

FCC PART 15 CLASS B

EMI MEASUREMENT AND TEST REPORT

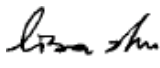
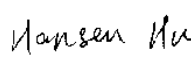
For

PePLink Ltd.

2302, Tai Tung Building 8 Fleming Road, Wanchai, Hong Kong

FCC ID: SAN24PS

March 9, 2006

This Report Concerns: ☒ Original Report	Equipment Type: Internet Access Router
Test Engineer: Lisa Zhu and Hansen Hu  	
Report Number: RSZ06030202	
Test Date: November 7-21, 2005	
Reviewed By: Chris Zeng 	
Prepared By: Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: +86-755-33320018 Fax: +86-755-33320008	

Note: The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Bay Area Compliance Lab Corp. (ShenZhen). This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the US Government.

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GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *PePLink Ltd.* 's product, model *PePLink Surf* or the "EUT" as referred to in this report was a Internet Access Router which measures approximately 13.7 cm L x 16.5 cm W x 12.5 cm H, rated input voltage: DC 5 V.

Adapter: manufacture: Switching Power Supply, model: S024AU0500300, input: 100~240V 47-63Hz 700 mA, output: 5.0 V 3000 mA

** The test data gathered are from production sample, serial number: 0511038, provided by the manufacturer.*

Objective

The following test report is prepared on behalf of *PePLink Ltd.* in accordance with Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine compliance with FCC Part 15 Class B.

Related Submittal(s)/Grant(s)

No related submittal(s).

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.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Lab Corp. (ShenZhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Lab Corp. (ShenZhen) to collect radiated and conducted emission measurement data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab Corp. (ShenZhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Lab Corp. (ShenZhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at <http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm>

Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	Motherboard	OWC297	CN-OWC297-70821-564-00NI	DoC
DELL	Power	NPS-250KB D	CN-0H2678-17972-56E-80BM	DoC
Seagate	Hard Disk	ST340014A	5JXK3GXE	DoC
DELL	3.5' Floppy	N/A	CN-0N8893-69802-54Q-02P0	DoC
Lite-ON	CD-Rom	LTN-489S	N/A	DoC
Intel	Ethernet	PRO 10/100 VE	N/A	DoC

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
DELL	PC	DELL 170L	CN-0TC670-70821-560-F4Q6	DoC
DELL	Keyboard	SK-8110	CN07N244-71616-56A-1B1E	DoC
DELL	Mouse	M071KC	520027907	DoC
DELL	LCD Monitor	1505FP	Y4287-7168-571-GBSH	DoC
ProMOS	Memory	V826632K24SATG-C0	0525-K1933700	DoC
Intel	CPU	Celeron D-2533	N/A	DoC
HP	Laser Jet5L	C3941A	JPTVOB2337	DoC
SAST	Modem	AEM-2100	293	DoC

External I/O Cable

Cable Description	Length (M)	From/Port	To
Shielded Detachable Keyboard Cable	1.50	Keyboard Port / Host	Keyboard
Shielded Detachable Mouse Cable	1.50	PS/2 Port / Host	Mouse
Shielded Detachable Printer Cable	1.20	Parallel Port / Host	Printer
Shielded Detachable Serial Cable	1.20	Serial Port / Host	Modem
Shielded Detachable VGA Cable	1.50	VGA Port / Host	Monitor
Shielded Detachable USB Cable	1.50	EUT	host PC
Unshielded Undetachable DC Cable with a core	1.90	EUT	Adapter

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by Bay Area Compliance Lab Corp. (ShenZhen) can exercise the EUT as data transferring between the EUT and the host.

Special Accessories

The special Accessories were supplied by Bay Area Compliance Lab Corp. (ShenZhen).

