

FCC PART 15 CLASS B EMI MEASUREMENT AND TEST REPORT

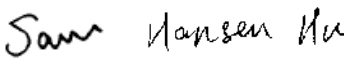
For

Shanghai DareGlobal Technologies Co.,Ltd.

22F,Info Tech Building,No.1555 Kongjiang Road,Shanghai P.R.China

FCC ID: RS3DSL-500

September 12, 2005

This Report Concerns: ☒ Original Report	Equipment Type: ADSLMODEM
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Report No.:	RSH05080801
Test Date:	August 11-26, 2005
Reviewed By:	Chris Zeng 
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Note: The test report is specially limited to the above company and this particular sample only.
It may not be duplicated without prior written consent of Bay Area Compliance Lab Corp.
(ShenZhen). This report must not be used by the client to claim product certification,
approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *Shanghai DareGlobal Technologies Co.,Ltd.*'s product, model number: WMM001 or the "EUT" as referred to in this report is a Transmitter, ADSL MODEM. The EUT is measured approximately 5.0cm L x 9.0 cm W x 4.0cm H. rated input voltage: DC 5.2V.

AC/DC Adapter: DUE

Model: DSA-12W-05FUS, S/N: PS052100, Input: 100-240 V~50/60 Hz 0.3A, Output: +5.2 V $\pm$ 1A

** The test data gathered are from production sample, serial number: 0508005, provided by the manufacturer.*

Objective

This Type approval report is prepared on behalf of *Shanghai DareGlobal Technologies Co.,Ltd.* in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC rules, sec 15.107 and sec 15.109.

Related Submittal(s)/Grant(s)

No Related Submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Lab Corp. (ShenZhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Lab Corp. (ShenZhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab Corp. (ShenZhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Lab Corp. (ShenZhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

Equipment Modifications

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

EUT Exercise Software

N/A

Special Accessories

The special accessories were provided by Bay Area Compliance Lab Corp. (ShenZhen).

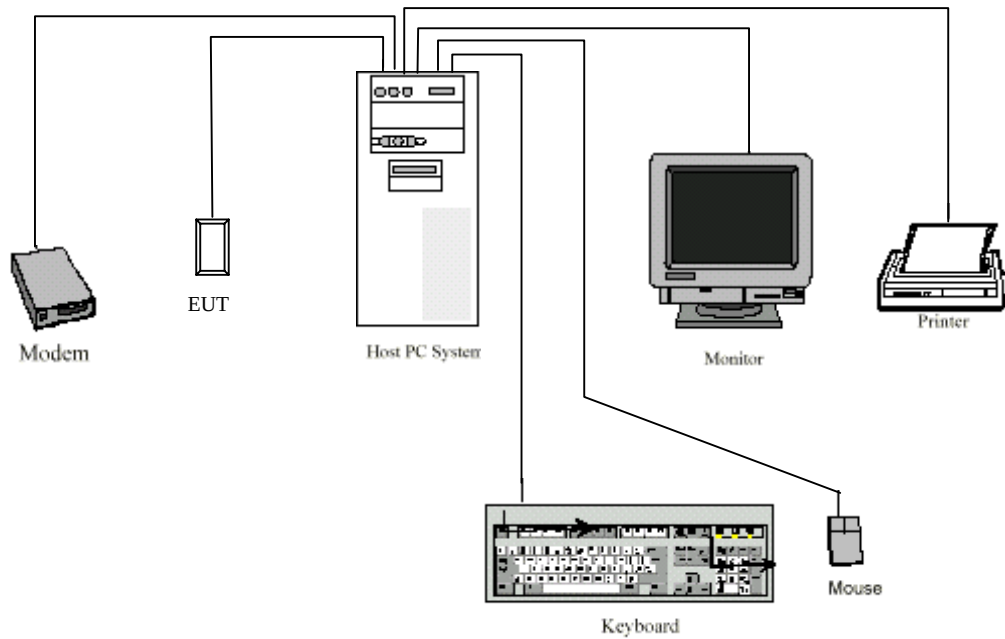
Schematic

Please refer to the Exhibit D.

