

FCC PART 15.109

MEASUREMENT AND TEST REPORT

FOR

ThinNetworks IT products Limited

SAAN 02 #260- Industrial Zone – Brasilia- DF, Brazil- 70.632-200

FCC ID: WQ3CF-000585

Report Concerns: Original Report	Equipment Type: Audio Hub
Model: <u>CF-000585</u>	
Report No.: <u>STR080980701</u>	
Test/Witness Engineer: <u>Jason</u>	
Test Date: <u>2008-09-19 to 2008-09-24</u>	
Issued Date: <u>2008-09-26</u>	
Prepared By: SEM.Test Compliance Service Co., Ltd. 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C. (518101)	
Approved & Authorized By:  _____ 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 permission by SEM.Test Compliance Service Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION	3
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	3
1.2 TEST STANDARDS	3
1.3 RELATED SUBMITTAL(S)/GRANT(S)	3
1.4 TEST METHODOLOGY	3
1.5 TEST FACILITY	4
1.6 ACCESSORIES EQUIPMENT LIST AND DETAILS	4
1.7 EUT CABLE LIST AND DETAILS.....	4
2. SUMMARY OF TEST RESULTS	5
3. §15.107 (A)- CONDUCTED EMISSION	6
3.1 MEASUREMENT UNCERTAINTY	6
3.2 TEST EQUIPMENT LIST AND DETAILS.....	6
3.3 TEST PROCEDURE.....	6
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	6
3.5 ENVIRONMENTAL CONDITIONS	7
3.6 TEST RECEIVER SETUP	7
3.7 SUMMARY OF TEST RESULTS/PLOTS	7
3.8 CONDUCTED EMISSIONS TEST DATA.....	7
4. §15.109(A)- RADIATED EMISSION	10
4.1 MEASUREMENT UNCERTAINTY	10
4.2 TEST EQUIPMENT LIST AND DETAILS	10
4.3 TEST PROCEDURE.....	10
4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION	11
4.5 ENVIRONMENTAL CONDITIONS	11
4.6 SUMMARY OF TEST RESULTS/PLOTS.....	11

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: ThinNetworks IT products Limited
Address of applicant: SAAN 02 #260 – Industrial Zone – Brasilia- DF, Brazil-
70.632-200

Manufacturer: Champ Tough Technology (China) Limited
Address of manufacturer: 1502B, Launch Industrial Park, North WuHe Rd, Bantian,
Buji, LongGang Distr, Shenzhen China Zip:518129

General Description of E.U.T

Items	Description
EUT Description:	Audio Hub
Trade Name:	ThinNetworks
Model No.:	CF-000585
Rated Voltage:	5V
Size:	8.5X5X2 cm

For more information refer to the circuit diagram form and the user's manual.

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 ThinNetworks IT products Limited 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/immunity, 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 immunity level. Test is carried with playing mode which worst case has been showed. Test setup was 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 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
IBM	Notebook	T22	LV14893
TP-LINK	Modem	TM-EC5658V	KT99CTQC-508
Lenovo	Printer	3110	OD65133711480
Lenovo	USB Disk	LD256	/

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	1.20	Shielded	With Core
Audio Output Cable	0.8	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 EMISSION

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 $\pm 1.5\text{dB}$.

