


FCC PART 15.109 MEASUREMENT AND TEST REPORT FOR

Mouse Channel (H.K) Technology Limited

**Room 2602, 26/F, Workington Tower, 78 Bonham Strand Sheung Wan,
HongKong**

FCC ID: WPY-GA6233

Report Concerns: Original Report	Equipment Type: USB 4-port HUB
Model:	<u>mc-707</u>
Report No.:	<u>STR08098055I</u>
Test/Witness Engineer:	<u>Jason</u>
Test Date:	<u>2008-09-12 to 2008-09-16</u>
Issued Date:	<u>2008-09-17</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 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: Mouse Channel (H.K) Technology Limited
Address of applicant: Room 2602, 26/F, Workington Tower, 78 Bonham Strand
Sheung Wan, HongKong

Manufacturer: SHENZHEN QUANNUO ELECTRONICS LTD.
Address of manufacturer: 3rd Floor, 1st Building, Zhu Ao, Xin'an 2nd Industrial zone,
Gushu, Xixiang Town, Bao'an District, Shenzhen, China

General Description of E.U.T

Items	Description
EUT Description:	USB 4-port HUB
Trade Name:	/
Model No.:	mc-707
Rated Voltage:	5V
Size:	7X5X1.5 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 Mouse Channel (H.K) Technology 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

1.7 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/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

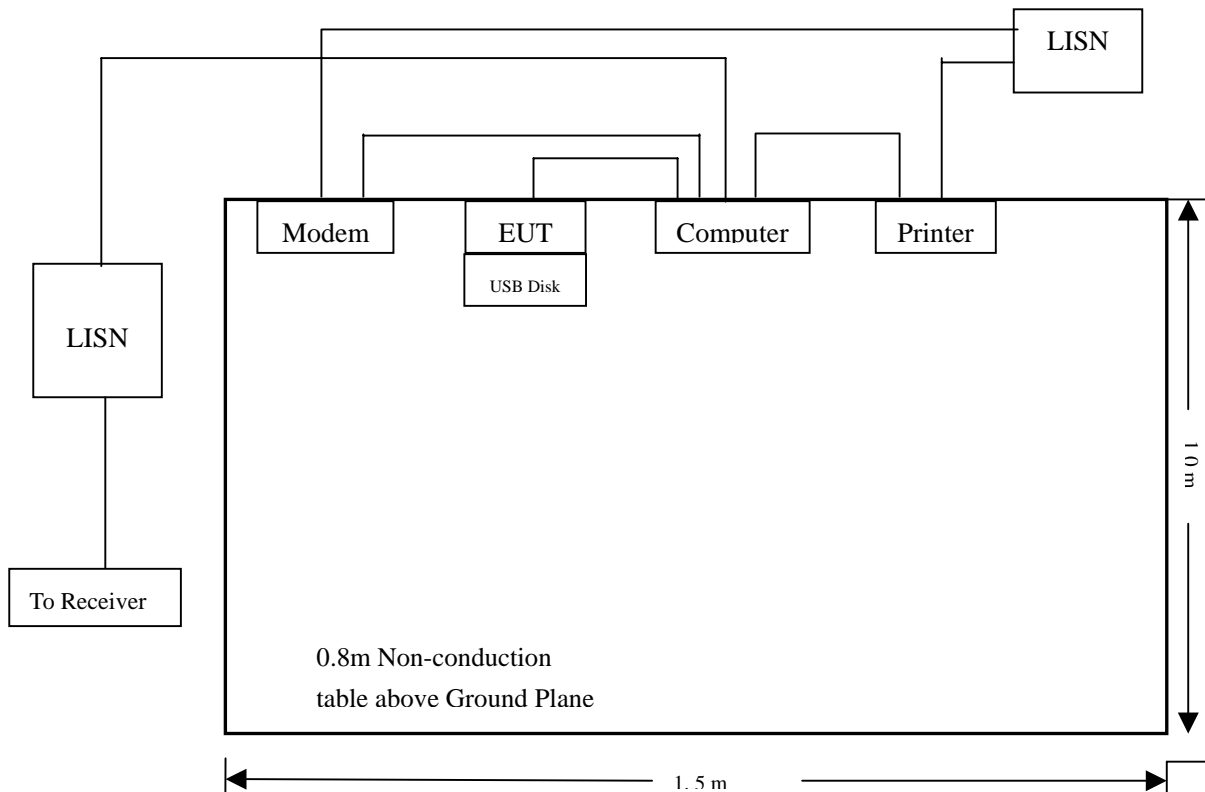
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-01-25	2009-01-24
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-01-25	2009-01-24
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-01-25	2009-01-24
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-01-25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

