize: V
		3.96 dB	Polarize: H
3	Uncertainty for Radiation Emission test in 10m chamber	3.46 dB	Distance: 10m Polarize: V
		3.82 dB	Distance: 10m Polarize: H
		3.64 dB	Distance: 3m Polarize: V
		4.02 dB	Distance: 3m Polarize: H

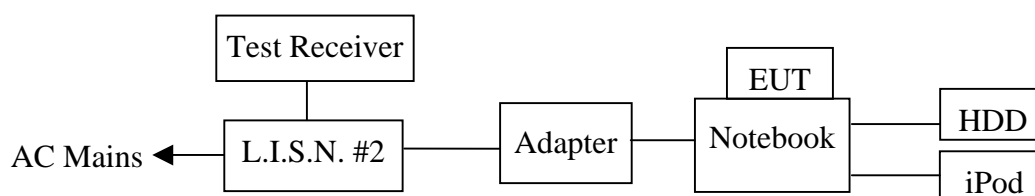
3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Dec.19, 07	1 Year
2.	L.I.S.N.#2	Kyoritsu	KNW-407	8-1636-1	May 10,08	1 Year
3.	L.I.S.N.#3	EMCO	3825/2	9006-1660	May 10,08	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May 10,08	1 Year
5.	RF Cable	Fujikura	3D-2W	LISN Cable 1#	Jul.08, 08	1/2 Year
6.	Coaxial Switch	Anritsu	MP59B	M55367	Jul.08, 08	1/2 Year
7.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100340	Jul.08, 08	1/2 Year

3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators



(EUT: AM1G USB SENDER)

3.3. Power Line Conducted Emission Test Limits

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4.1. AM1G USB SENDER (EUT)

Model Number : AVRB7101A

Serial Number : N/A

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

3.5.Operating Condition of EUT

3.5.1.Setup the EUT and simulator as shown as Section 3.2.

3.5.2.Turn on the power of all equipment.

3.5.3.Let the EUT worked in test mode (TX mode) and measured it.

3.6.Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #2).. Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2003 on conducted Emission test.

The bandwidth of the R&S Test Receiver ESHS10 was set at 10kHz.

The frequency range from 150kHz to 30MHz was checked using a peak detector.

The all reading of measurement was with the Quasi-Peak detector and Average detector. (Remark: If the Average limit is met when using a Quasi-Peak detector, the Average detector is unnecessary)

EUT: AM1G USB SENDER

Model No. : AVRB7101A

Test Date: Aug.27, 2008

Temperature: 29.5℃

Humidity: 55%

The details of test modes are as follow:

No.	Test Mode	Reference Test Data No.	
		VA	VB
1.	TX mode	#1	#2

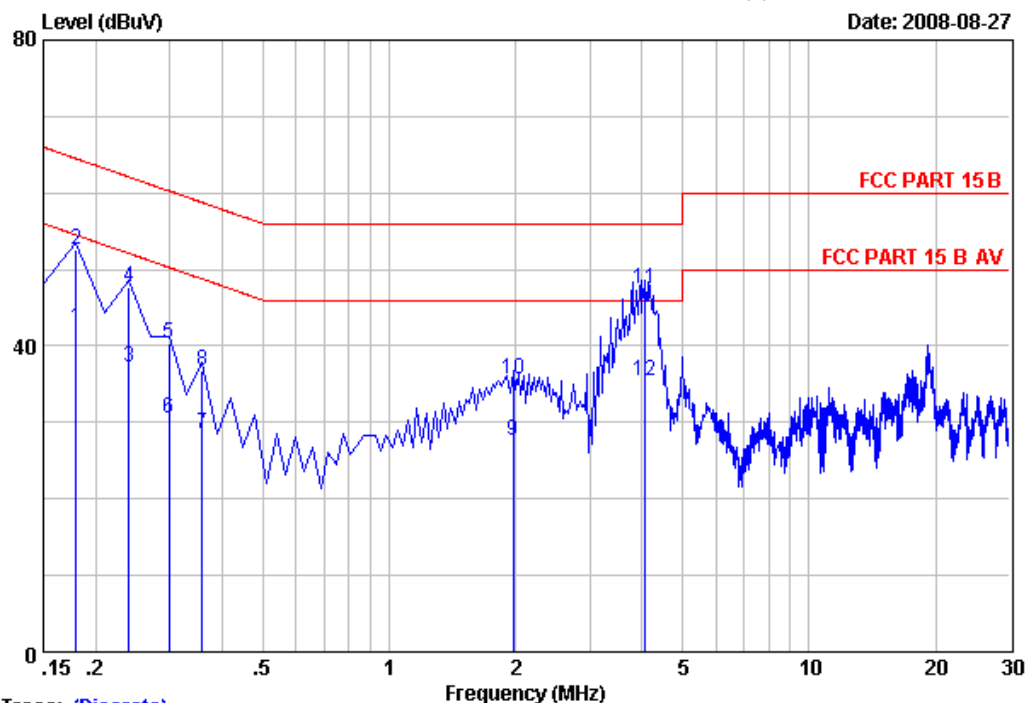
3.7.Power Line Conducted Emission Test Results

