

FCC Part 15B

Measurement and Test Report

For

SHENZHEN TENDA TECHNOLOGY CO., LTD.

3F, MOSO INDUSTRIAL BUILDING, NO. 1031, LIMING ROAD XILI TOWN,

NANSHAN DISTRICT, SHENZHEN, CHINA

FCC ID: V7TW368R

Report Concerns: Original Report	Equipment Type: Wireless-N Broadband Router
Model:	<u>W368R</u>
Report No.:	<u>STR10038003E-3</u>
Test/Witness Engineer:	<u></u>
Test Date:	<u>2010-03-02 to 2010-03-12</u>
Issue Date:	<u>2010-03-15</u>
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Approved & Authorized By:	<u></u> Jandy So / PSQ Manager

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address of applicant: 3F, MOSO INDUSTRIAL BUILDING, NO. 1031, LIMING ROAD XILI TOWN, NANSHAN DISTRICT, SHENZHEN, CHINA

Manufacturer: SHENZHEN TENDA TECHNOLOGY CO., LTD.
Address of manufacturer: 3F, MOSO INDUSTRIAL BUILDING, NO. 1031, LIMING ROAD XILI TOWN, NANSHAN DISTRICT, SHENZHEN, CHINA

General Description of E.U.T

Items	Description
EUT Description:	Wireless-N Broadband Router
Trade Name:	Tenda
Model No.:	W368R
Rated Voltage:	AC 9V adapter
Max. Output Power	18dBm
Antenna Gain:	1dBi
Frequency range:	2412~2462MHz / 2422~2452MHz
Number of channels:	11 / 7
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Size:	17.0x11.5x3.0 cm

The test data is gathered from a production sample, provided by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the SHENZHEN TENDA TECHNOLOGY 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 Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Related Submittal(s)/Grant(s)

No Related Submittal(s).

1.4 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.

The equipment under test (EUT) was configured to measure its highest possible susceptibility against the tested phenomena. The test modes were adapted accordingly in reference to the Operating Instructions.

1.5 Test Facility

FCC – Registration No.: **994117**

SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.

Industry Canada (IC) Registration No.: **7673A**

The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.

1.6 EUT Exercise Software

The EUT exercise program used during the testing was designed to exercise the system components.

1.7 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
ASUS	Notebook	X50R	/
/	/	/	/
/	/	/	/

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
Power Cable	1.8	Unshielded	Without Core

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Compliant
§15.109(a) Radiated Emission	Compliant

3. §15.107 (a) CONDUCTED EMISSIONS

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 1.5 dB.

3.2 Test Equipment List and Details

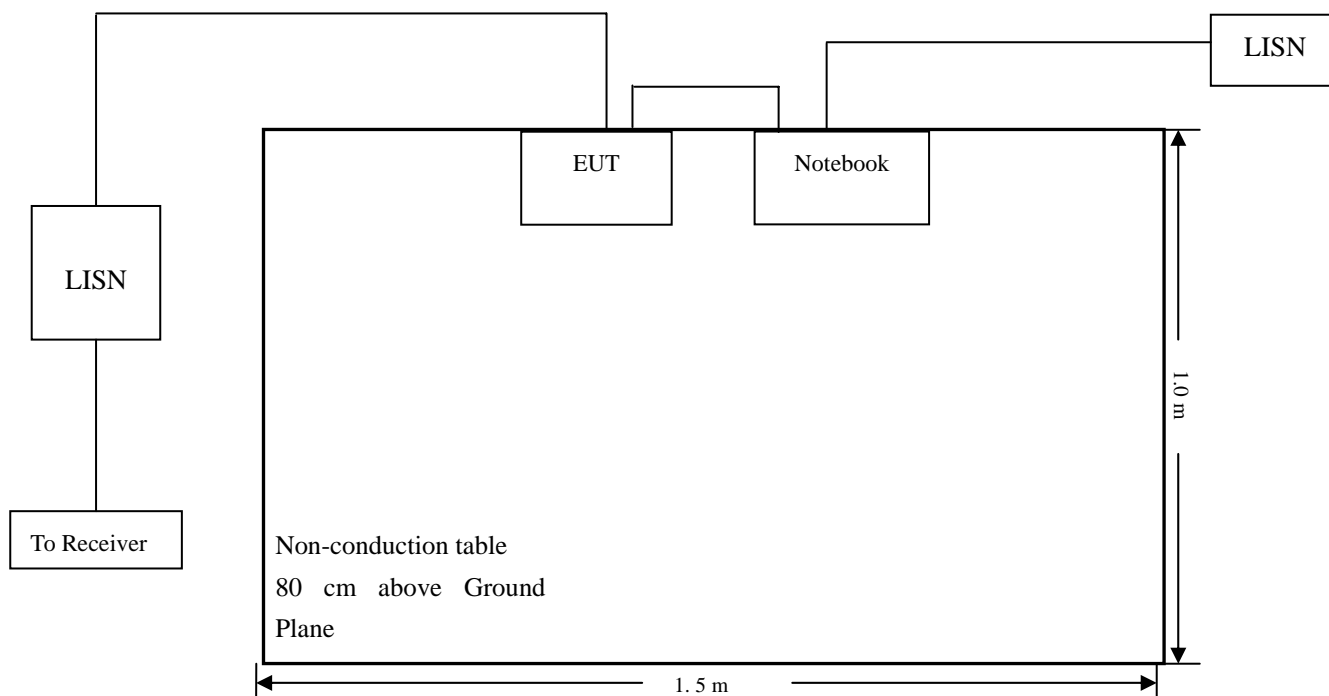
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2009-08-12	2010-08-11
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2009-08-12	2010-08-11
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2009-08-12	2010-08-11
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2009-08-12	2010-08-11