-6.53 dB μ V at 0.21MHz in the Line mode, (Ave) 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
0.21	46.51	Ave	Line	53.04	-6.53
0.21	53.25	PK	Line	62.97	-9.79
0.17	54.68	PK	Neutral	64.75	-10.07
0.28	37.91	Ave	Neutral	50.75	-12.84
4.73	32.71	Ave	Line	46	-13.28
0.43	32.48	Ave	Neutral	47.32	-14.84
4.03	29.97	Ave	Neutral	46	-16.02
0.99	29.65	Ave	Neutral	46	-16.34
0.49	29.58	Ave	Line	46.09	-16.51
0.99	28.78	Ave	Line	46	-17.21
4.73	38.16	PK	Line	56	-17.83
3.89	37.08	PK	Neutral	56	-18.91
6.43	30.97	Ave	Line	50	-19.02
0.43	38.29	PK	Neutral	57.33	-19.04
0.38	39.08	PK	Line	52.32	-19.24
7.64	30.73	Ave	Neutral	50	-19.26

Emission attenuation more than 20dB are not report.

Plot of Conducted Emissions Test Data

Conducted Disturbance

EUT: USB 4-port HUB

M/N: mc-707

Operating Condition: Running

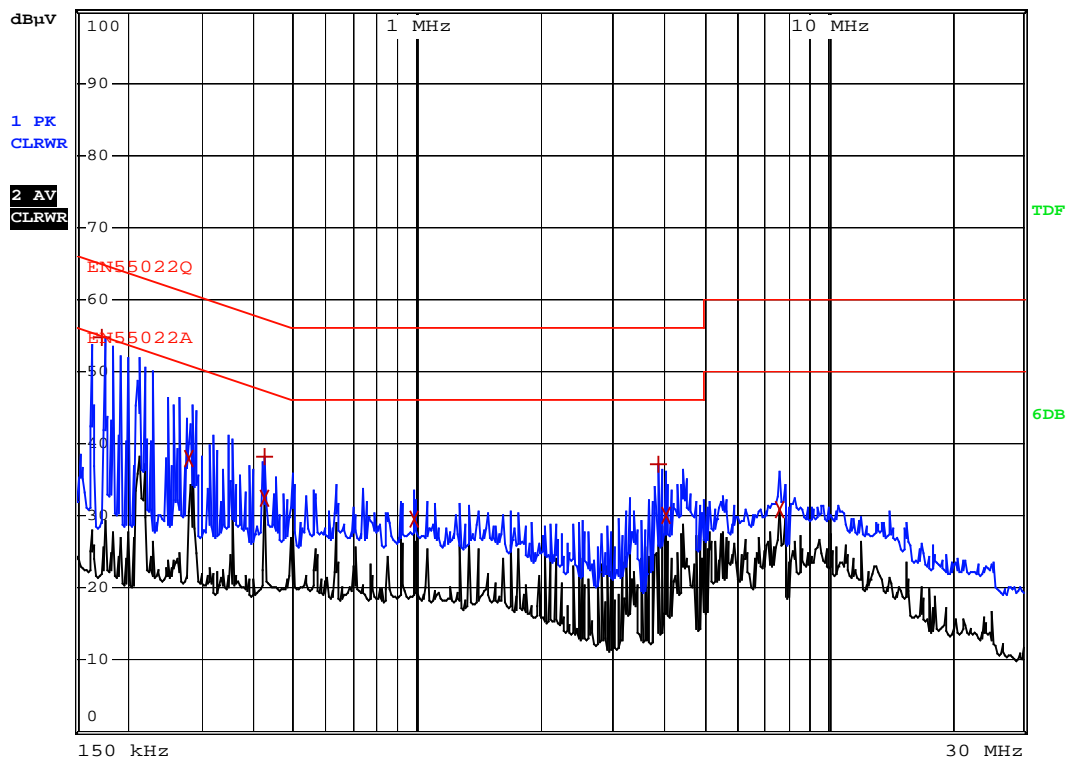