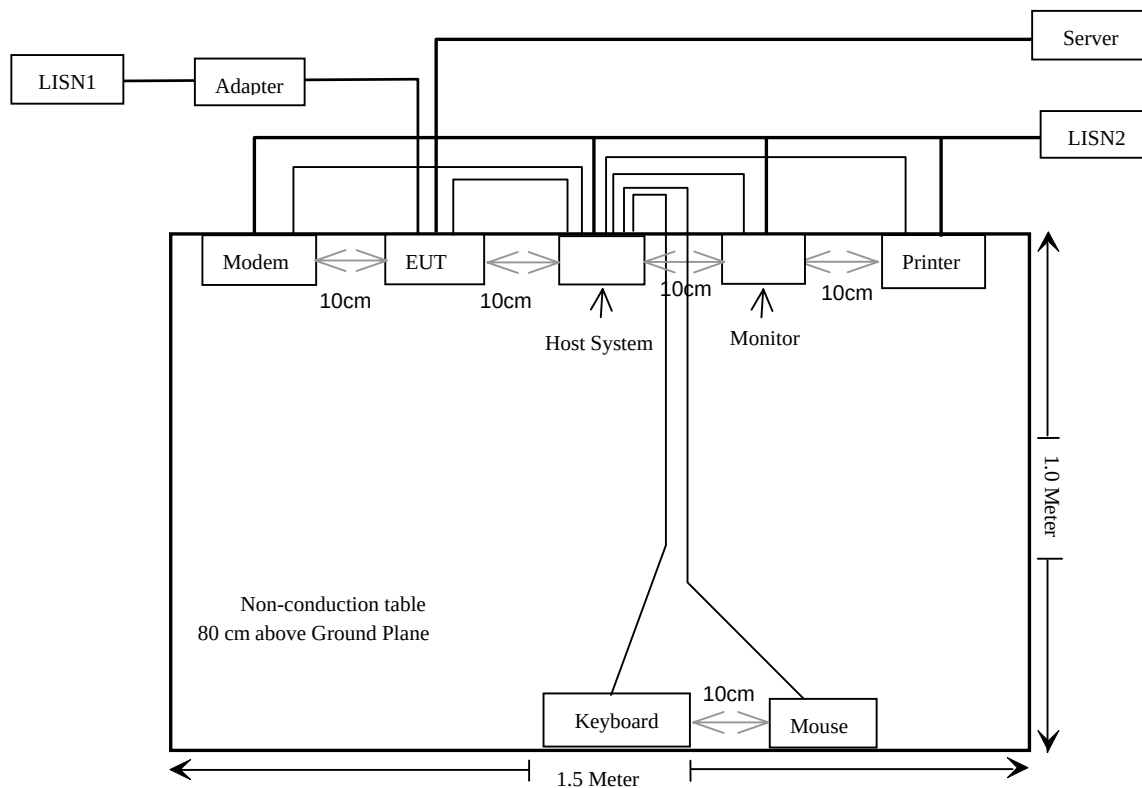
Equipment Modifications

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

Results reported relate only to the product tested, serial number:0508005.

FCC RULES	DESCRIPTION OF TEST	RESULT
§15.107	Conducted Emission	Compliant
§15.109	Radiated Emission Limit	Compliant

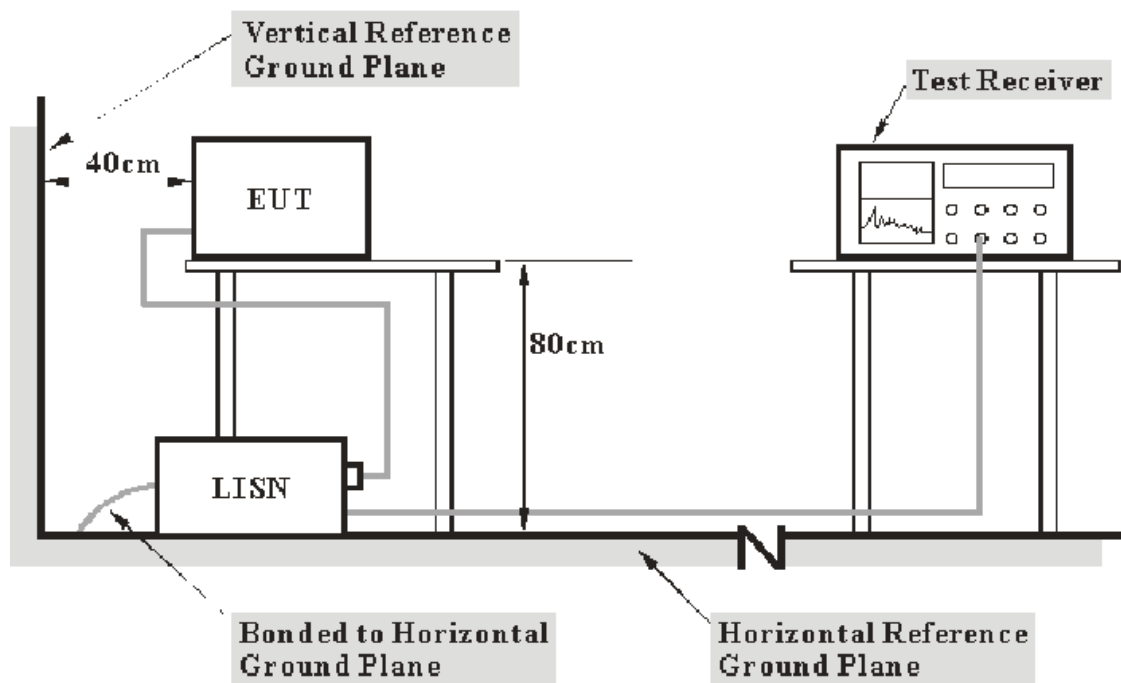
§15.107 - CONDUCTED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 3.2 dB.