PASSED



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Postcode:518057

Data: 1 File: D:\emc 002\DATA\2008 Test Data\B\ACS8Q1367.EMI (2)



Trace: (Discrete)

Site no :Audix No.1 Conduction Data no :1
Dis./Ant. :-- KNW407 1# VA
Limit :FCC PART 15 B
Env./Ins. :29.5°C/55% ESHS 10 Engineer :Sunny
EUT :AM1G USB SENDER M/N:AVRB7101A
Power Rating :DC 5V From PC input AC120V/60Hz
Test Mode :Tx Mode

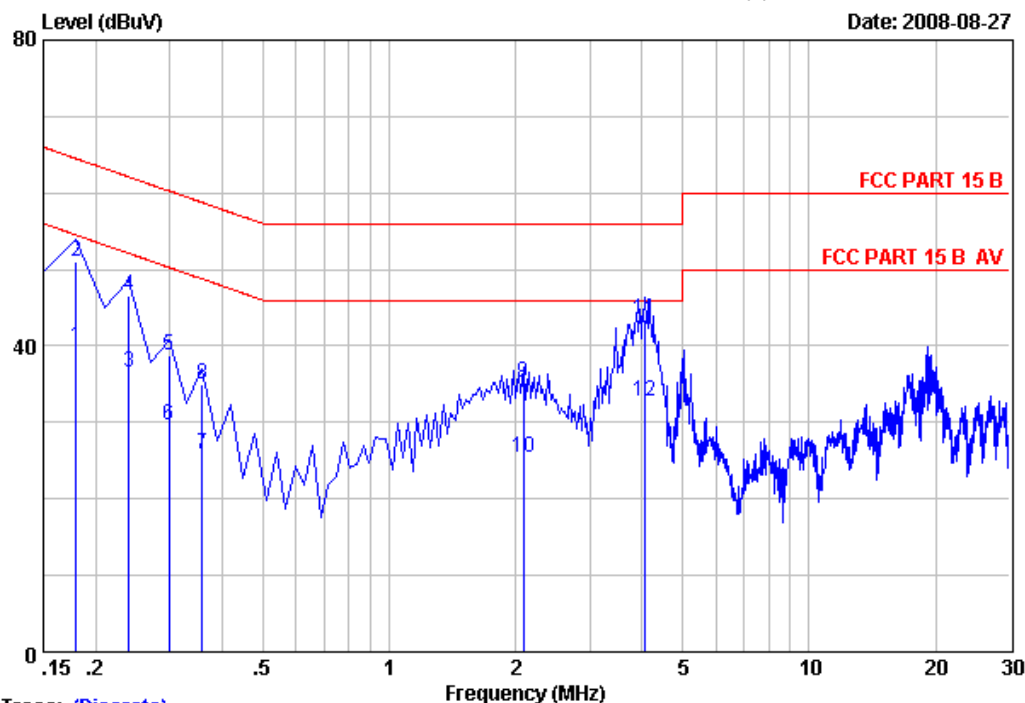
No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.18	0.29	10.15	32.00	42.44	54.49	12.05	Average
2	0.18	0.29	10.15	42.10	52.54	64.49	11.95	QP
3	0.24	0.28	10.15	26.78	37.21	52.11	14.90	Average
4	0.24	0.28	10.15	37.23	47.66	62.11	14.45	QP
5	0.30	0.26	10.15	29.88	40.29	60.26	19.97	QP
6	0.30	0.26	10.15	20.09	30.50	50.26	19.76	Average
7	0.36	0.24	10.14	18.20	28.58	48.75	20.17	Average
8	0.36	0.24	10.14	26.41	36.79	58.75	21.96	QP
9	1.97	0.10	10.15	17.30	27.55	46.00	18.45	Average
10	1.97	0.10	10.15	25.48	35.73	56.00	20.27	QP
11	4.06	0.10	10.18	37.23	47.51	56.00	8.49	QP
12	4.06	0.10	10.18	25.20	35.48	46.00	10.52	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