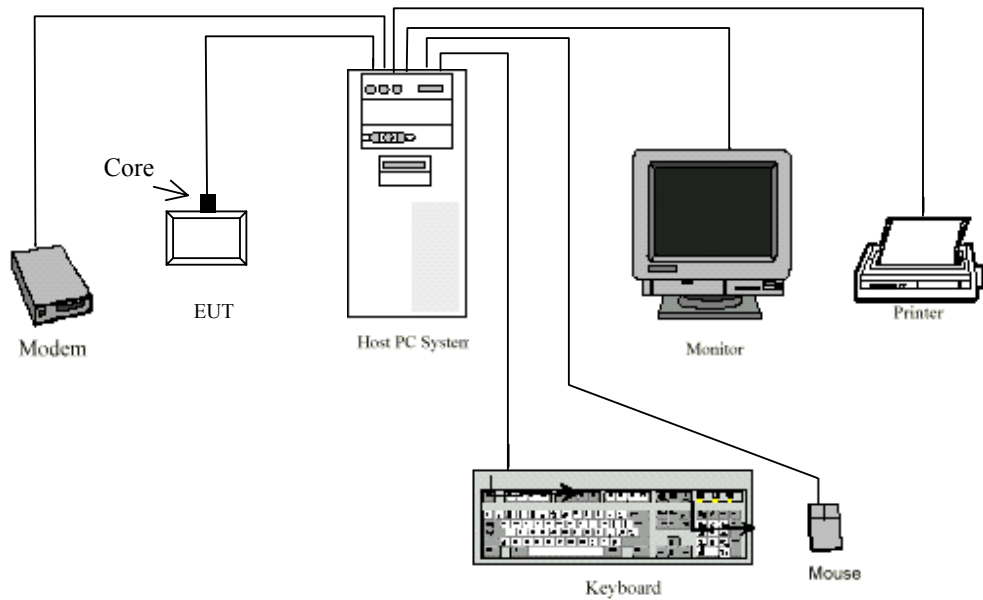
Block Diagram/Schematics

Please refer to the Exhibit C.

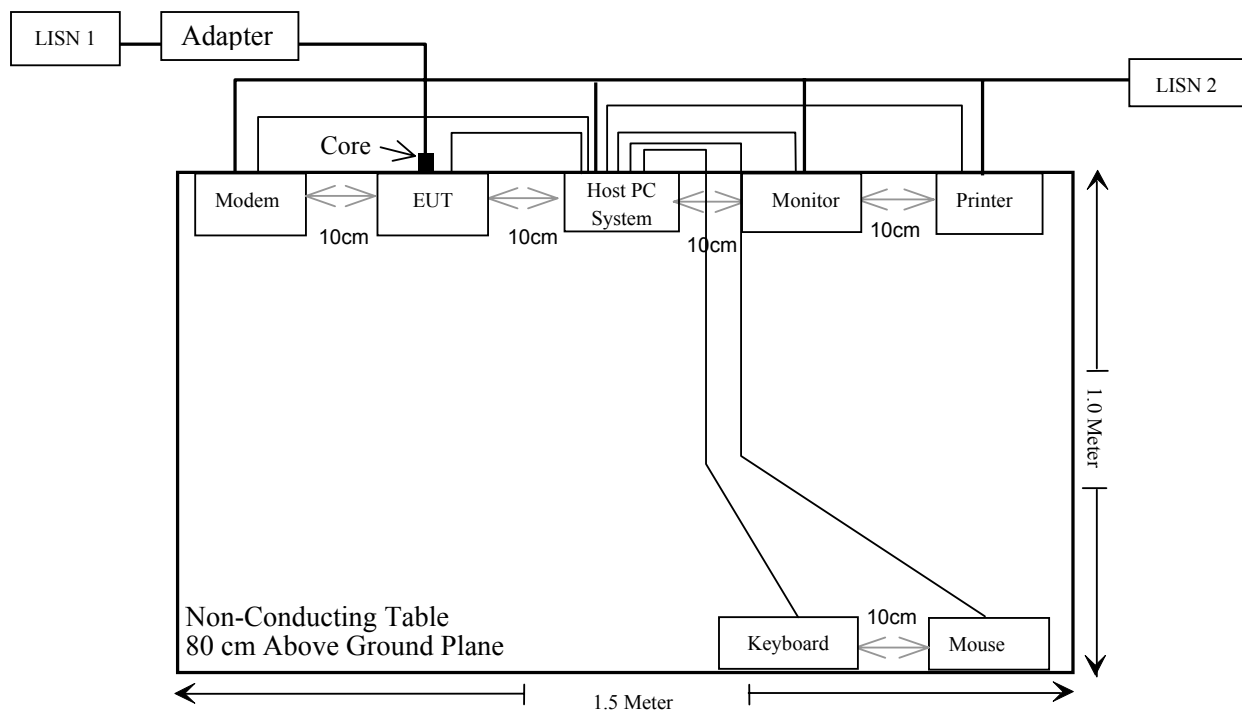
Equipment Modifications

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST REPORT

RULE	DESCRIPTION	RESULTS
§15.107	Conducted Emission	Compliant
§15.109	Radiated Emission	Compliant*
§15.33	Frequency of Investigation	Compliant, Note 1
§15.27	Special Accessories	Compliant