EUT Setup



- Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The host PC was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

<u>Frequency Range</u>	<u>IFBW</u>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2005-1-26	2006-1-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2005-2-28	2006-2-28

* Com-Power's LISN were used as the supporting equipment.

* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the host PC was connected to the outlet of the first LISN, all other support equipment power cords were connected to the outlet of the second LISN.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

EUT Adapter: **-8.41 dB** at **0.215 MHz** in the **Line** conductor mode.
host PC: **-8.00 dB** at **7.445 MHz** in the **Line** conductor mode.

Test Data**Environmental Conditions**

Temperature:	27 ° C
Relative Humidity:	65%
ATM Pressure:	1000mbar

The testing was performed by Hansen Hu on 2005-8-15.

EUT Adapter:

Test Mode: Running

Frequency MHz	LINE CONDUCTED EMISSIONS			FCC PART 15 CLASS B	
	Amplitude dBμV	Detector QP/AV	Phase Line/Neutral	Limit dBμV	Margin dB
0.215	54.60	QP	Line	63.01	-8.41
0.215	51.80	QP	Neutral	63.01	-11.21
0.320	45.40	QP	Line	59.71	-14.31
0.215	36.90	AV	Line	53.01	-16.11
0.445	40.00	QP	Line	56.97	-16.97
0.320	42.60	QP	Neutral	59.71	-17.11
0.215	32.50	AV	Neutral	50.00	-17.50
0.440	36.80	QP	Neutral	57.06	-20.26
15.960	35.20	QP	Line	56.00	-20.80
0.555	35.50	QP	Line	56.97	-21.47
4.045	34.50	QP	Line	56.00	-21.50
0.775	31.80	QP	Neutral	56.00	-24.20
0.445	21.80	AV	Line	46.97	-25.17
4.055	30.70	QP	Neutral	56.00	-25.30
0.320	22.60	AV	Line	49.71	-27.11
9.740	31.60	QP	Neutral	60.00	-28.40
0.440	18.50	AV	Neutral	47.06	-28.56
4.045	16.80	AV	Line	46.00	-29.20
0.320	20.40	AV	Neutral	49.71	-29.31
15.960	19.90	AV	Line	50.00	-30.10
4.055	14.00	AV	Neutral	46.00	-32.00
0.555	11.20	AV	Line	46.00	-34.80
9.740	14.90	AV	Neutral	50.00	-35.10
0.775	10.20	AV	Neutral	46.00	-35.80

host PC:

Test Mode: Running

LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency MHz	Amplitude dB μ V	Detector QP/AV	Phase Line/Neutral	Limit dB μ V	Margin dB
7.445	48.00	QP	Line	56.00	-8.00
1.025	34.90	AV	Neutral	46.00	-11.10
1.540	34.70	AV	Neutral	46.00	-11.30
7.445	47.90	QP	Neutral	60.00	-12.10
7.565	47.80	QP	Neutral	60.00	-12.20
1.800	33.20	AV	Line	46.00	-12.80
1.025	41.90	QP	Neutral	56.00	-14.10
1.095	31.20	AV	Line	46.00	-14.80
10.865	34.60	AV	Neutral	50.00	-15.40
14.105	34.60	AV	Neutral	50.00	-15.40
1.540	40.40	QP	Neutral	56.00	-15.60
7.445	34.00	AV	Neutral	50.00	-16.00
1.800	39.80	QP	Line	56.00	-16.20
10.925	33.60	AV	Line	50.00	-16.40
7.565	33.40	AV	Neutral	50.00	-16.60
1.095	39.10	QP	Line	56.00	-16.90
10.925	42.40	QP	Line	60.00	-17.60
10.865	42.30	QP	Neutral	60.00	-17.70
7.445	31.60	AV	Line	50.00	-18.40
0.190	35.60	AV	Line	54.04	-18.44
14.105	39.70	QP	Neutral	60.00	-20.30
0.320	28.40	AV	Line	49.71	-21.31
0.190	41.80	QP	Line	64.04	-22.24
0.320	31.40	QP	Line	59.71	-28.31

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

EUT Adapter:

Conducted Disturbance Test FCC part 15

EUT: ADSLmodem
Manuf: DareGlobal
Op Cond: Running
Operator: Hansen
Test Spec: AC 120V/60Hz L
Comment: Temp:27
Humi:65%
Date: 12. Aug 05 16:03

Scan Settings (1 Range)