3.2 Test Equipment List and Details

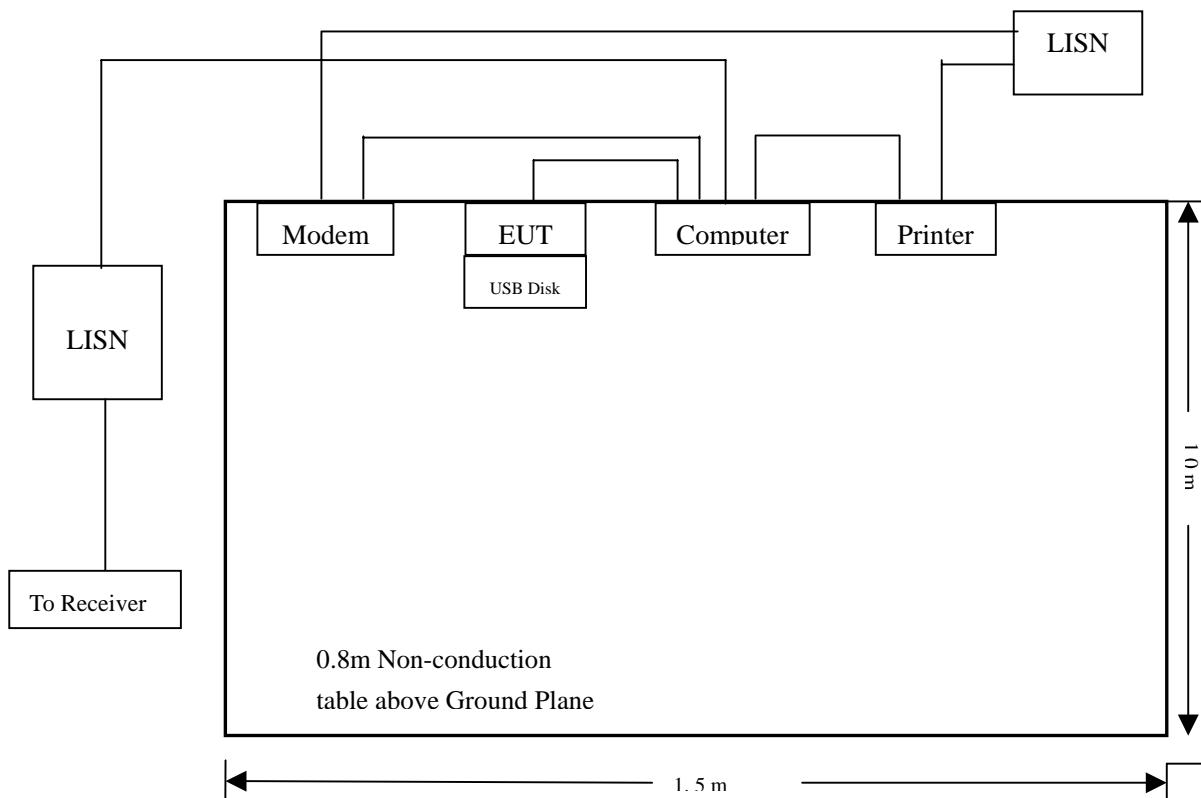
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-01-25	2009-01-24
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-01-25	2009-01-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-01-25	2009-01-24
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-01-25	2009-01-24

3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.107 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.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	25° C
Relative Humidity:	55%
ATM Pressure:	1010 mbar

3.6 Test Receiver Setup

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

Start Frequency 150 kHz
 Stop Frequency 30 MHz
 Sweep Speed Auto
 IF Bandwidth 10 kHz
 Quasi-Peak Adapter Bandwidth 9 kHz
 Quasi-Peak Adapter Mode Normal

3.7 Summary of Test Results/Plots

According to the data in section 3.8, the EUT complied with the FCC 15B Conducted margin for a Class B device, with the *worst* margin reading of:

-7.63 dB μ V at 0.15MHz in the Line mode, (PK) 0.15-30MHz

3.8 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dB μ V	QP/Ave/Pk	Line/Neutral	dB μ V	dB
0.15	58.36	Pk	Line	66	-7.63
0.16	57.17	Pk	Neutral	65.46	-8.39
0.21	43.48	Ave	Line	53.04	-9.56
0.21	43.48	Ave	Neutral	52.86	-10.46
0.63	30.10	Ave	Neutral	46	-13.08
4.02	32.05	Ave	Line	46	-13.94
4.02	32.05	Ave	Neutral	46	-14.72
0.63	30.10	Ave	Line	46	-15.89
1.69	29.03	Ave	Line	46	-16.96
1.69	29.03	Ave	Neutral	46	-17.01
4.17	38.37	Pk	Line	56	-17.62
4.30	38.26	Pk	Neutral	56	-17.74
7.20	31.34	Ave	Line	50	-18.65
7.20	31.34	Ave	Neutral	50	-19.01
0.42	38.31	Pk	Neutral	57.40	-19.09
0.56	36.24	Pk	Line	56	-19.75

Emission attenuation more than 20dB are not report.