Test Specification: N

Comment: Connect to Computer



RBW 9 kHz
MT 4 ms

Att 10 dB AUTO



Date: 16.SEP.2008 13:49:40

Plot of Conducted Emissions Test Data

Conducted Disturbance

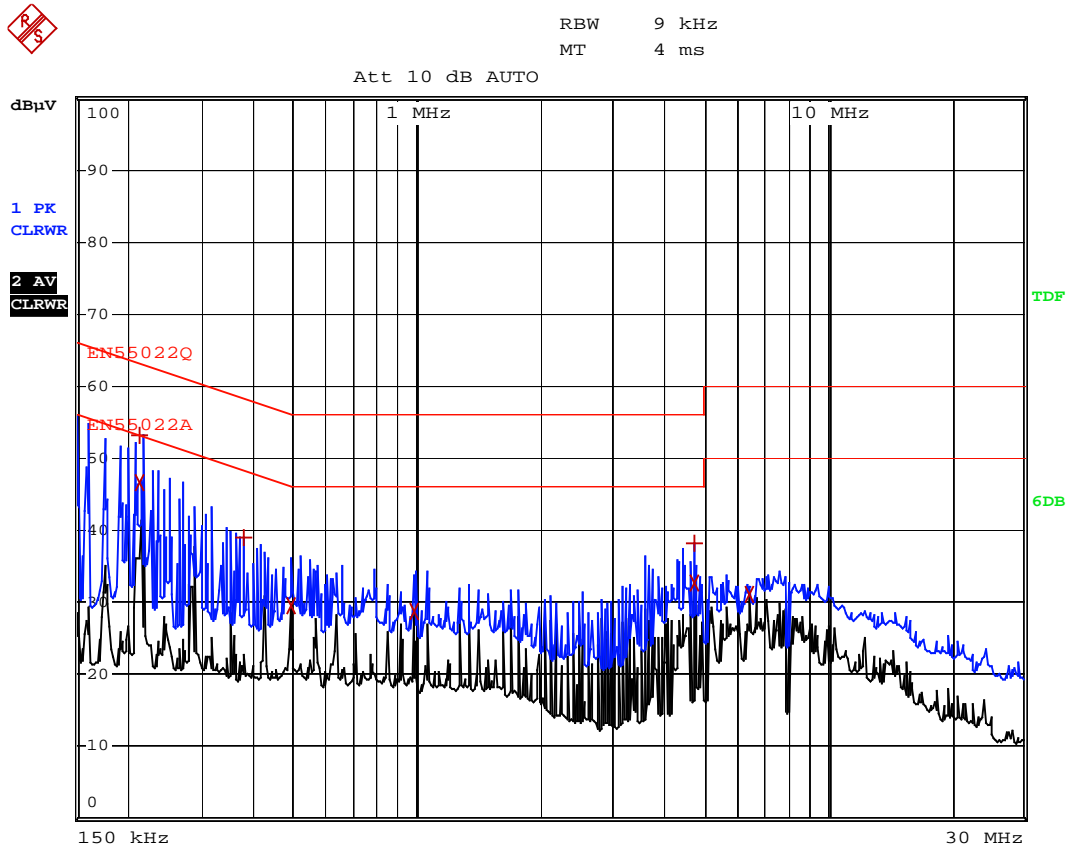
EUT: USB 4-port HUB

M/N: mc-707

Operating Condition: Running

Test Specification: L

Comment: Connect to Computer



Date: 16.SEP.2008 13:51:04

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

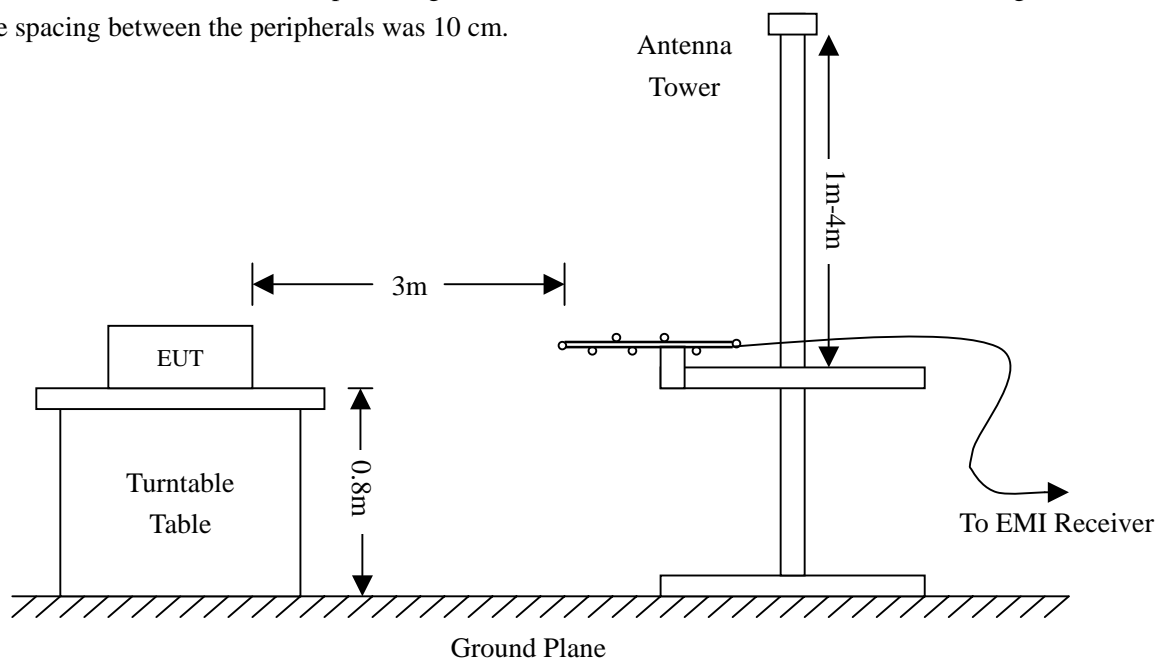
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-01-25	2009-01-24
Positioning Controller	C&C	CC-C-1F	N/A	2008-01-25	2009-01-24
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-01-25	2009-01-24
Horn Antenna	SCHWARZBECK	BBHX 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 -6dBμV means the emission is 6dBμV 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

