

FCC PART 15.109
MEASUREMENT AND TEST REPORT
FOR

ATCOM TECHNOLOGY CO., LIMITED.

Rm6AB, Shangtian Building, No 70, Nanyuan Rd, Futian District, Shenzhen,
China

FCC ID: W9D001IP019

Report Concerns: Original Report	Equipment Type: IP PBX
Model:	<u>IP01P</u>
Report No.:	<u>STR09038095I</u>
Test/Witness Engineer:	<i>Susan Su</i>
Test Date:	<u>2009-03-23 to 2009-04-07</u>
Issue Date:	<u>2009-04-08</u>
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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: ATCOM TECHNOLOGY CO., LIMITED.
Address of applicant: Rm6AB, Shangtian Building, No 70, Nanyuan Rd, Futian District, Shenzhen, China

Manufacturer: ATCOM TECHNOLOGY CO., LIMITED.
Address of manufacturer: Rm6AB, Shangtian Building, No 70, Nanyuan Rd, Futian District, Shenzhen, China

General Description of E.U.T

Items	Description
EUT Description:	IP PBX
Trade Name:	ATCOM
Model No.:	IP01P
Rated Voltage:	DC 12V
Rated Current:	500mA
Packaging Size:	10.0X10.0X2.2 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 ATCOM TECHNOLOGY CO., 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 15.107, 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
Brother	Printer	FAX-1960C	U61589C8F532391

1.8 EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
DC Power Cable	1.6	Unshielded	With 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

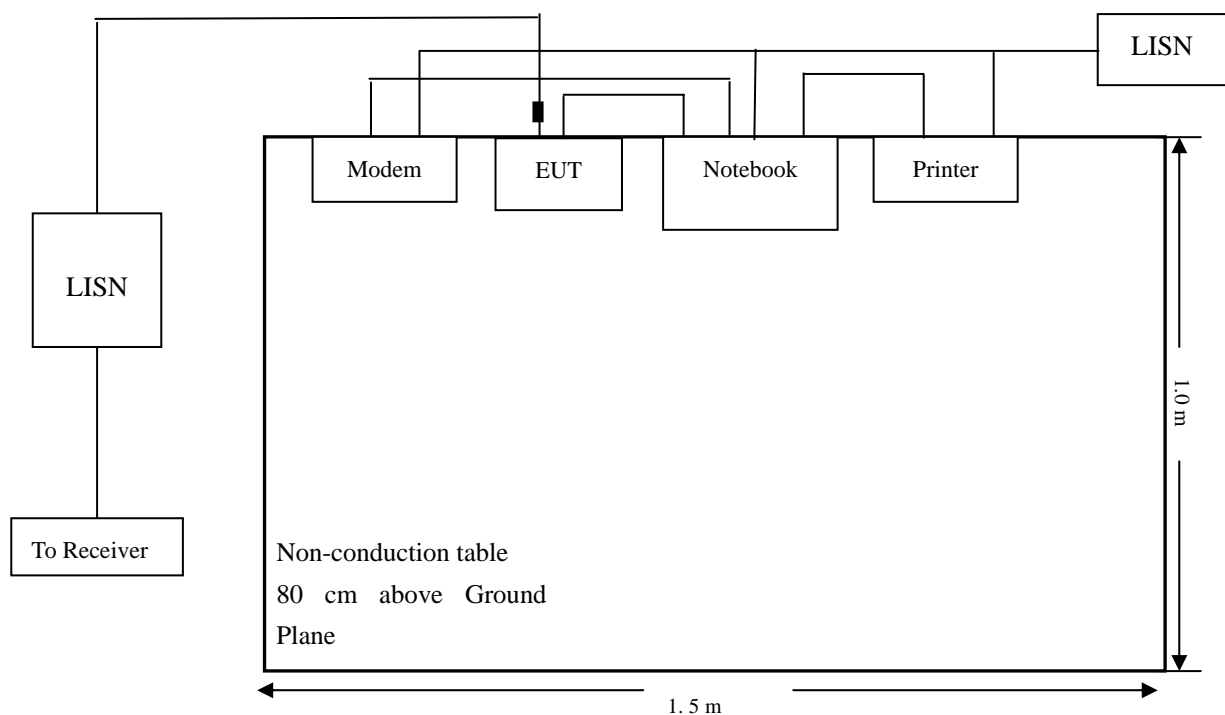
Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2008-07-08	2009-07-07
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2008-07-08	2009-07-07
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2008-07-08	2009-07-07
AMN	Rohde & Schwarz	ESH3-Z5	828304/014	2008-07-08	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:	25 °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:

-2.16 dBμV at 5.586 MHz in the Line mode, Average 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
5.586	47.83	Ave	Line	49.99	-2.16
4.942	53.29	Pk	Line	55.99	-2.70
5.150	54.78	Pk	Line	59.99	-5.21
4.970	50.53	Pk	Neutral	55.99	-5.46
4.714	39.80	Ave	Line	45.99	-6.19
5.614	52.11	Pk	Neutral	59.99	-7.88
5.674	41.90	Ave	Neutral	49.99	-8.09
0.942	44.82	Pk	Line	55.99	-11.17
4.970	34.67	Ave	Neutral	45.99	-11.32
1.942	44.30	Pk	Neutral	55.99	-11.69
0.494	43.44	Pk	Neutral	56.09	-12.65
0.350	45.73	Pk	Line	58.95	-13.22
0.350	35.63	Ave	Line	48.95	-13.32
0.942	32.58	Ave	Line	45.99	-13.41
0.358	43.92	Pk	Neutral	58.76	-14.84
1.942	29.47	Ave	Neutral	45.99	-16.52

Plot of Conducted Emissions Test Data

Conducted Disturbance

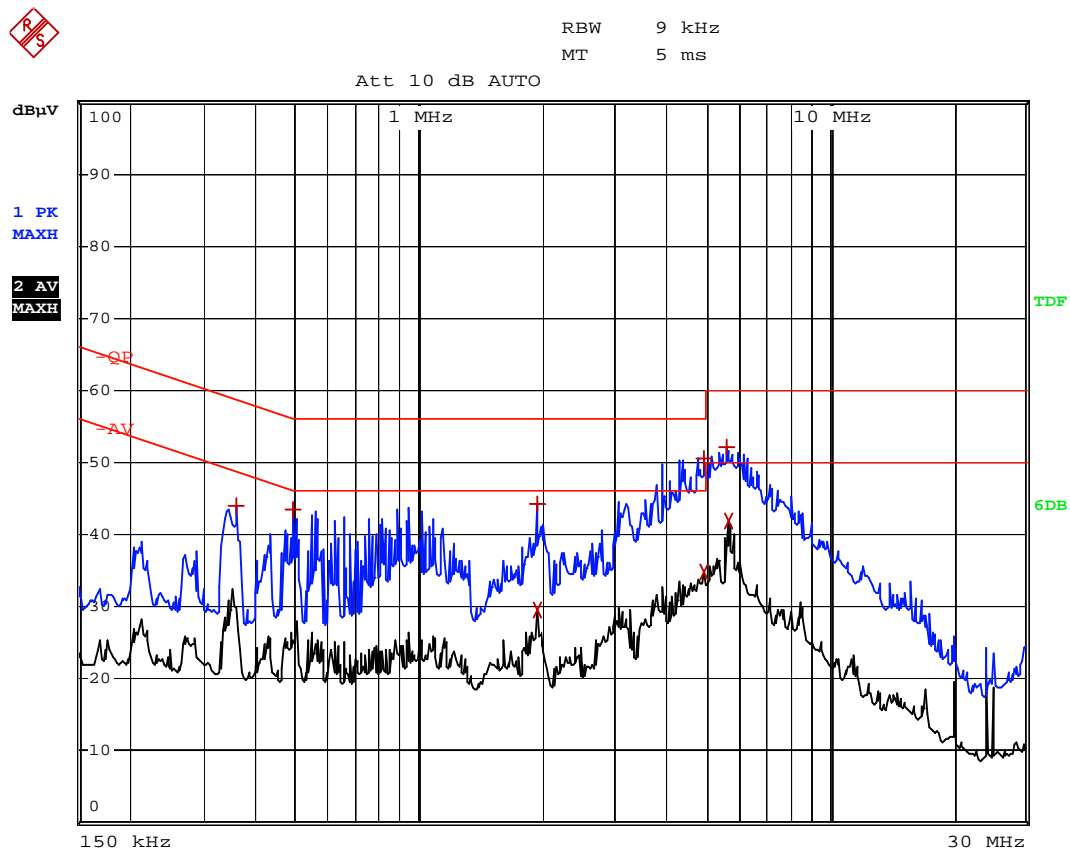
EUT: IP PBX

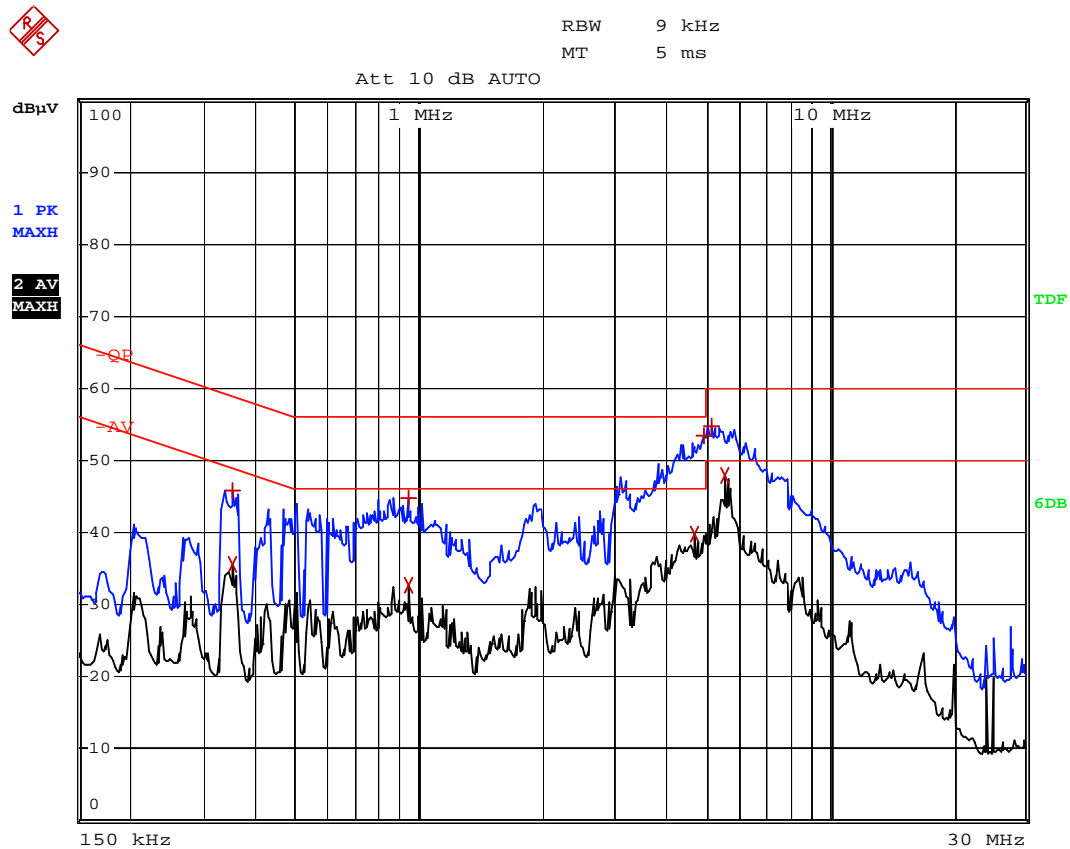
