

FCC PART 15.109

MEASUREMENT AND TEST REPORT

FOR

Yuanxin Electronic Factory

**No.9 DangYang Development Zone, Fuyong Town, Bao'an District, Shenzhen,
China**

FCC ID: W6S888888

Report Concerns: Original Report	Equipment Type: Hub
Model:	<u>YXA-01</u>
Report No.:	<u>STR09028108I</u>
Test/Witness Engineer:	<i>Susan Su</i>
Test Date:	<u>2009-02-26 to 2009-03-02</u>
Issue Date:	<u>2009-03-03</u>
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Approved & Authorized By:	<i>Jandy So</i> <hr/> 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: Yuanxin Electronic Factory
Address of applicant: No.9 DangYang Development Zone, Fuyong Town, Bao'an District, Shenzhen, China

Manufacturer: Yuanxin Electronic Factory
Address of manufacturer: No.9 DangYang Development Zone, Fuyong Town, Bao'an District, Shenzhen, China

General Description of E.U.T

Items	Description
EUT Description:	Hub
Trade Name:	/
Model No.:	YXA-01
Adding Models:	YXA-02, YXA-03, YXA-04
Rated Voltage:	DC 5V
Packaging Size:	5.6X5.6X2.1 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. The others models listed in the report are different appearance of YXA-01 without circuit and electronic construction changed, declared by the manufacturer.

1.2 Test Standards

The following report is prepared on behalf of the Yuanxin Electronic Factory 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 15.107, and 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which results 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 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 radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work. under the Windows XP terminal.

1.7 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

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
USB Cable	0.7	Shielded	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 ± 1.5 dB.

3.2 Test Equipment List and Details

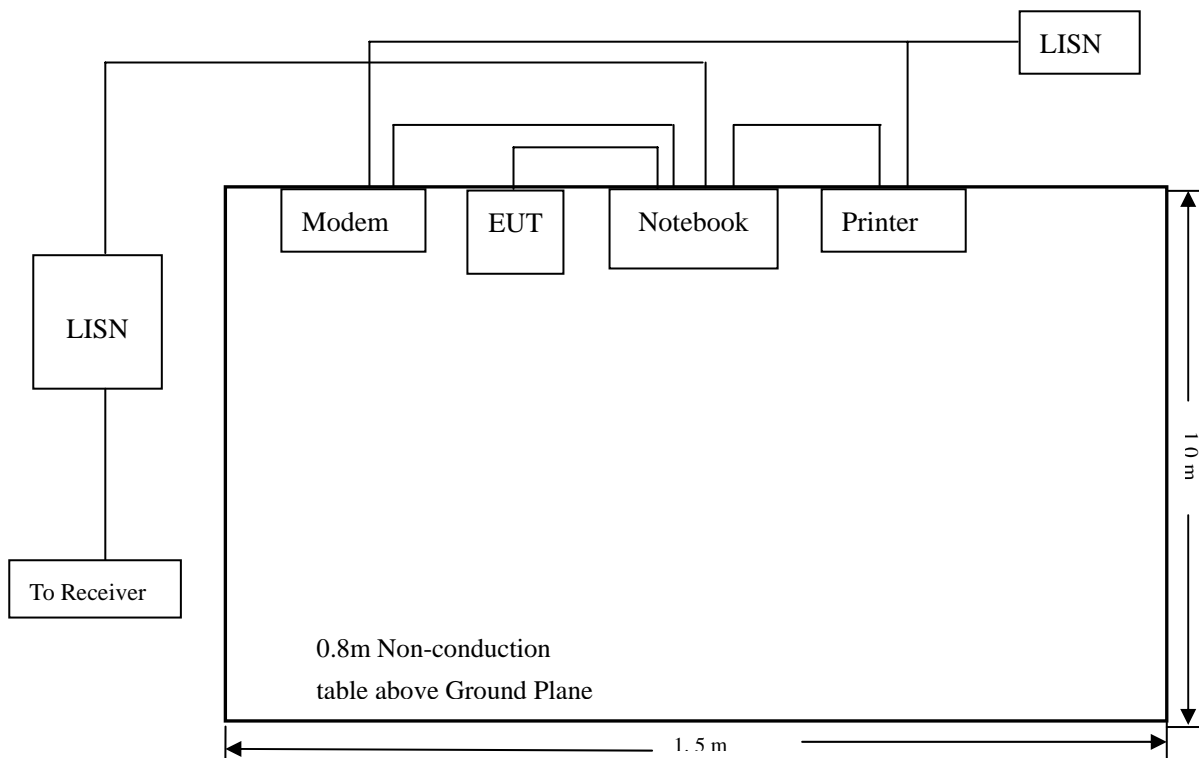
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-07-08	2009-07-07
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-07-08	2009-07-07
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-07-08	2009-07-07
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-07-08	2009-07-07