Note 1: The highest clocks of the EUT was 32 MHz.

* Within measurement uncertainty

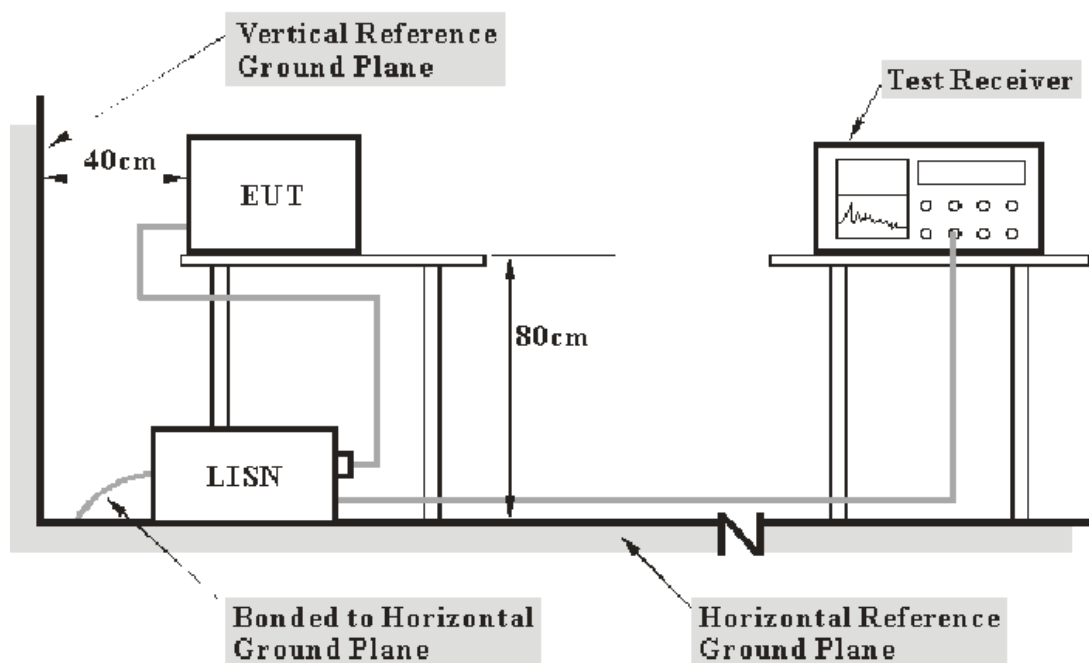
§15.107 - CONDUCTED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 2.4 dB.

EUT Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15 Class B limits.

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.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

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

<i>Frequency Range</i>	<i>IFBW</i>
150 kHz – 30 MHz	9 kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Com-Power	L.I.S.N.	LI-200	12005	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12008	N/A	N/A
Rohde & Schwarz	EMI Test Receiver	ESCS30	830245/006	2005-1-26	2006-1-26
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2005-2-28	2006-2-28

* Com-Power's LISN were used as the supporting equipment.

* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN, and all other support equipment power cords were connected to the outlet of the second LISN.

Maximizing procedure were performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

-8.7 dB at 3.010 MHz in the **Line** conductor mode.

Test Data**Environmental Conditions**

Temperature:	25 ° C
Relative Humidity:	55%
ATM Pressure:	1000mbar

The testing was performed by Lisa Zhu on 2005-11-7.