M/N: IP01P

Operating Condition: Running with Program

Test Specification: N

Comment: AC120V/60Hz; Switch Supply Power 12V



Plot of Conducted Emissions Test Data*Conducted Disturbance**EUT: IP PBX**M/N: IP01P**Operating Condition: Running with Program**Test Specification: L**Comment: AC120V/60Hz; Switch Supply Power 12V*

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

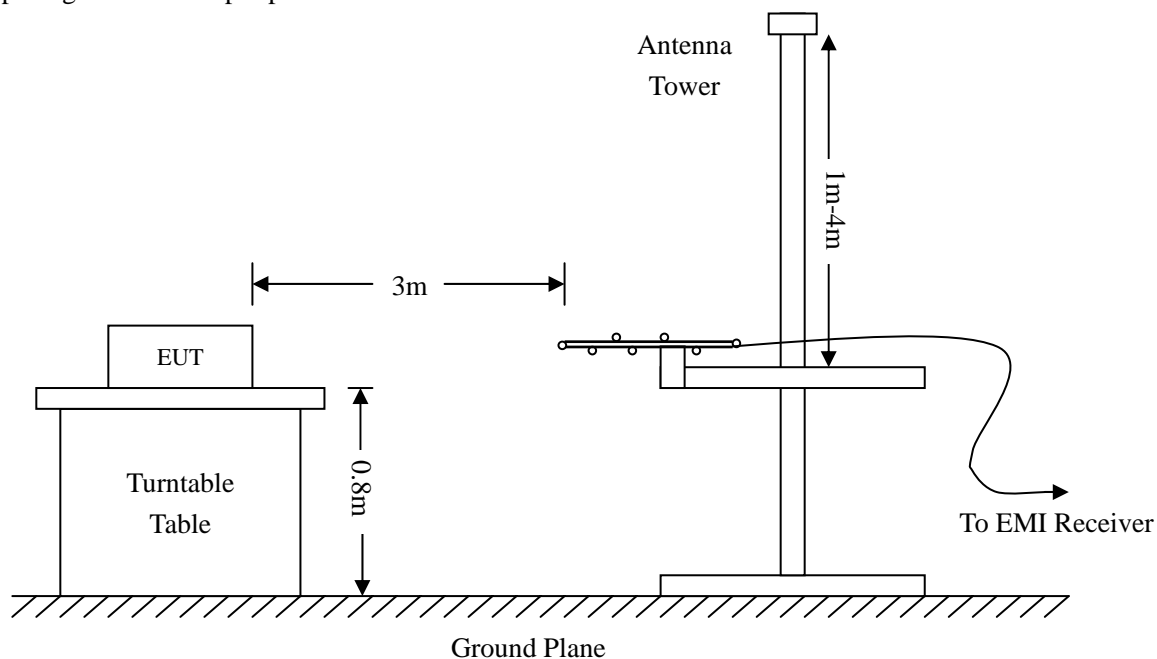
Manufacturer	Description	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	ROHDE&SCHWARZ	FSEA20	DE25181	2008-07-08	2009-07-07
Positioning Controller	C&C	CC-C-1F	N/A	2008-07-08	2009-07-07
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2008-07-08	2009-07-07
Horn Antenna	SCHWARZBECK	BBHX 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:

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

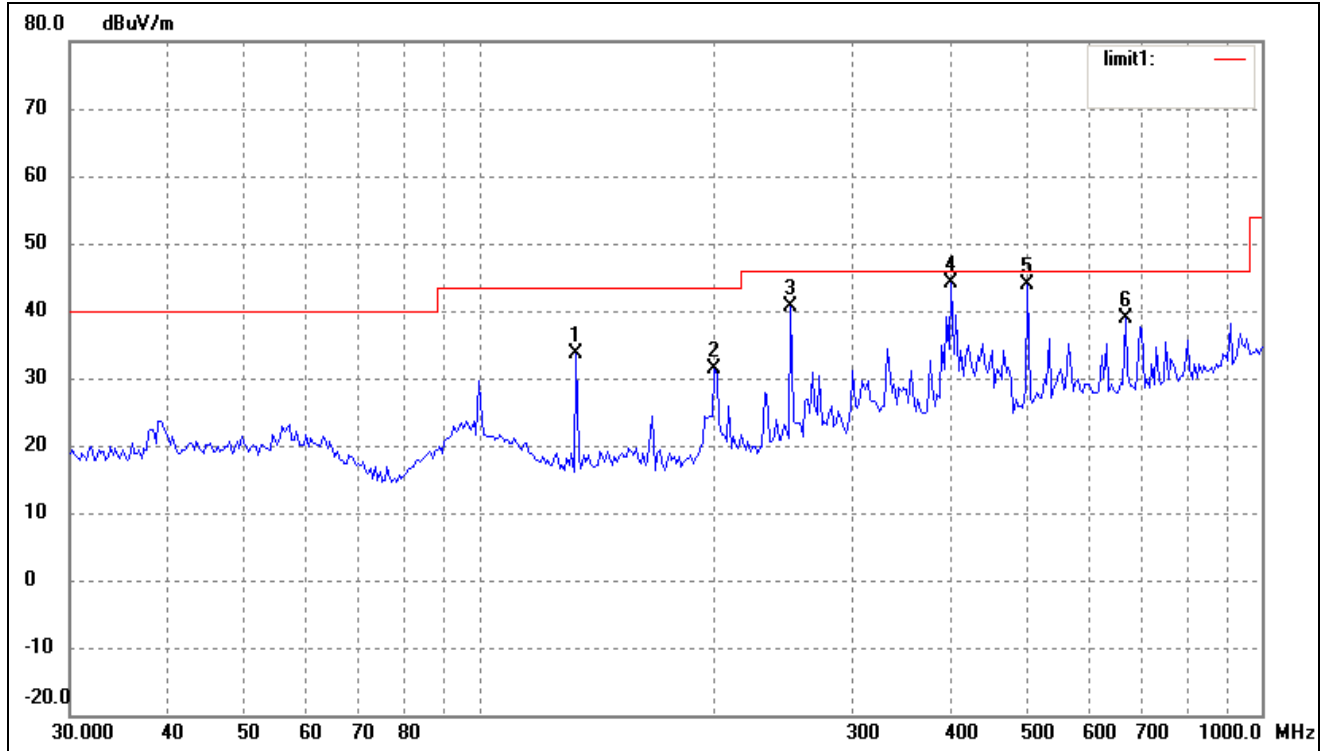
4.6 Environmental Conditions

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

4.7 Summary of Test Results/Plots

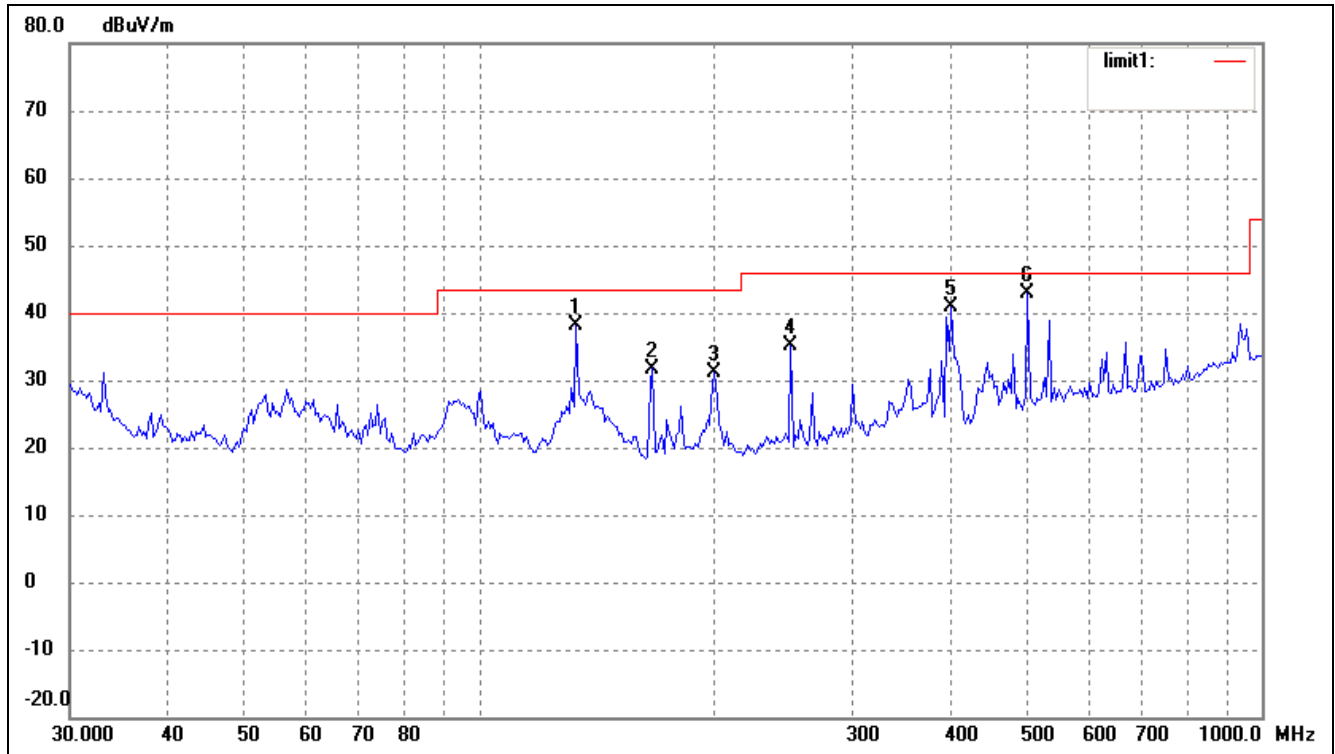
According to the data, the EUT complied with the FCC 15B Class B standards, and had the worst margin of:

-1.87 dB μ V at 401.1050MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiation Emissions Test Data*Radiated Disturbance**EUT: IP PBX**M/N: IP01P**Operating Condition: Running with Program**Test Specification: Horizontal & Vertical**Comment: AC 120V/60Hz Switch Supply Power 12V**Horizontal*

No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	133.0809	30.03	3.66	33.69	43.50	-9.81	203	100	peak
2	200.0432	25.72	5.68	31.40	43.50	-12.10	147	100	peak
3	250.4859	33.01	7.69	40.70	46.00	-5.30	86	100	QP
4	401.1050	34.05	10.08	44.13	46.00	-1.87	32	100	QP
5	502.2473	30.92	12.97	43.89	46.00	-2.11	89	200	QP
6	669.9523	23.41	15.50	38.91	46.00	-7.09	112	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	133.0809	34.35	3.66	38.01	43.50	-5.49	67	100	QP
2	166.6385	27.80	3.95	31.75	43.50	-11.75	99	100	peak
3	200.0432	25.43	5.68	31.11	43.50	-12.39	58	200	peak
4	250.4859	27.42	7.69	35.11	46.00	-10.89	268	200	peak
5	401.1050	30.78	10.08	40.86	46.00	-5.14	138	100	QP
6	502.2473	29.80	12.97	42.77	46.00	-3.23	193	200	QP

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