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

3.3 Test Procedure

Test is conducting under the description of 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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the FCC 15.107 Conducted margin for a Class B device, with the *worst* margin reading of:

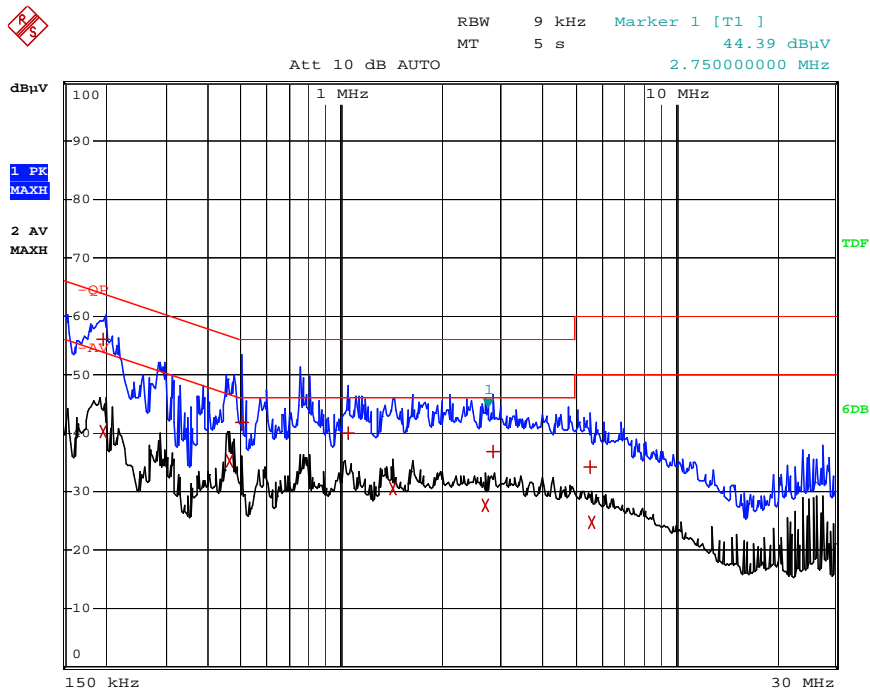
-7.58 dBμV at 0.198 MHz in the Line, QP detector, 0.15-30MHz