Plot of Conducted Emissions Test Data

Conducted Disturbance

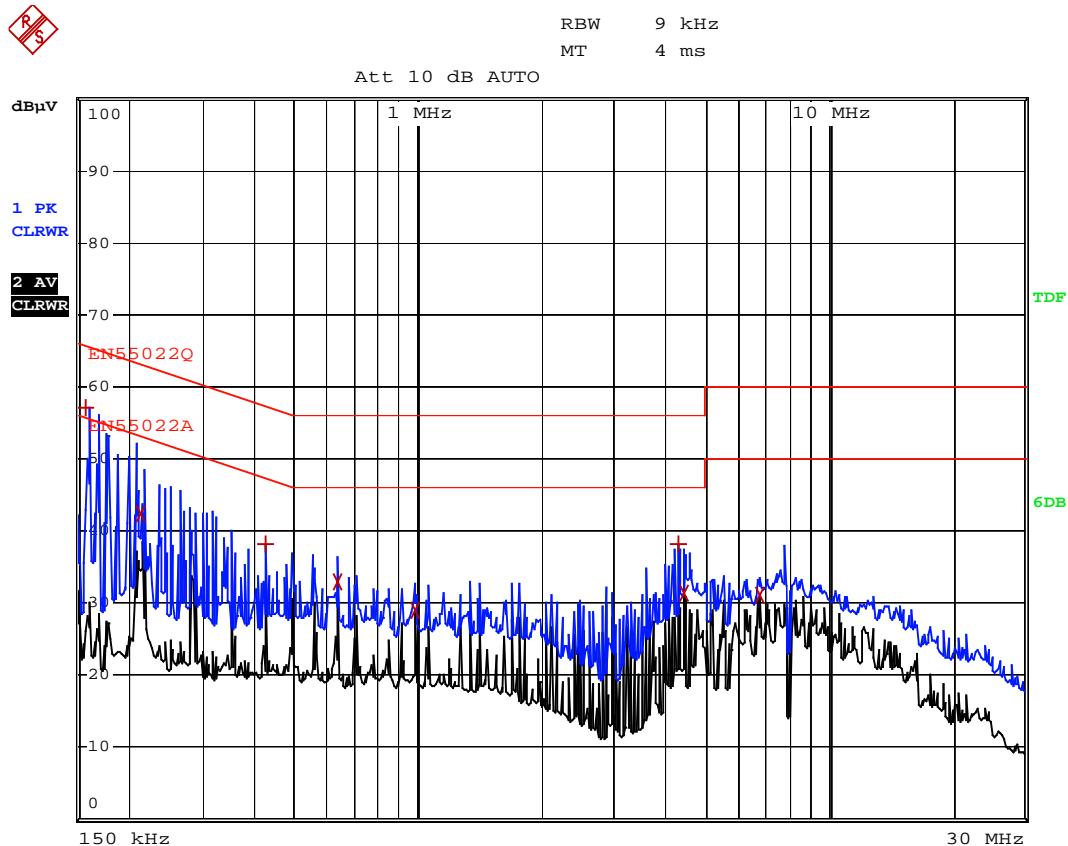
EUT: Audio Hub

M/N: CF-000585

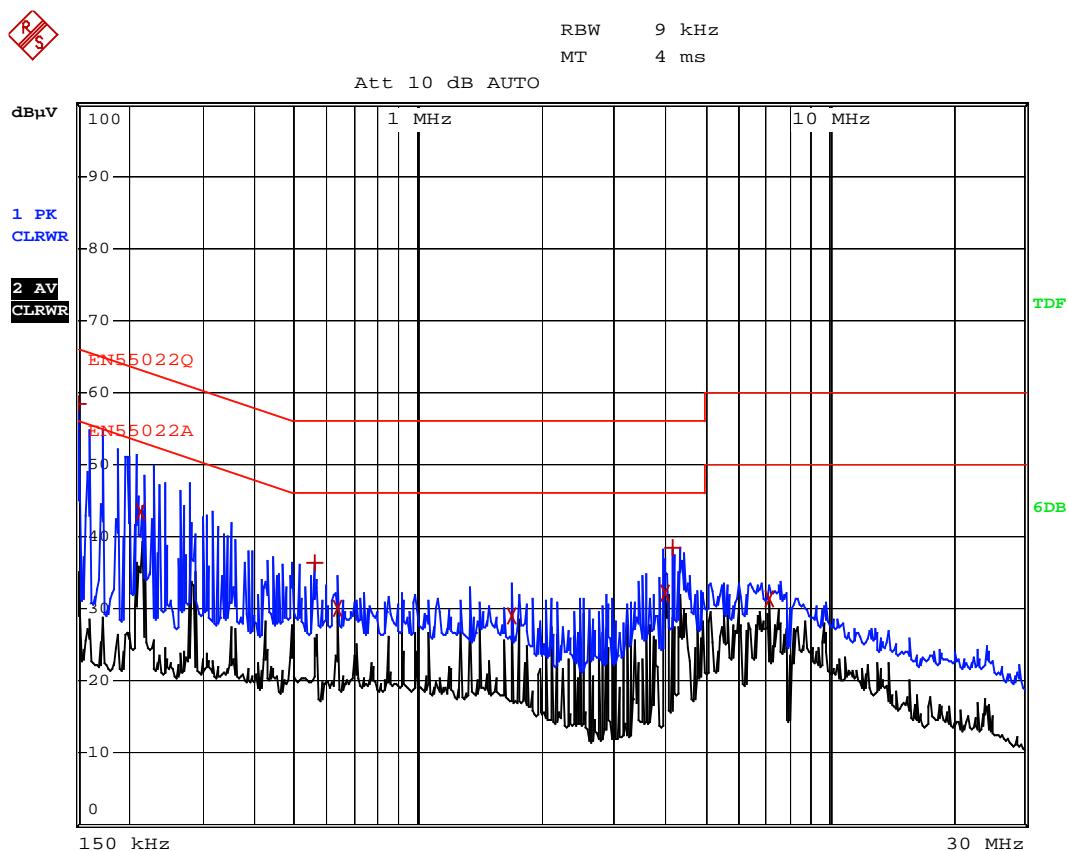
Operating Condition: Operating

Test Specification: N

Comment: Connect to Computer



Date: 24.SEP.2008 15:16:21

Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: Audio Hub**M/N: CF-000585**Operating Condition: Operating**Test Specification: L**Comment: Connect to Computer*

Date: 24.SEP.2008 15:15:05

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