Test Mode: Running

LINE CONDUCTED EMISSIONS				FCC PART 15 CLASS B	
Frequency MHz	Amplitude dBμV	Detector QP/AV	Phase Line/Neutral	Limit dBμV	Margin dB
3.010	47.30	QP	Line	56.00	-8.70
2.880	42.10	QP	Neutral	56.00	-13.90
0.845	41.60	QP	Line	56.00	-14.40
0.945	31.60	AV	Line	46.00	-14.40
1.740	40.60	QP	Line	56.00	-15.40
1.245	40.50	QP	Line	56.00	-15.50
1.420	40.40	QP	Line	56.00	-15.60
0.945	40.30	QP	Line	56.00	-15.70
2.880	29.50	AV	Neutral	46.00	-16.50
1.420	29.30	AV	Line	46.00	-16.70
2.195	38.70	QP	Neutral	56.00	-17.30
0.795	28.60	AV	Neutral	46.00	-17.40
1.120	37.80	QP	Neutral	56.00	-18.20
1.740	27.40	AV	Line	46.00	-18.60
0.160	27.30	AV	Neutral	46.00	-18.70
0.795	37.20	QP	Neutral	56.00	-18.80
0.335	40.30	QP	Neutral	59.33	-19.03
0.160	46.10	QP	Neutral	65.46	-19.36
3.010	26.50	AV	Line	46.00	-19.50
1.245	26.50	AV	Line	46.00	-19.50
0.335	27.40	AV	Neutral	49.33	-21.93
1.120	22.60	AV	Neutral	46.00	-23.40
0.845	22.00	AV	Line	46.00	-24.00
2.195	19.90	AV	Neutral	46.00	-26.10

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.

Conducted Emission Test FCC Part 15

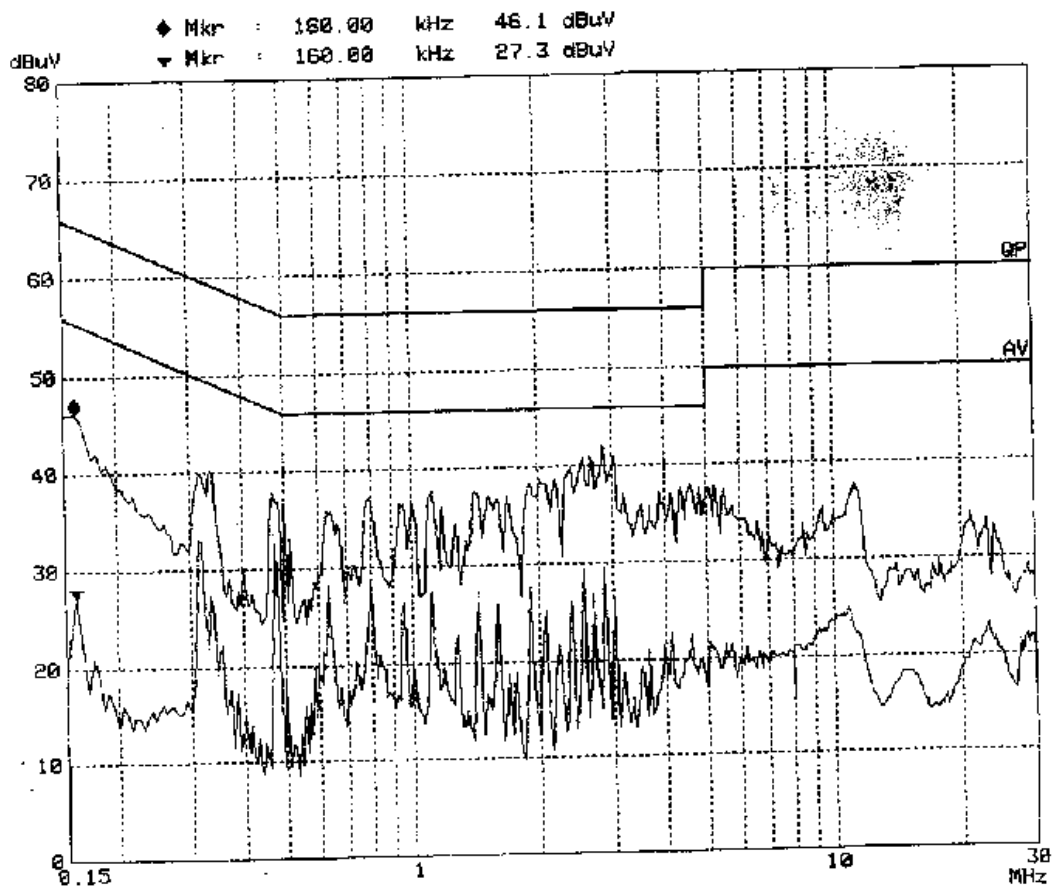
Manuf: PePLink
Op Cond: Running
Operator: Lisa
Test Spec: AC 120V/60Hz N
Comment: Temp:25
Humi:55%
Date: 07. Nov 05 14:08