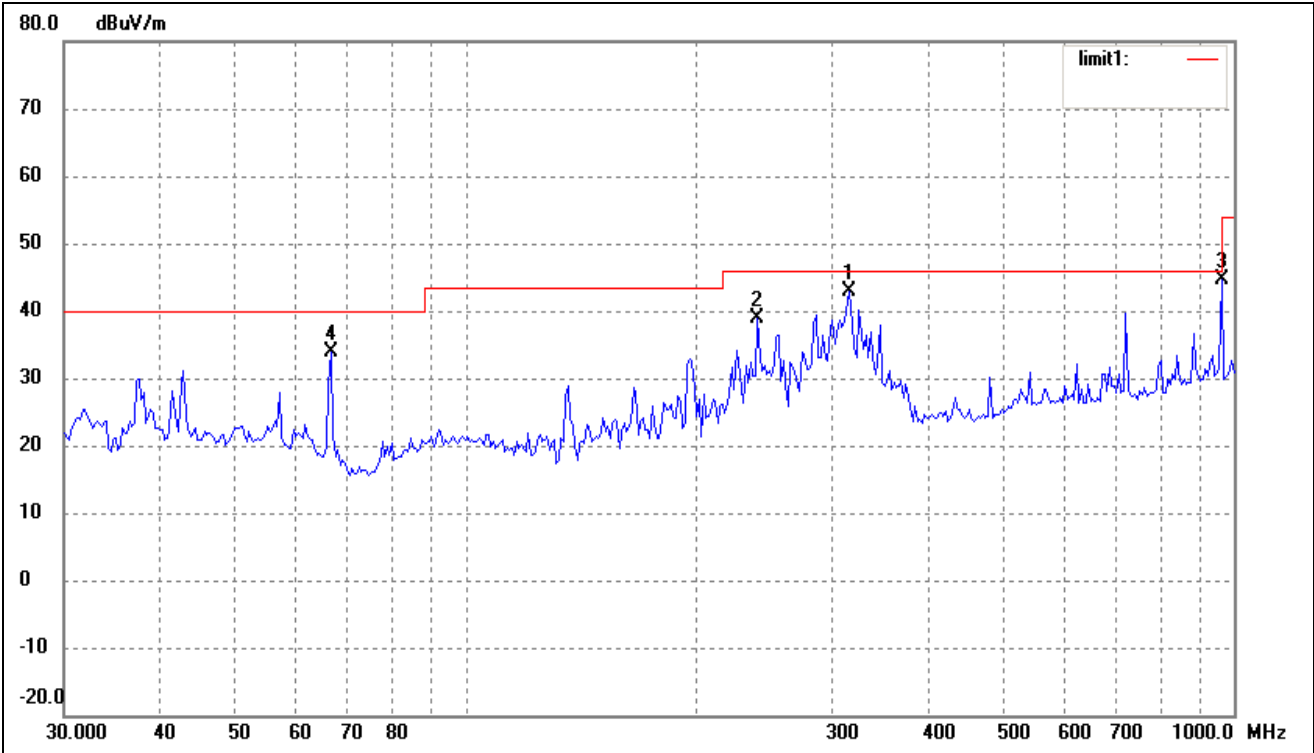
4.6 Summary of Test Results/Plots

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

-3.24 dBμV at 315.8601 MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

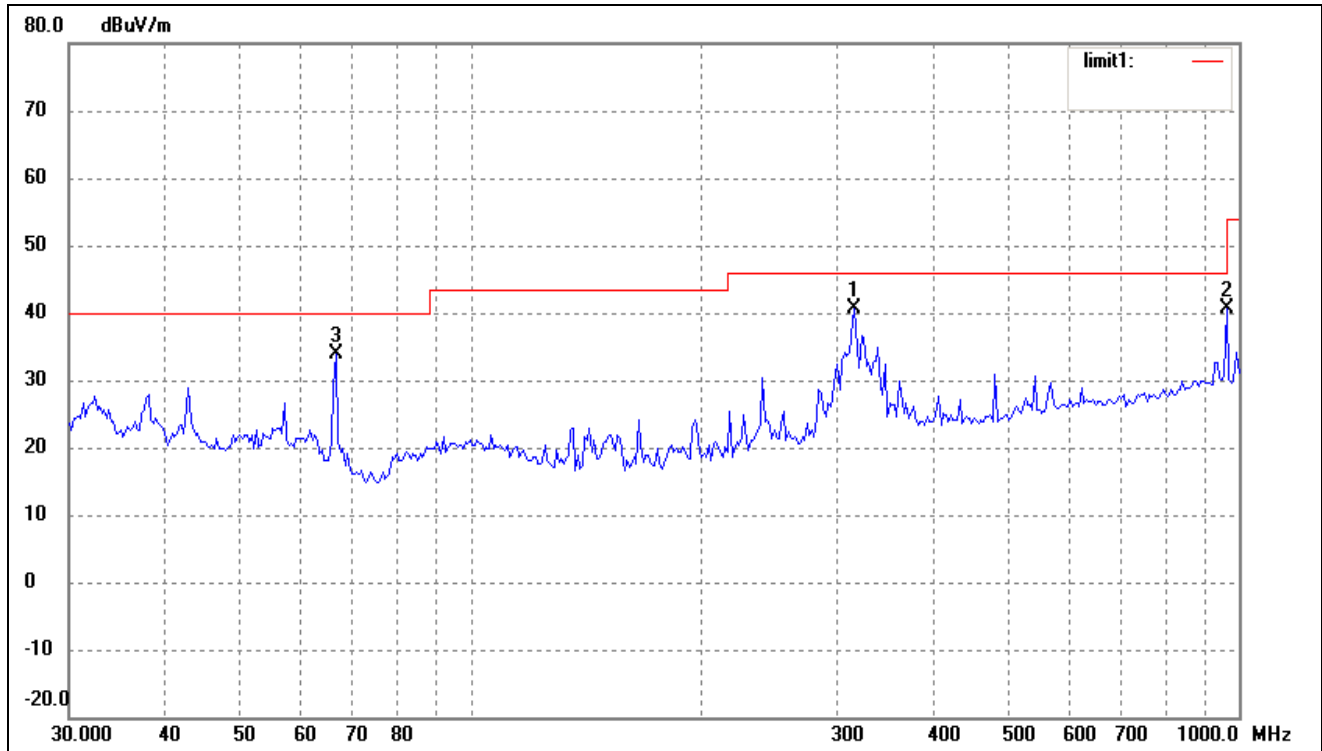
Plot of Radiation Emissions Test Data

Radiated Disturbance
EUT: USB 4-port HUB
M/N: mc-707
Operating Condition: Running
Test Specification: Horizontal & Vertical
Comment: Connect to Computer
Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	315.8601	33.97	8.79	42.76	46.00	-3.24	221	110	QP
2	240.1442	31.43	7.44	38.87	46.00	-7.13	243	105	peak
3	965.4742	28.99	15.59	44.58	54.00	-9.42	254	102	peak
4	66.8395	29.35	4.47	33.82	40.00	-6.18	205	112	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	315.8601	31.93	8.79	40.72	46.00	-5.28	208	115	QP
2	965.4742	25.00	15.59	40.59	54.00	-13.41	221	118	peak
3	66.8395	29.33	4.47	33.80	40.00	-6.20	216	105	peak

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