----- Frequencies -----			----- Receiver Settings -----				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	10ms	AUTO LN	OFF

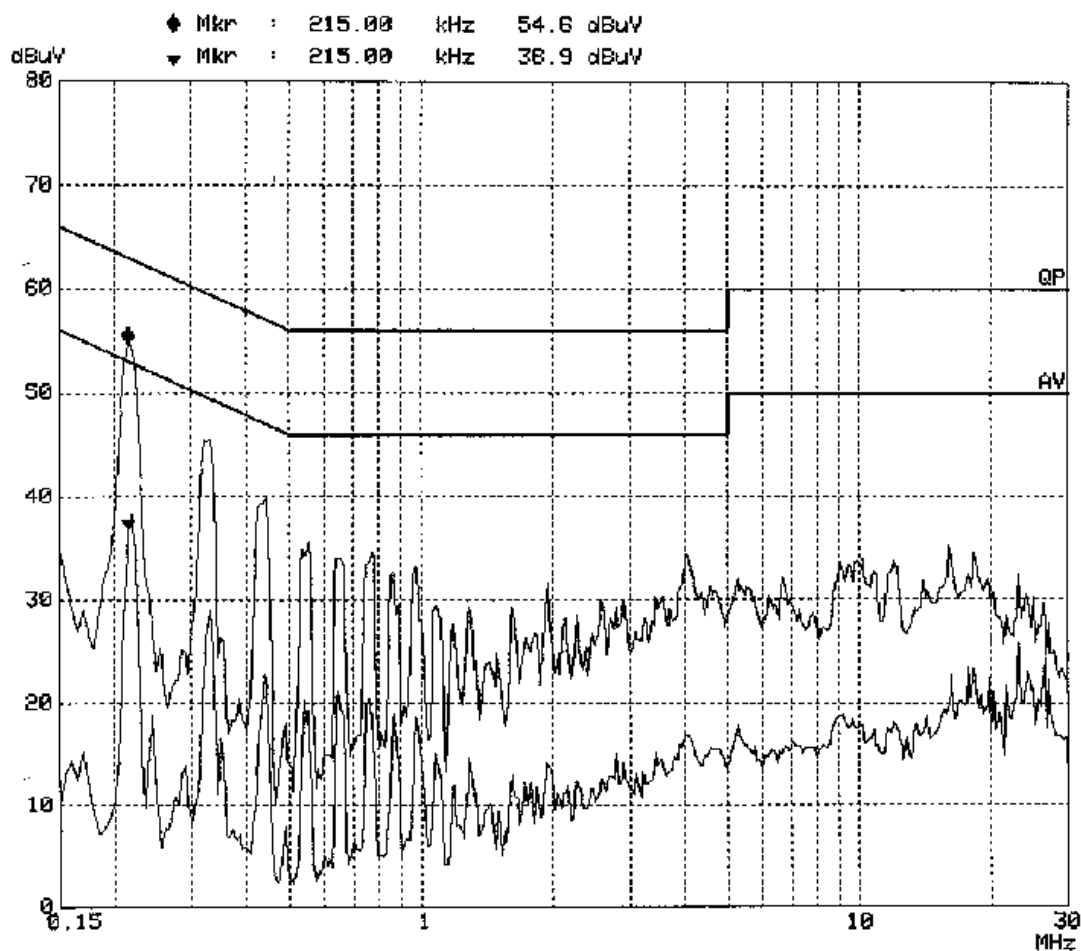
Transducer No.	Start	Stop	Name
1	9k	30M	ESH3