Scan Settings (1 Range)

----- Frequencies -----			----- Receiver Settings -----				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PX+AV	20ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	9k	30M	FACTOR

Final Measurement: x QP / + AV
Meas Time: 1 s
Subranges: 25
Acc Margin: 6dB



Conducted Emission Test FCC Part 15

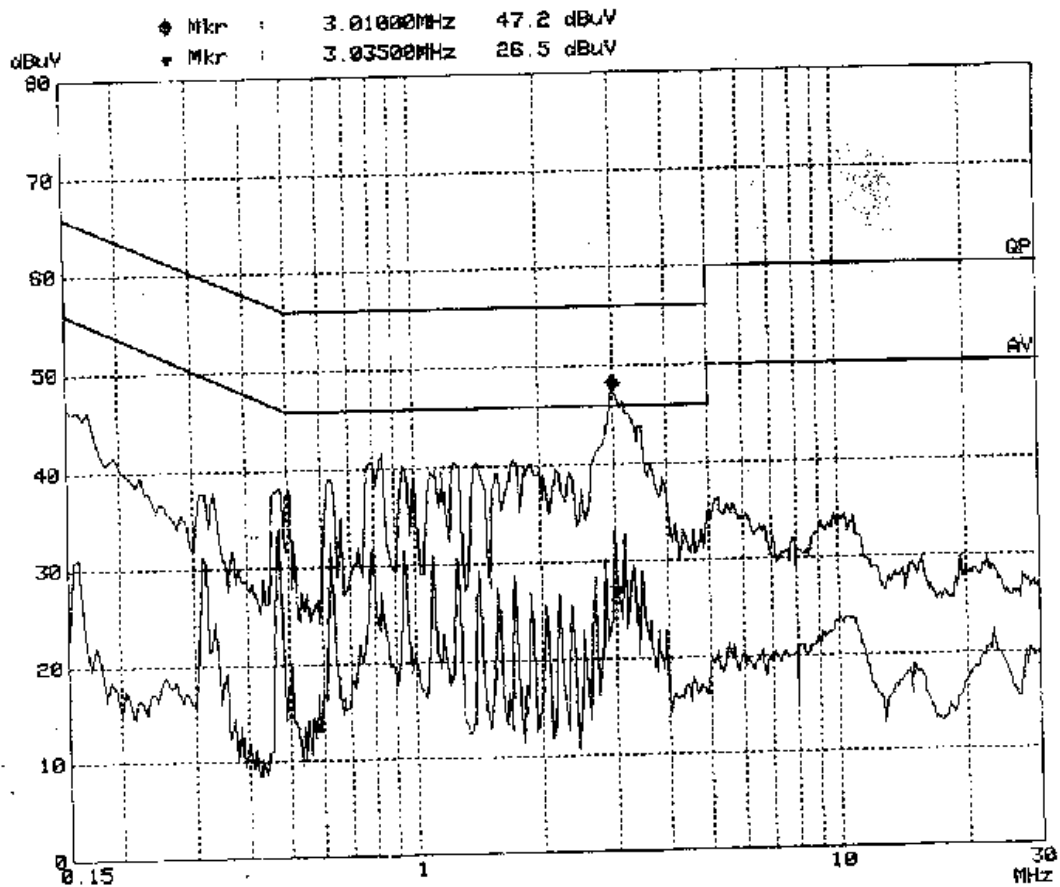
Manuf: PePLink
Op Cond: Running
Operator: Lisa
Test Spec: AC 120V/60Hz L
Comment: Temp: 25
Humi: 55%
Date: 07. Nov 05 14:27