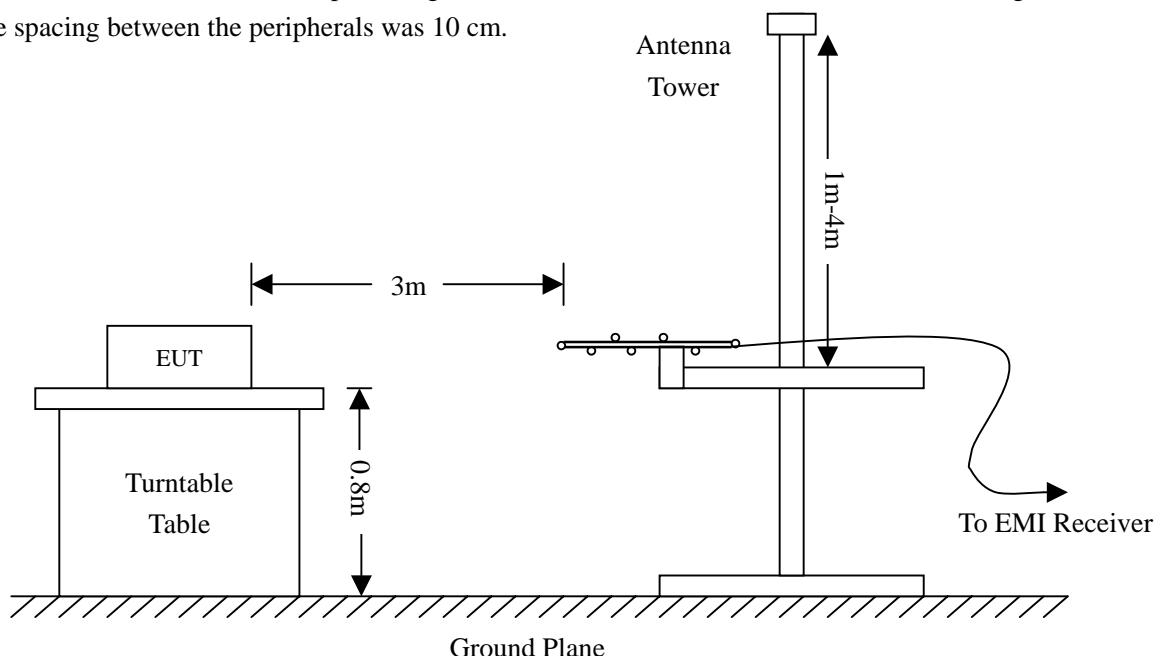
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-01-25	2009-01-24
Positioning Controller	C&C	CC-C-1F	N/A	2008-01-25	2009-01-24
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-01-25	2009-01-24
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2008-01-25	2009-01-24
RF Switch	EM	EMSW18	SW060023	2008-01-25	2009-01-24
Amplifier	Agilent	8447F	3113A06717	2008-01-25	2009-01-24
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-01-25	2009-01-24
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-01-25	2009-01-24