Final Measurement: x QP / + AV

Meas Time: 1 s

Subranges: 25

Acc Margin: 6dB



Conducted Disturbance Test FCC part 15

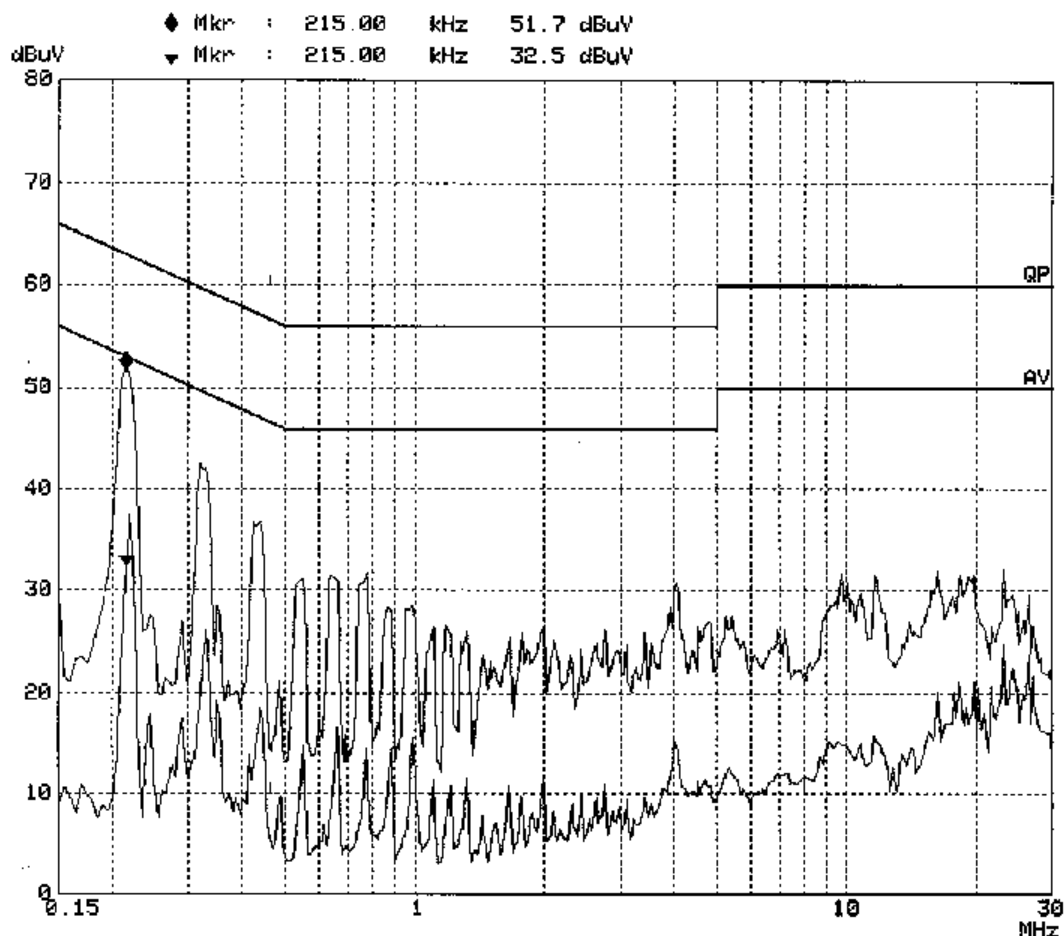
EUT: ADSLmodem
Manuf: DareGlobal
Op Cond: Running
Operator: Hansen
Test Spec: AC 120V/60Hz N
Comment: Temp:27
Humi:65%
Date: 12. Aug 05 16:13

Scan Settings (1 Range)

----- Frequencies -----			----- Receiver Settings -----			
Start	Stop	Step	IF BW	Detector	M-Time	Atten Preamp
150k	30M	5k	9k	PK+AV	10ms AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	9k	30M	ESH3

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



host PC:

Conducted Disturbance Test
FCC Part15

EUT: ADSL Modem
Manuf: DareGlobal
Op Cond: Running
Operator: Sam
Test Spec: AC 120V/60Hz N Host PC
Comment: Temp:27
Humi:58%
Date: 20. Sep 05 13:48

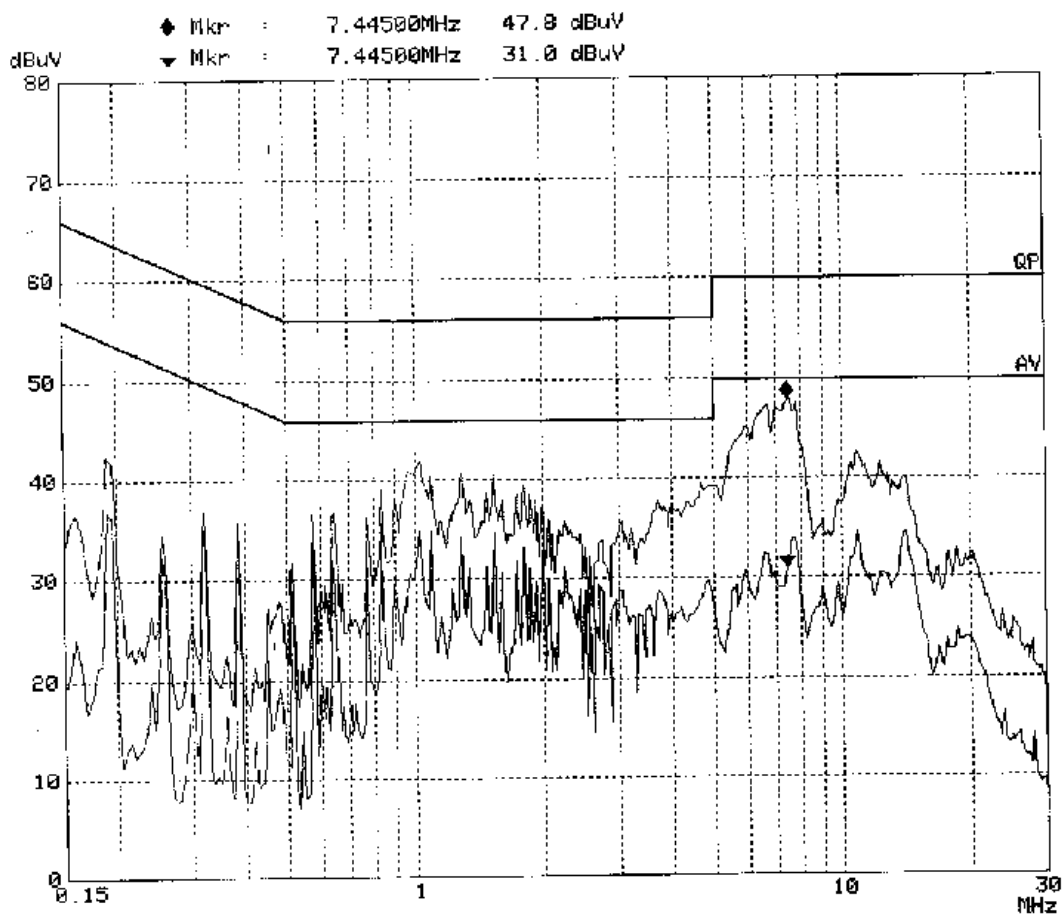
Scan Settings (1 Range)