3.7 Conducted Emissions Test Data/Plots

Operating Condition: Operating

Test Specification: N

Comment: 120V/60Hz; AC9V adapter



Date: 9.MAR.2010 09:52:53

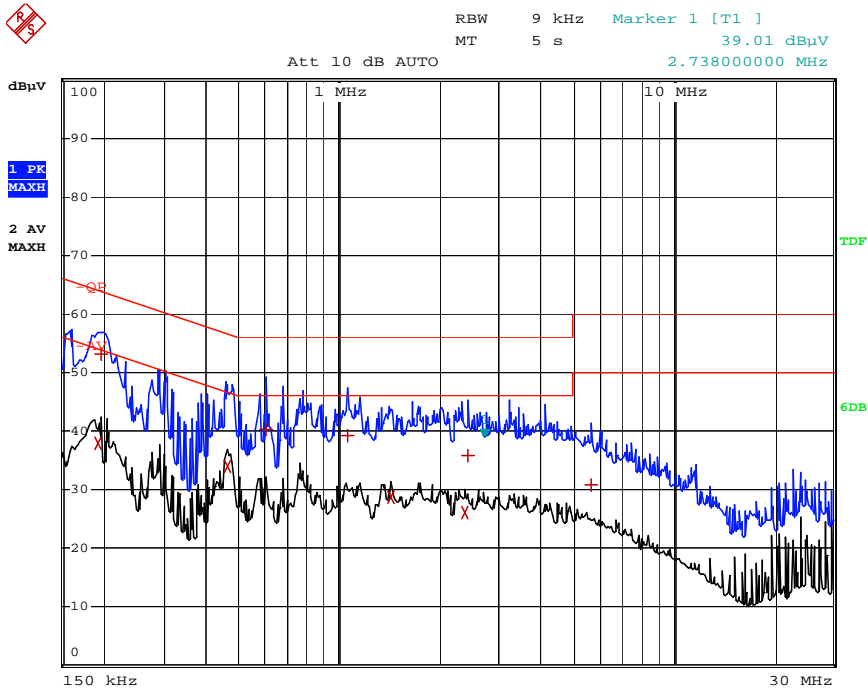
EDIT PEAK LIST (Final Measurement Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
1 Quasi Peak	198 kHz	56.11	-7.58
2 Average	198 kHz	40.40	-13.29
2 Average	462 kHz	35.38	-11.26
1 Quasi Peak	502 kHz	41.88	-14.11
1 Quasi Peak	1.046 MHz	40.14	-15.85
2 Average	1.43 MHz	30.59	-15.40
2 Average	2.714 MHz	27.78	-18.21
1 Quasi Peak	2.842 MHz	36.76	-19.23
1 Quasi Peak	5.578 MHz	34.23	-25.76
2 Average	5.61 MHz	24.74	-25.25

Date: 9.MAR.2010 09:52:40

Operating Condition: Operating

Test Specification: L

Comment: 120V/60Hz; AC 9V adapter



Date: 9.MAR.2010 09:55:28

EDIT PEAK LIST (Final Measurement Results)			
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBμV	DELTA LIMIT dB
2 Average	194 kHz	37.83	-16.02
1 Quasi Peak	198 kHz	53.11	-10.58
2 Average	462 kHz	33.87	-12.78
1 Quasi Peak	602 kHz	40.28	-15.71
1 Quasi Peak	1.062 MHz	39.14	-16.85
2 Average	1.43 MHz	28.82	-17.17
2 Average	2.374 MHz	25.99	-20.00
1 Quasi Peak	2.418 MHz	35.95	-20.04
1 Quasi Peak	5.69 MHz	30.89	-29.10

Date: 9.MAR.2010 09:55:03

4. §15.109(a)- RADIATED EMISSION

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 3.0 dB.

4.2 Test Equipment List and Details

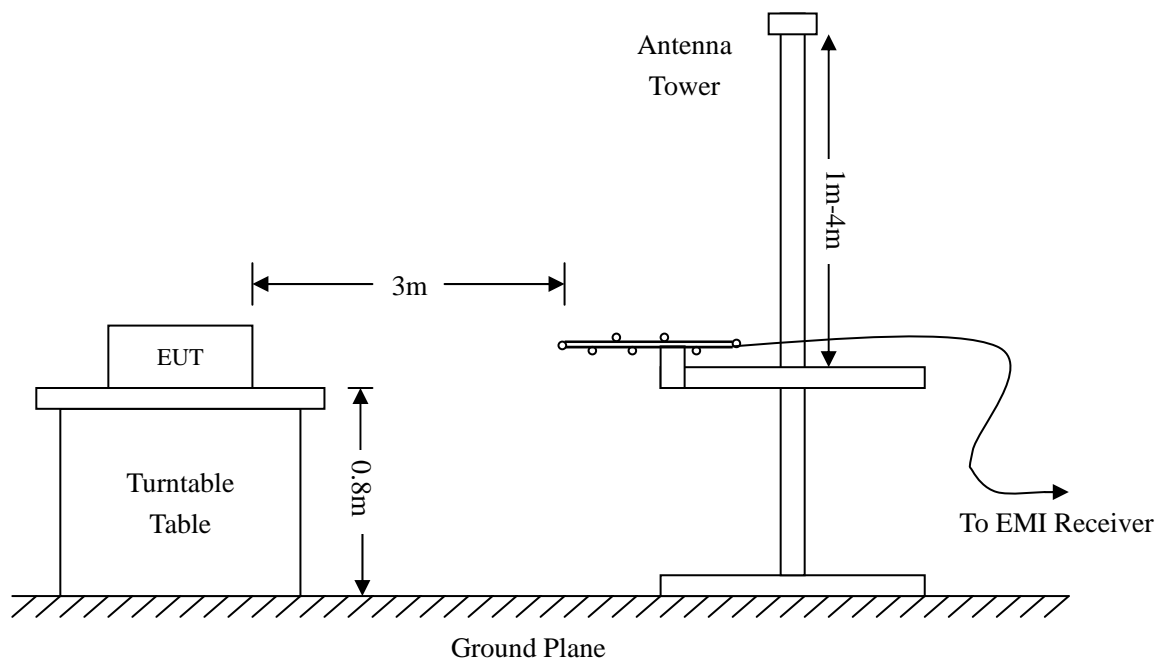
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2009-08-12	2010-08-11
Positioning Controller	C&C	CC-C-1F	N/A	2009-08-12	2010-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-21	2010-07-20
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-07-21	2010-07-20
RF Switch	EM	EMSW18	SW060023	2009-08-12	2010-08-11
Amplifier	Agilent	8447F	3113A06717	2009-08-12	2010-08-11
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-08-12	2010-08-11
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2009-08-12	2010-08-11