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:	24 °C
Relative Humidity:	52%
ATM Pressure:	1012 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:

-8.16 dBμV at 0.15 MHz in the Line mode, Peak detector, 0.15-30MHz

3.8 Conducted Emissions Test Data

LINE CONDUCTED EMISSIONS				FCC 15 CLASS B	
Frequency	Amplitude	Detector	Phase	Limit	Margin
MHz	dBμV	QP/Ave/Pk	Line/Neutral	dBμV	dB
0.150	57.83	Pk	Line	65.99	-8.16
1.014	47.38	Pk	Neutral	55.99	-8.61
0.734	46.35	Pk	Neutral	55.99	-9.64
0.166	55.26	Pk	Neutral	65.15	-9.89
4.574	34.15	Ave	Line	45.99	-11.84
0.210	40.72	Ave	Neutral	53.20	-12.48
0.422	34.72	Ave	Neutral	47.50	-12.68
0.210	40.43	Ave	Line	53.19	-12.76
0.674	42.54	Pk	Line	55.99	-13.45
4.502	31.66	Ave	Neutral	45.99	-14.33
0.634	31.55	Ave	Line	45.99	-14.44
0.986	30.93	Ave	Neutral	45.99	-15.06
4.574	39.17	Pk	Line	55.99	-16.82
0.986	28.76	Ave	Line	45.99	-17.24