Frequencies			Receiver Settings			
Start	Stop	Step	IF BW	Detector	M-Time	Atten Preamp
150k	30M	5k	9k	PK+AV	20ms AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	9k	30M	FACTOR

Final Measurement: x QP / + AV

Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



Conducted Disturbance Test FCC Part 15

EUT: ADSL Modem
Manuf: DareGlobal
Op Cond: Running
Operator: Sam
Test Spec: AC 120V/60Hz L Host PC
Comment: Temp:27
Humi:58%
Date: 20. Sep 05 14:32

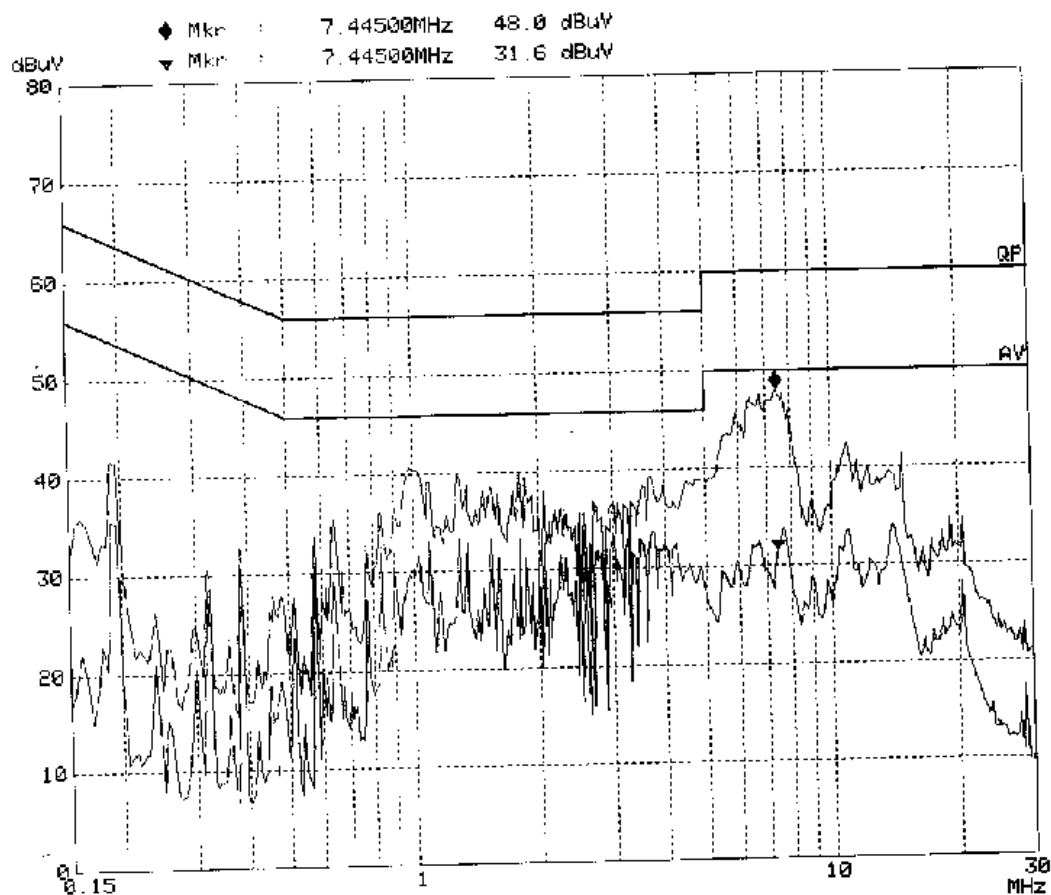
Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO LN	OFF

Transducer No.	Start	Stop	Name
1	9k	30M	FACTOR

Final Measurement: x QP / + AV

Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



§15.109 - RADIATED EMISSIONS TEST

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 4.4 dB.