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Data: 2 File: D:\emc 002\DATA\2008 Test Data\B\ACS8Q1367.EMI (2)



Trace: (Discrete)

Site no :Audix No.1 Conduction Data no :2
Dis./Ant. :-- KNW407 1# VB
Limit :FCC PART 15 B
Env./Ins. :29.5°C/55% ESHS 10 Engineer :Sunny
EUT :AM1G USB SENDER M/N:AVRB7101A
Power Rating :DC 5V From PC input AC120V/60Hz
Test Mode :Tx Mode

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.18	0.15	10.15	29.60	39.90	54.49	14.59	Average
2	0.18	0.15	10.15	40.65	50.95	64.49	13.54	QP
3	0.24	0.12	10.15	26.30	36.57	52.11	15.54	Average
4	0.24	0.12	10.15	36.41	46.68	62.11	15.43	QP
5	0.30	0.14	10.15	28.59	38.88	60.26	21.38	QP
6	0.30	0.14	10.15	19.30	29.59	50.26	20.67	Average
7	0.36	0.16	10.14	15.51	25.81	48.75	22.94	Average
8	0.36	0.16	10.14	24.78	35.08	58.75	23.67	QP
9	2.09	0.03	10.15	24.95	35.13	56.00	20.87	QP
10	2.09	0.03	10.15	15.20	25.38	46.00	20.62	Average
11	4.06	0.04	10.18	33.13	43.35	56.00	12.65	QP
12	4.06	0.04	10.18	22.60	32.82	46.00	13.18	Average

Remarks: 1.Emission Level=LISN Factor+Cable Loss+Reading.
2.If the average limit is met when using a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. RADIATED EMISSION TEST

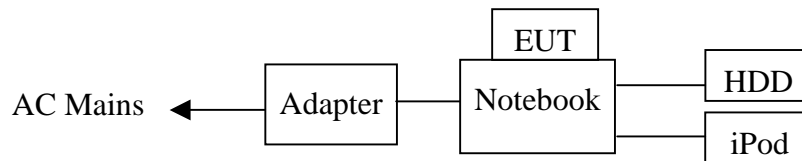
4.1. Test Equipment

The following test equipments are used during the radiated emission test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	3#Chamber	AUDIX	N/A	N/A	Jun.09,08	1/2 Year
2.	EMI Spectrum	Agilent	E7403A	MY42000106	May 10, 08	1 Year
3.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	May 10, 08	1 Year
4.	Amplifier	HP	8447D	2648A04738	Jul.08.08	1/2 Year
5.	Bilog Antenna	Schaffner	CBL6112D	25237	Feb.21, 08	1 Year
6.	RF Cable	JINGCHENG	KLMR400	3# Chamber No.1	Jul.08.08	1/2 Year
7.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.2	Jul.08.08	1/2 Year
8.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.3	Jul.08.08	1/2 Year
9.	RF Cable	JINGCHENG	JB Y400	3# Chamber No.4	Jul.08.08	1/2 Year
10.	Coaxial Switch	Anritsu	MP59B	M73989	Jul.08.08	1/2 Year

4.2. Block Diagram of Test Setup

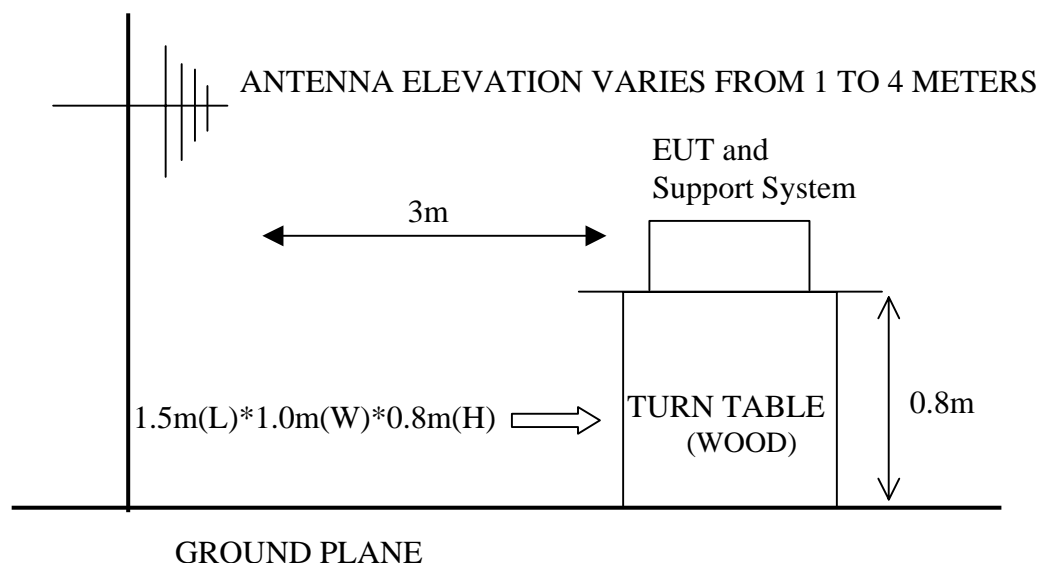
4.2.1. Block diagram of connection between the EUT and simulators