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.109 Limit.

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.



4.4 Test Receiver Setup

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

Start Frequency 30 MHz
 Stop Frequency..... 1000 MHz
 Sweep Speed Auto
 IF Bandwidth..... 10 kHz
 Quasi-Peak Adapter Bandwidth 120 kHz
 Quasi-Peak Adapter Mode Normal

4.5 Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

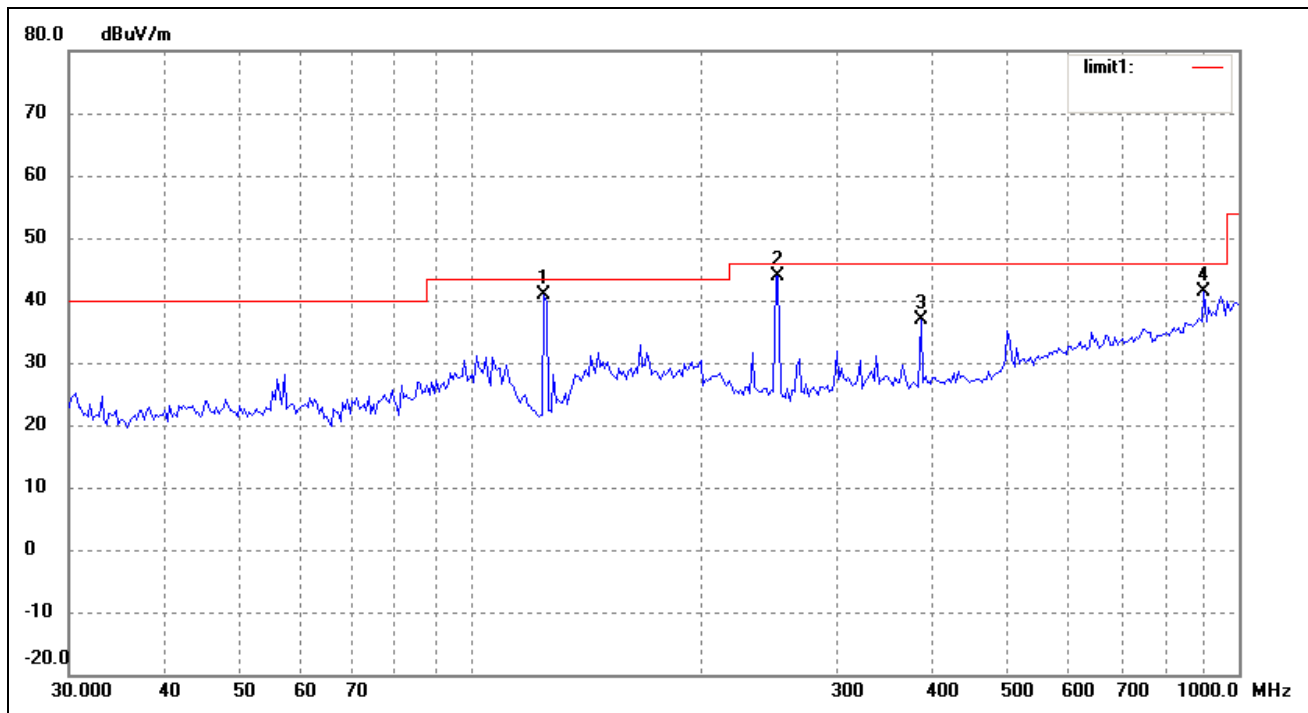
4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