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 15.205 and 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 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:

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

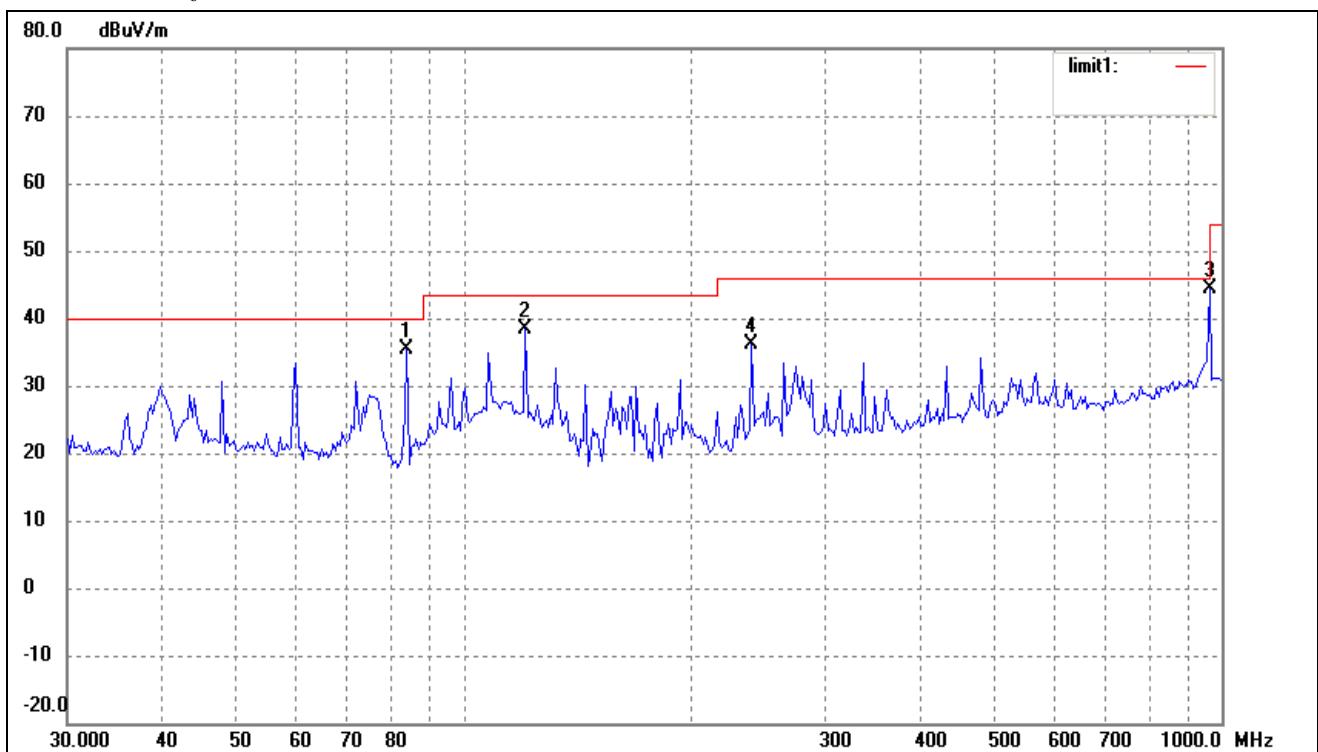
4.5 Environmental Conditions

Temperature:	25° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.6 Summary of Test Results/Plots