Plot of Conducted Emissions Test Data

Conducted Disturbance

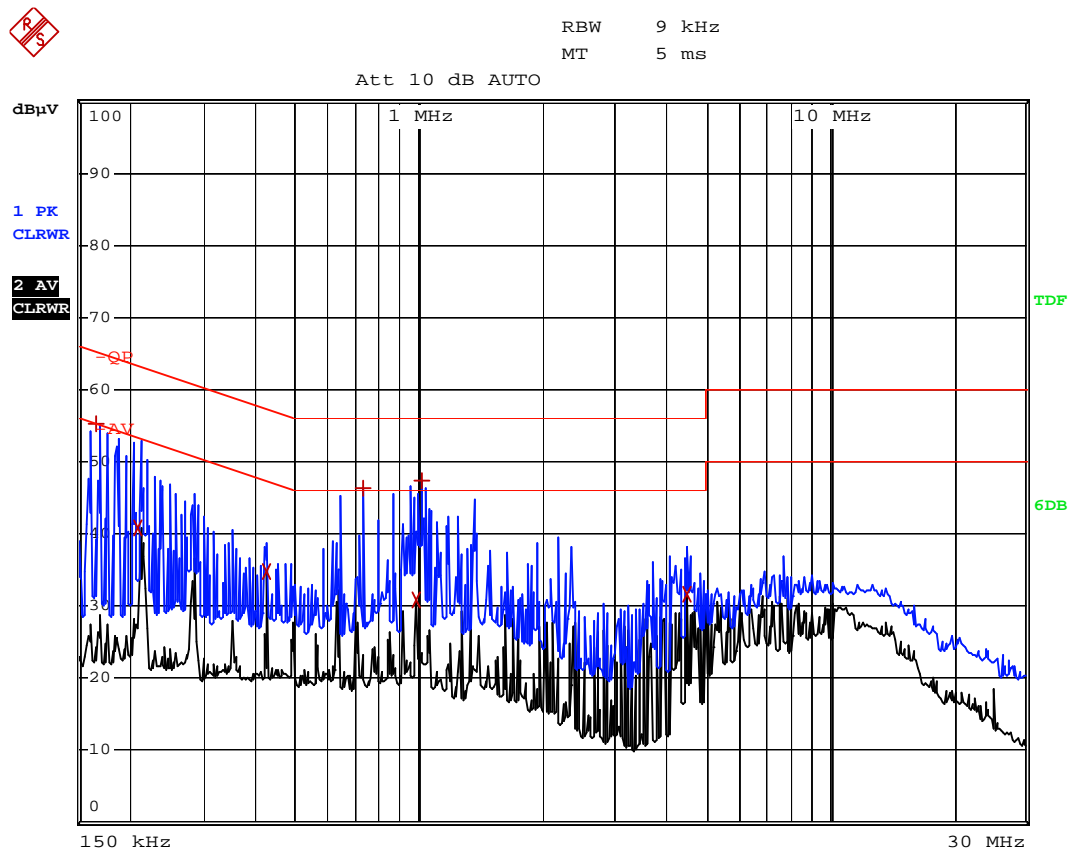
EUT: Hub

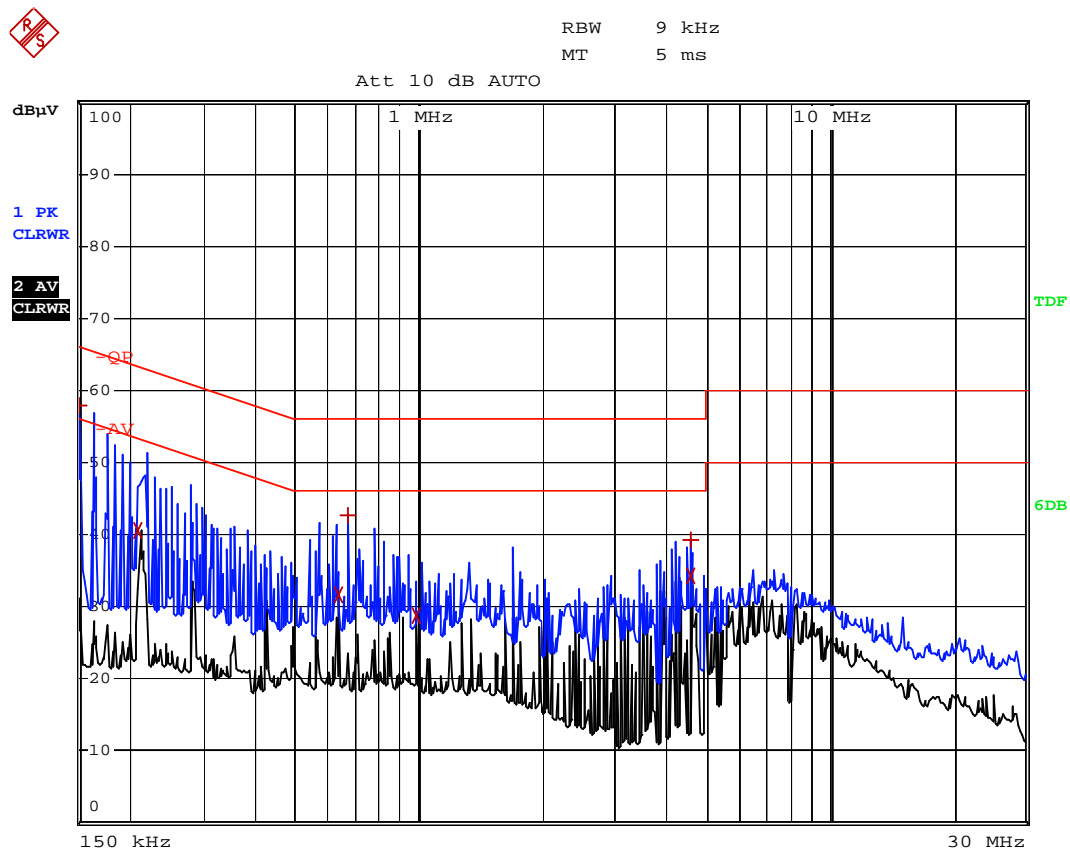
M/N: YXA-01

Operating Condition: Running with program

Test Specification: N

Comment: AC 120V/60Hz connect to PC, USB 5V



Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: Hub**M/N: YXA-01**Operating Condition: Running with Program**Test Specification: L**Comment: AC 120V/60Hz connect to PC, USB 5V*

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

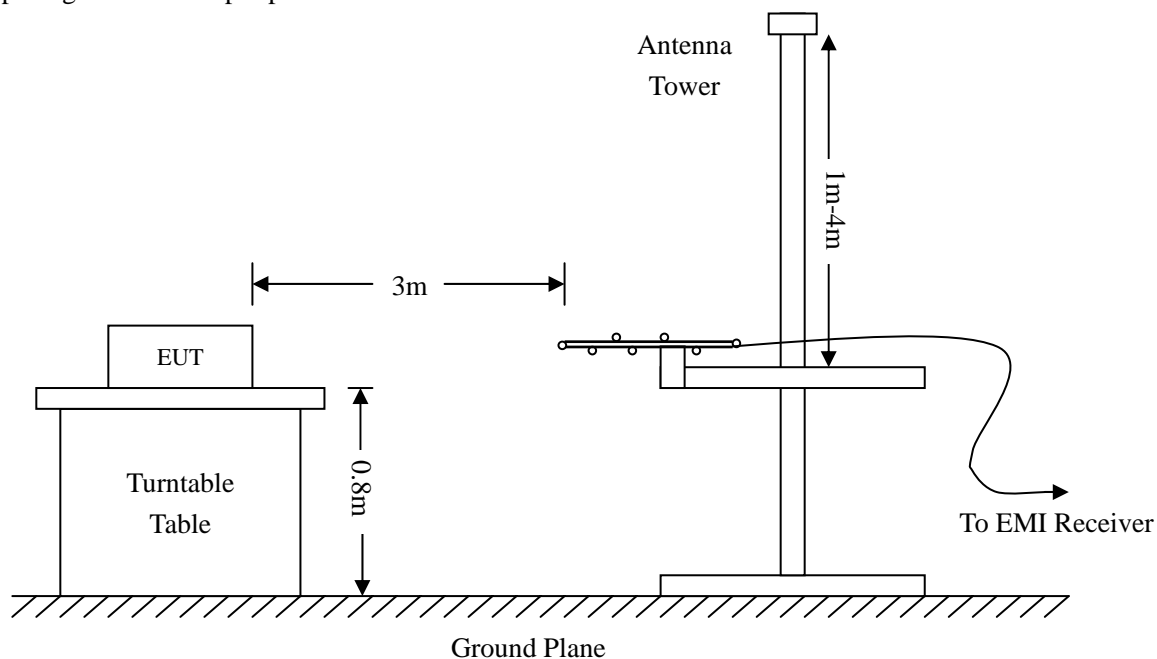
Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-07-08	2009-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2008-07-08	2009-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-07-08	2009-07-07
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2008-07-08	2009-07-07
RF Switch	EM	EMSW18	SW060023	2008-07-08	2009-07-07
Amplifier	Agilent	8447F	3113A06717	2008-07-08	2009-07-07
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2008-07-08	2009-07-07
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	25498514	2008-07-08	2009-07-07

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 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:

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

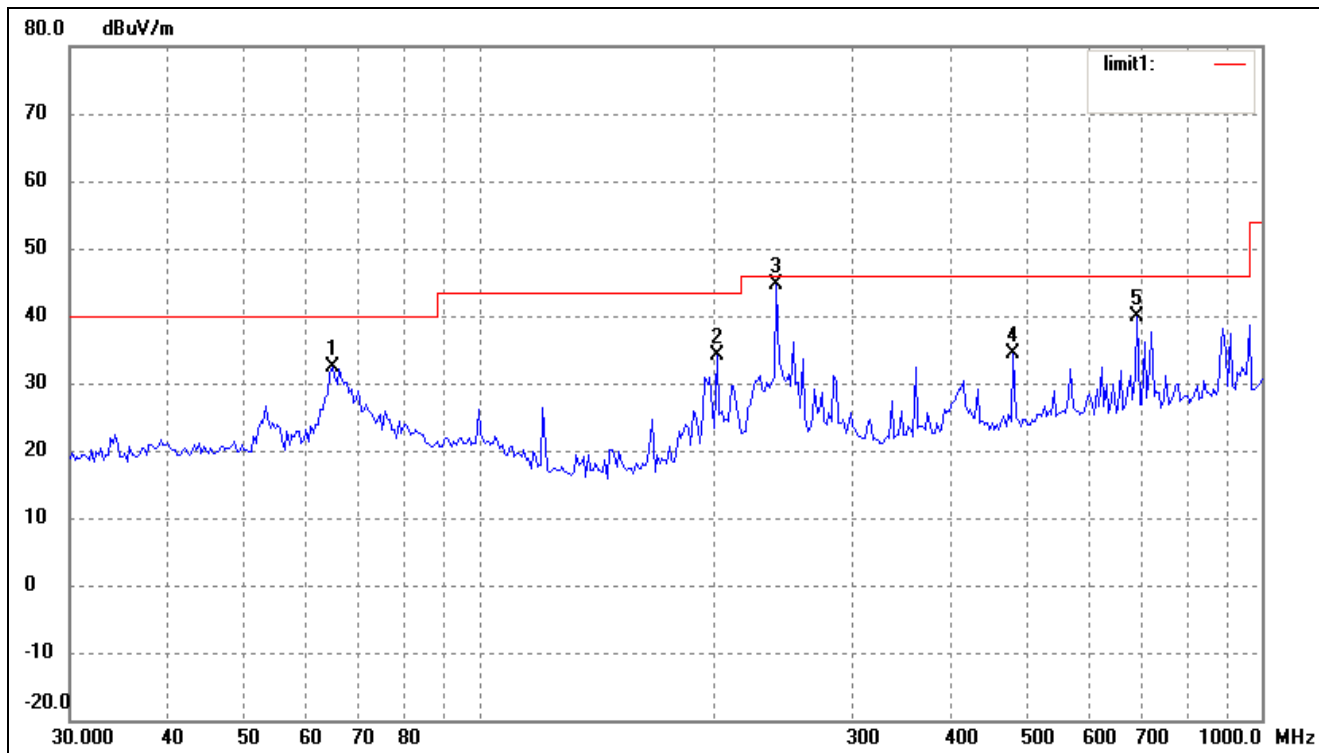
4.6 Environmental Conditions

Temperature:	25 °C
Relative Humidity:	54 %
ATM Pressure:	1011 mbar

4.7 Summary of Test Results/Plots

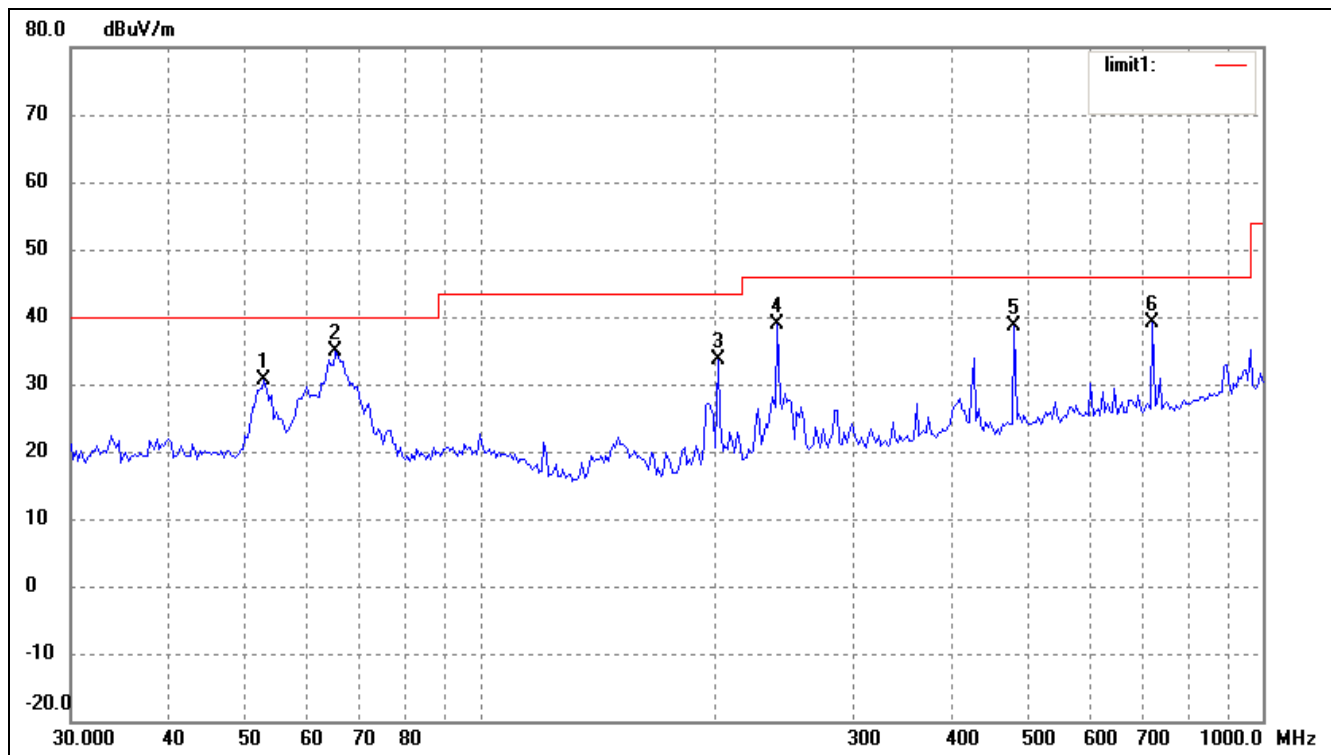
According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

-1.46 dB μ V at 240.1442 MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test Data*Radiated Disturbance**EUT: Hub**M/N: YXA-01**Operating Condition: Running with Program**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz connect to PC, USB 5V**Horizontal*

No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	Factor(dB)	(dBuV/m)	(dBuV/m)	(dB)	(°)	(cm)	
1	64.9869	27.13	5.21	32.34	40.00	-7.66	101	100	peak
2	201.4539	28.51	5.73	34.24	43.50	-9.26	48	150	peak
3	240.1442	37.10	7.44	44.54	46.00	-1.46	349	200	QP
4	481.5112	24.29	10.09	34.38	46.00	-11.62	67	100	peak
5	693.9101	27.30	12.69	39.99	46.00	-6.01	58	100	peak

Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	53.0056	23.02	7.55	30.57	40.00	-9.43	85	200	peak
2	65.4452	29.88	5.02	34.90	40.00	-5.10	99	200	QP
3	201.4539	27.93	5.73	33.66	43.50	-9.84	63	100	peak
4	240.1442	31.37	7.44	38.81	46.00	-7.19	115	200	peak
5	481.5112	28.60	10.09	38.69	46.00	-7.31	123	100	peak
6	723.7930	26.21	12.90	39.11	46.00	-6.89	57	100	peak

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