The fundamental data was recorded in average detection mode: set the VBW AVE on, and then record the data.

EUT Setup

The radiated emission tests were performed in the 3 meters chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Class B limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

<i>Frequency Range</i>	<i>R B/W</i>	<i>Video B/W</i>	<i>IF B/W</i>
30 – 1000 MHz	100 kHz	100 kHz	120 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2005-8-17	2006-8-17
Rohde & Schwarz	EMI Test Receiver	ESCI	100035	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2005-4-28	2006-4-28

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed per the NVLAP requirements, traceable to NIST.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Limit}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

-0.9 dB at 251.18 MHz in the Horizontal polarization.

Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	58 %
ATM Pressure:	998 mbar

The testing was performed by Sam Lin on 2005-8-25.

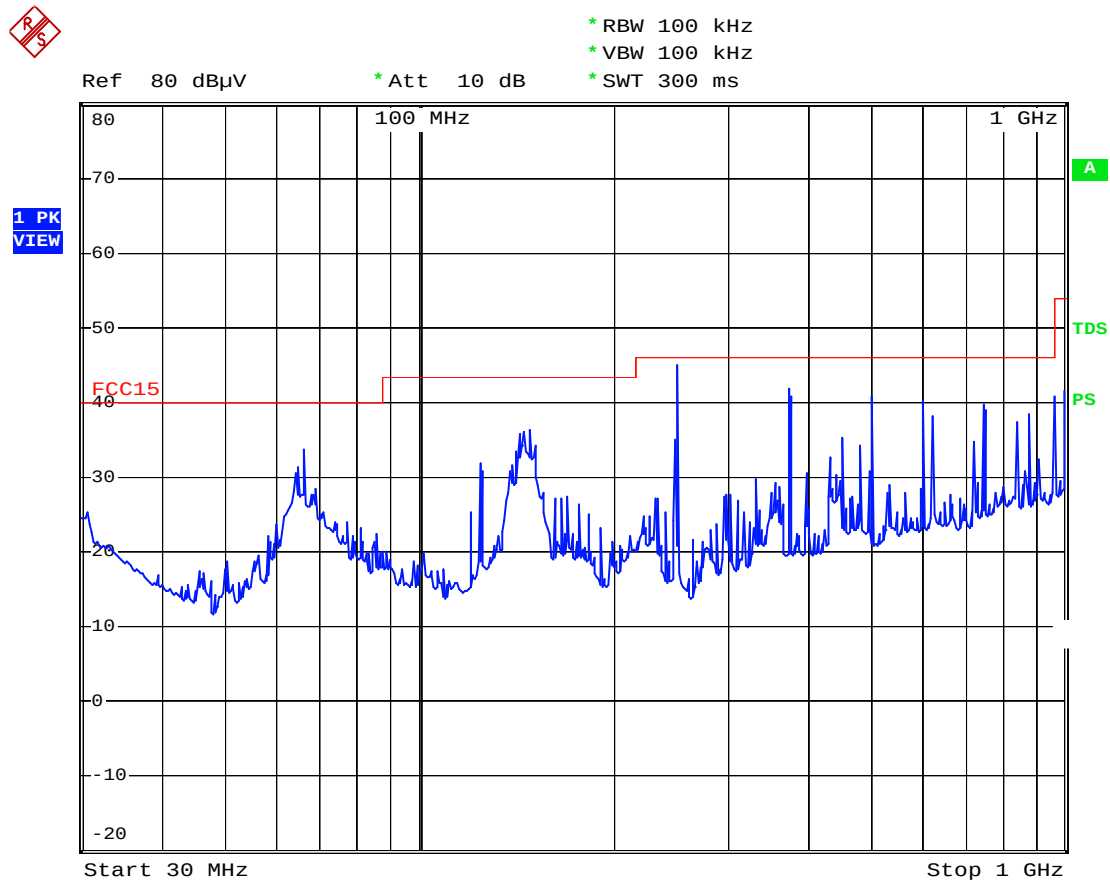
Test mode: Transmitting

INDICATED		TABLE	ANTENNA			CORRECTION FACTOR			CORRECTED AMPLITUDE Correction	FCC PART 15 CLASS B	