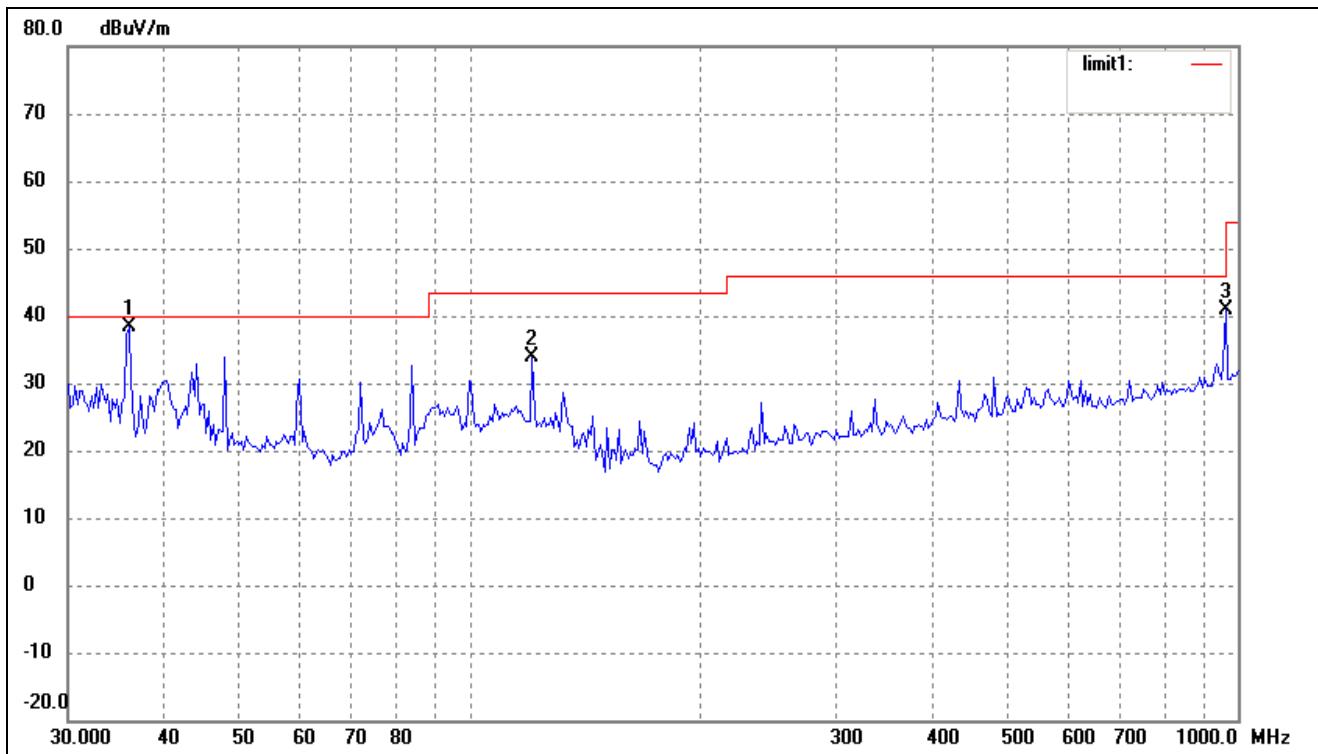
According to the data in section 4.6, the EUT complied with the FCC 15 Class B standards, and had the worst margin is:

-1.59 dB μ V at 36.013MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test Data*Radiated Disturbance**EUT: Audio Hub**M/N: CF-000585**Operating Condition: Operating**Test Specification: Horizontal & Vertical**Comment: Connect to Computer**Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	84.2839	30.57	4.69	35.26	40.00	-4.74	124	110	QP
2	120.6118	33.16	5.19	38.35	43.50	-5.15	221	145	QP
3	965.4742	28.76	15.59	44.35	54.00	-9.65	245	112	peak
4	240.1442	28.63	7.44	36.07	46.00	-9.93	204	201	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	36.0138	31.54	6.87	38.41	40.00	-1.59	102	124	QP
2	120.6118	28.72	5.19	33.91	43.50	-9.59	122	100	peak
3	965.4741	25.38	15.59	40.97	54.00	-13.03	205	115	peak

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