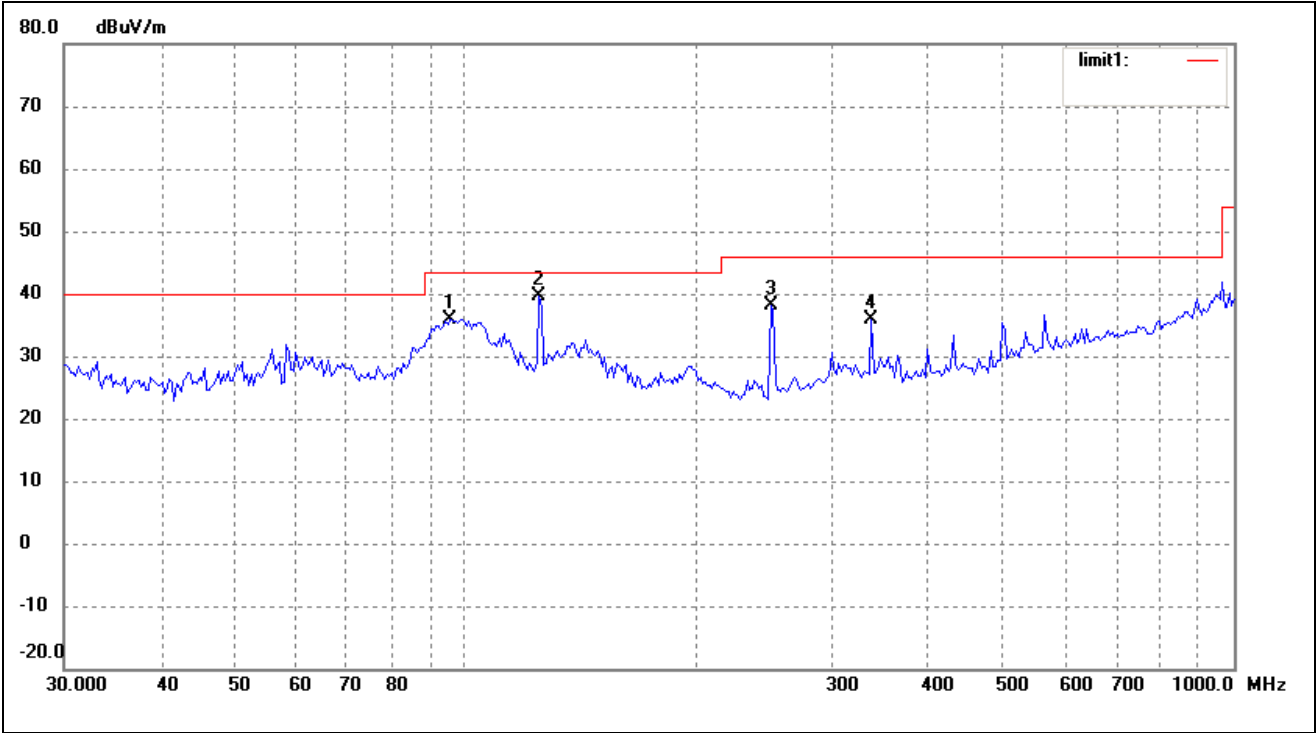
According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

-2.09 dB μ V at 251.1804 MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test*Radiated Disturbance**EUT: Wireless-N Broadband Router**M/N: W368R**Operating Condition: Running with Program**Test Specification: Horizontal & Vertical**Comment: 120V/60Hz; AC9V adapter***Horizontal**

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	124.5690	35.59	5.32	40.91	43.50	-2.59	125	100	QP
2	251.1804	35.19	8.72	43.91	46.00	-2.09	89	100	QP
3	385.2805	25.51	11.25	36.76	46.00	-9.24	341	100	peak
4	900.1474	20.45	20.90	41.35	46.00	-4.65	157	200	QP

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	95.4270	27.89	8.09	35.98	43.50	-7.52	56	100	QP
2	124.5690	34.30	5.32	39.62	43.50	-3.88	152	100	QP
3	249.4250	29.33	8.68	38.01	46.00	-7.99	33	100	peak
4	337.2155	25.39	10.37	35.76	46.00	-10.24	105	200	peak

***** END OF REPORT *****