Frequency MHz	Meter Reading dBuV	Detector PK/QP/AV	Direction Degree	Height Meter	Polar H / V	Antenna Loss dB	Cable loss dB	Amplifier dB	Factor dBuV/m	Limit dBuV/m	Margin dB
251.18	59.1	QP	45	1.2	H	12.3	1.3	27.6	45.1	46.0	-0.9
845.08	45.7	QP	45	1.2	V	22.3	3.4	28.2	43.2	46.0	-2.8
251.18	57.1	QP	60	1.0	V	12.3	1.3	27.6	43.1	46.0	-2.9
374.62	52.3	QP	270	1.0	H	15.5	1.9	27.8	41.9	46.0	-4.1
625.07	48.0	QP	60	1.0	V	19.3	2.8	28.7	41.4	46.0	-4.6
452.71	50.3	QP	60	1.2	V	17.1	2.2	28.4	41.2	46.0	-4.8
124.56	51.7	QP	90	1.0	V	14.0	1.1	28.5	38.3	43.5	-5.2
502.94	49.0	QP	45	1.2	H	18.0	2.4	28.6	40.8	46.0	-5.3
64.88	54.0	QP	180	1.2	V	8.1	0.8	28.7	34.1	40.0	-5.9
603.53	46.9	QP	90	1.2	H	19.2	2.7	28.7	40.1	46.0	-5.9
66.26	53.2	QP	45	1.0	H	8.5	0.8	28.7	33.8	40.0	-6.2
148.44	50.4	QP	60	1.2	H	13.4	1.1	28.5	36.4	43.5	-7.1

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Horizontal:

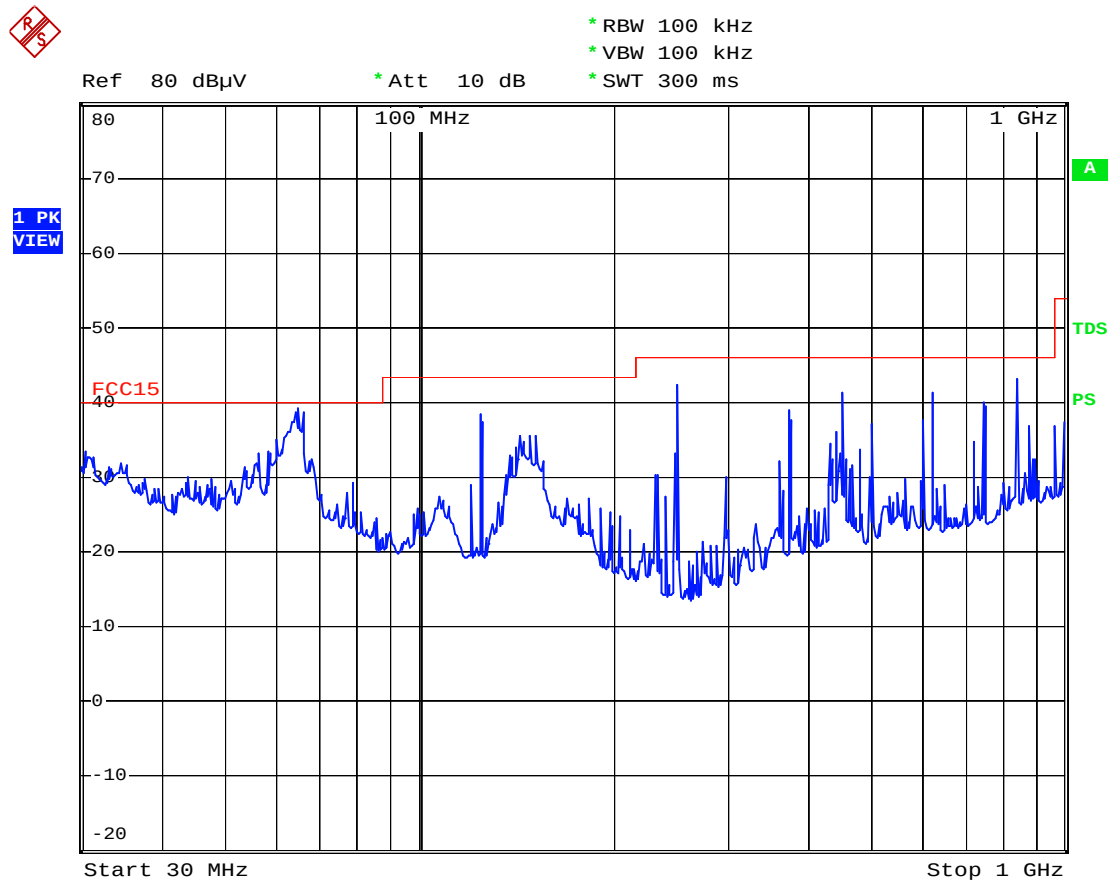


DareGlobal ADSL Modem

Radiation Horizontal

Date: 24.AUG.2005 15:50:24

Vertical:



DareGlobal ADSL Modem

Radiation Vertical

Date: 24.AUG.2005 15:58:34