Scan Settings (1 Range)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	30M	5k	9k	PK+AV	20ms	AUTO	LN OFF

Transducer No.	Start	Stop	Name
1	9k	30M	FACTOR

Final Measurement: x QP / + AV
 Meas Time: 1 s
 Subranges: 25
 Acc Margin: 6dB



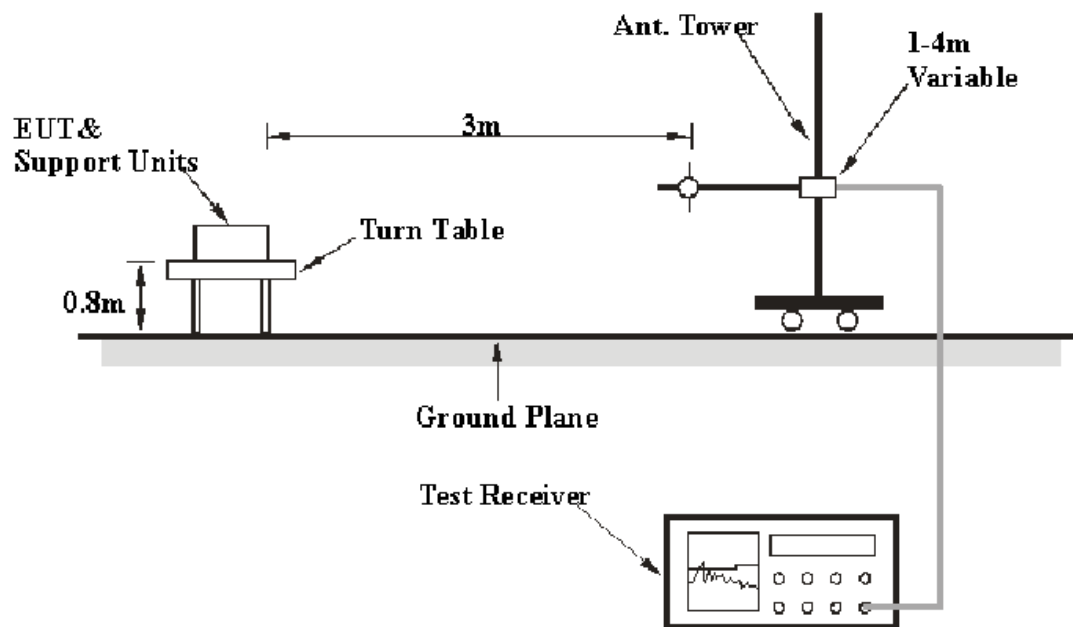
§15.109 - RADIATED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3 meters chamber A test site, using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC Part 15 Class B limits.

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.

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 25 GHz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>	<i>IF B/W</i>
30 – 1000 MHz	100 kHz	300 kHz	120 kHz
Above 1GHz	1MHz	3MHz	1MHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2005-12-21	2006-12-21
HP	Amplifier	8449B	3008A00277	2005-8-17	2006-8-17
Sunol Sciences	Horn Antenna	DRH-118	A052604	2005-7-20	2006-7-20
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2005-8-17	2006-8-17
HP	Amplifier	HP8447E	1937A01046	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2005-4-28	2006-4-28

* **Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter was connected to the outlet of the first LISN and the host PC and all other support equipment power cords were connected to the outlet of the second LISN.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detection mode.

Maximizing procedure was performed on the six (6) highest emissions in the described configurations.

Corrected Amplitude & Margin Calculation

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

$$\text{Corr. Ampl.} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15 Class B, with the worst margin reading of:

-2.3 dB at 32.63 MHz in the Vertical polarization.

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing was performed by Hansen Hu on 2005-11-7.