(EUT: AMIG USB SENDER)

4.2.2. In Anechoic Chamber

ANTENNA TOWER



4.3. Radiated Emission Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark :
- (1) Emission level $\text{dB}\mu\text{V} = 20 \log$ Emission level $\mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

4.4.1. AM1G USB SENDER (EUT)

Model Number : AVRB7101A
 Serial Number : N/A

4.4.2. Support Equipment : As Tested Supporting System Detail, in Section 2.2.

4.5.Operating Condition of EUT

4.5.1.Setup the EUT and simulator as shown as Section 4.2.

4.5.2.Turn on the power of all equipment.

4.5.3.Let the EUT worked in test mode (TX mode) and measured it.

4.6.Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to ANSI C63.4: 2003 on Radiated Emission test.

The bandwidth of the R&S Test Receiver ESVS20 was set at 120kHz. (For 30MHz to 1000MHz)

The frequency range from 30MHz to 1000MHz was pre-scanned with a peak detector and all final readings of measurement from Test Receiver are Quasi-Peak values.

For frequency range 30MHz~1000MHz, EUT with the following test modes were measured within Anechoic Chamber and all the scanning waveform were on section 4.7, which include:

Test Date: Aug.26, 2008

Temperature: 24℃

Humidity: 56%

The details of test modes are as follows:

No.	Test Mode	Reference Test Data No.	
		Horizontal	Vertical
1.	TX mode	#2	#1

4.7.Radiated Emission Test Results

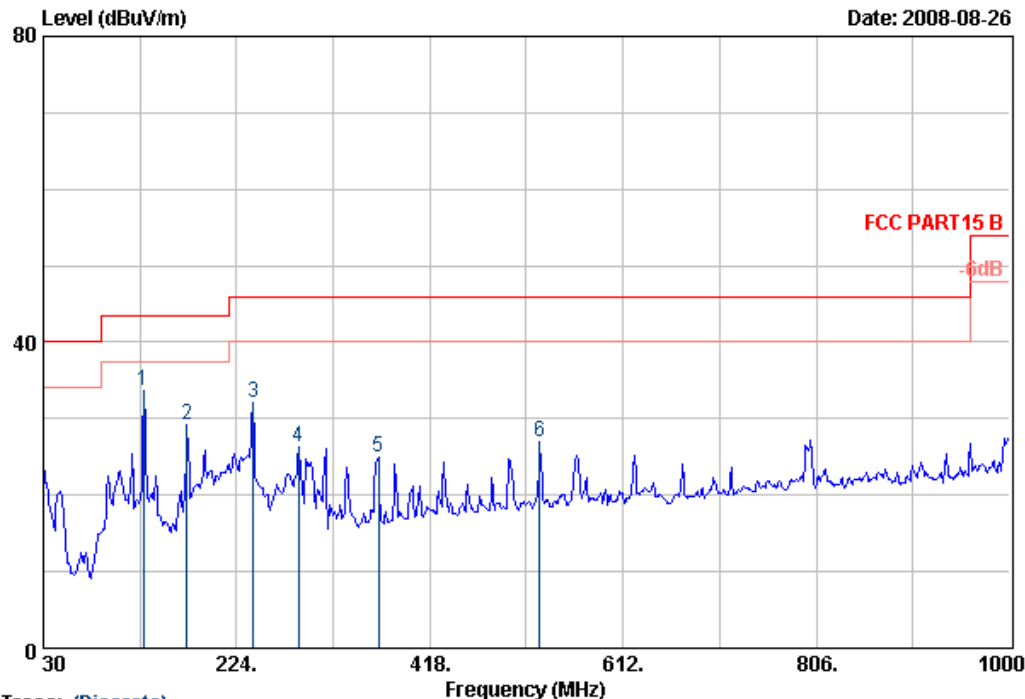
PASSED



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Postcode:518057

Data: 2 File: D:\2008 Report Data\B\ACS8Q1367.EMI (2)

Date: 2008-08-26



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 2
Dis. / Ant. : 3m CBL6112D Ant. pol. : HORIZONTAL
Limit : FCC PART15 B
Env. / Ins. : 24°C/56% ESVS20 Engineer : Sunny
EUT : AM1G USB SENDER M/N:AVRB7101A
Power Rating : DC 5V From PC input AC120V/60Hz
Test Mode : Tx Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	130.88	11.09	1.16	21.41	33.66	43.50	9.84	QP
2	174.53	8.51	1.27	19.47	29.25	43.50	14.25	QP
3	240.49	10.11	1.46	20.42	31.99	46.00	14.01	QP
4	286.08	11.68	1.55	13.02	26.25	46.00	19.75	QP
5	366.59	13.42	1.76	9.82	25.00	46.00	21.00	QP
6	528.58	15.86	2.09	8.95	26.90	46.00	19.10	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 130.88MHz with corrected signal level of 33.66dBμV/m (Limit is 43.50dBμV/m) when the antenna was at horizontal polarization and at 1m high and the turntable was at 150°.

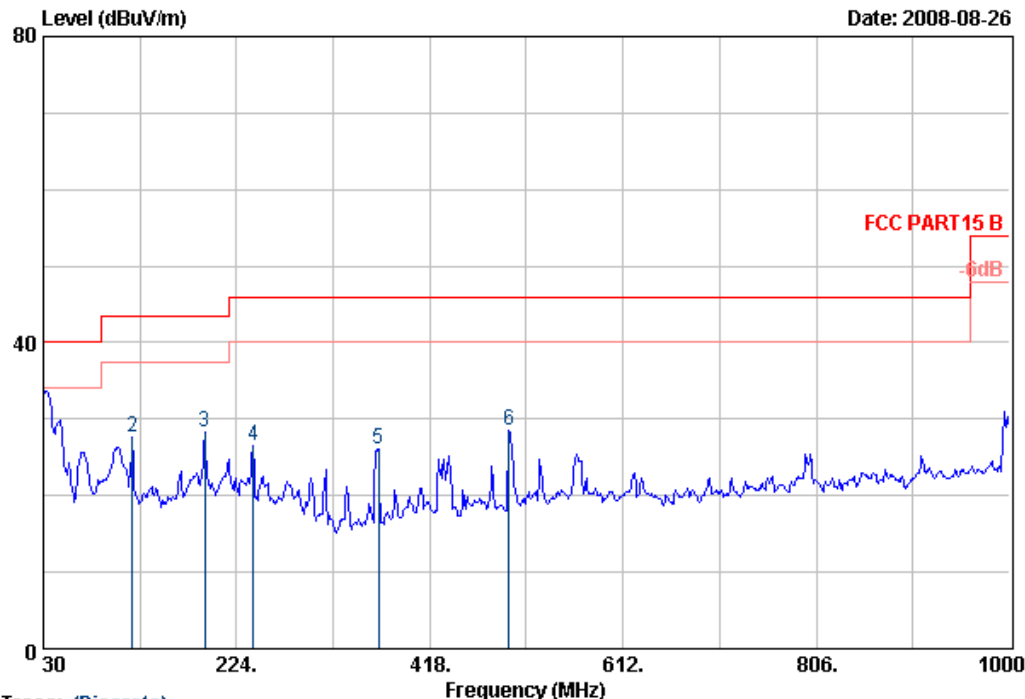
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.



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Data: 1 File: D:\2008 Report Data\B\ACS8Q1367.EMI (2)

Date: 2008-08-26



Trace: (Discrete)

Site no. : 3# Chamber Radiation Data no. : 1
Dis. / Ant. : 3m CBL6112D Ant. pol. : VERTICAL
Limit : FCC PART15 B
Env. / Ins. : 24°C/56% ESVS20 Engineer : Sunny
EUT : AM1G USB SENDER M/N:AVRB7101A
Power Rating : DC 5V From PC input AC120V/60Hz
Test Mode : Tx Mode

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	30.00	19.92	0.68	13.39	33.99	40.00	6.01	QP
2	119.24	11.12	1.11	15.37	27.60	43.50	15.90	QP
3	191.99	8.04	1.30	18.90	28.24	43.50	15.26	QP
4	240.49	10.11	1.46	14.96	26.53	46.00	19.47	QP
5	366.59	13.42	1.76	10.95	26.13	46.00	19.87	QP
6	497.54	15.63	2.04	10.81	28.48	46.00	17.52	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 30.00MHz with corrected signal level of 33.99dBμV/m (Limit is 40.00dBμV/m) when the antenna was at vertical polarization and at 1m high and the turntable was at 330°.

4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

5. DEVIATION TO TEST SPECIFICATIONS

[NONE]