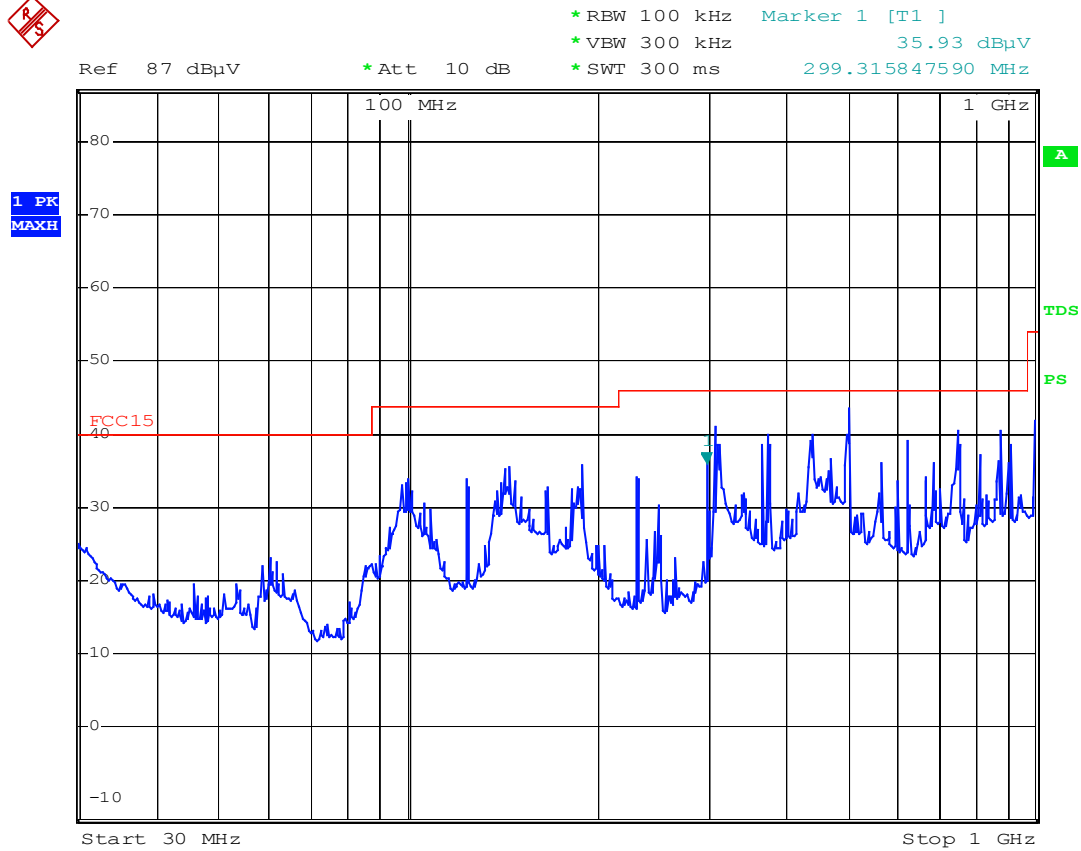
Test mode: Running

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15		
Frequency MHz	Meter Reading dB μ V/m	Angle Degree	Height Meter	Polar H/ V	Antenna Loss dB	Cable Loss dB	Amplifier Gain dB	Corr. Ampl. dB μ V/m	Limit dB μ V/m	Margin dB	Remark
32.63	41.8	45	1.2	V	24.1	0.6	28.8	37.7	40.0	-2.3*	PK
374.62	53.7	120	1.0	V	15.5	1.9	27.8	43.3	46.0	-2.7*	PK
502.93	51.4	45	1.2	H	18.0	2.4	28.6	43.2	46.0	-2.8*	PK
53.31	56.0	180	1.0	V	8.5	0.7	28.7	36.5	40.0	-3.5*	PK
502.93	50.0	60	1.0	V	18.0	2.4	28.6	41.8	46.0	-4.2	PK
744.86	45.4	90	1.2	V	21.4	3.2	28.2	41.8	46.0	-4.2	PK
309.99	53.0	270	1.0	H	13.9	1.6	27.7	40.8	46.0	-5.2	PK
124.56	51.3	60	1.0	V	14.0	1.1	28.5	37.9	43.5	-5.6	PK
750.10	43.6	360	1.2	H	21.6	3.2	28.1	40.3	46.0	-5.7	PK
98.14	52.3	45	1.0	H	8.2	0.9	28.6	32.8	40.0	-7.2	PK
145.35	49.4	270	1.2	H	13.4	1.1	28.5	35.4	43.5	-8.1	PK
124.56	46.9	180	1.0	H	14.0	1.1	28.5	33.5	43.5	-10.0	PK

* Within measurement uncertainty

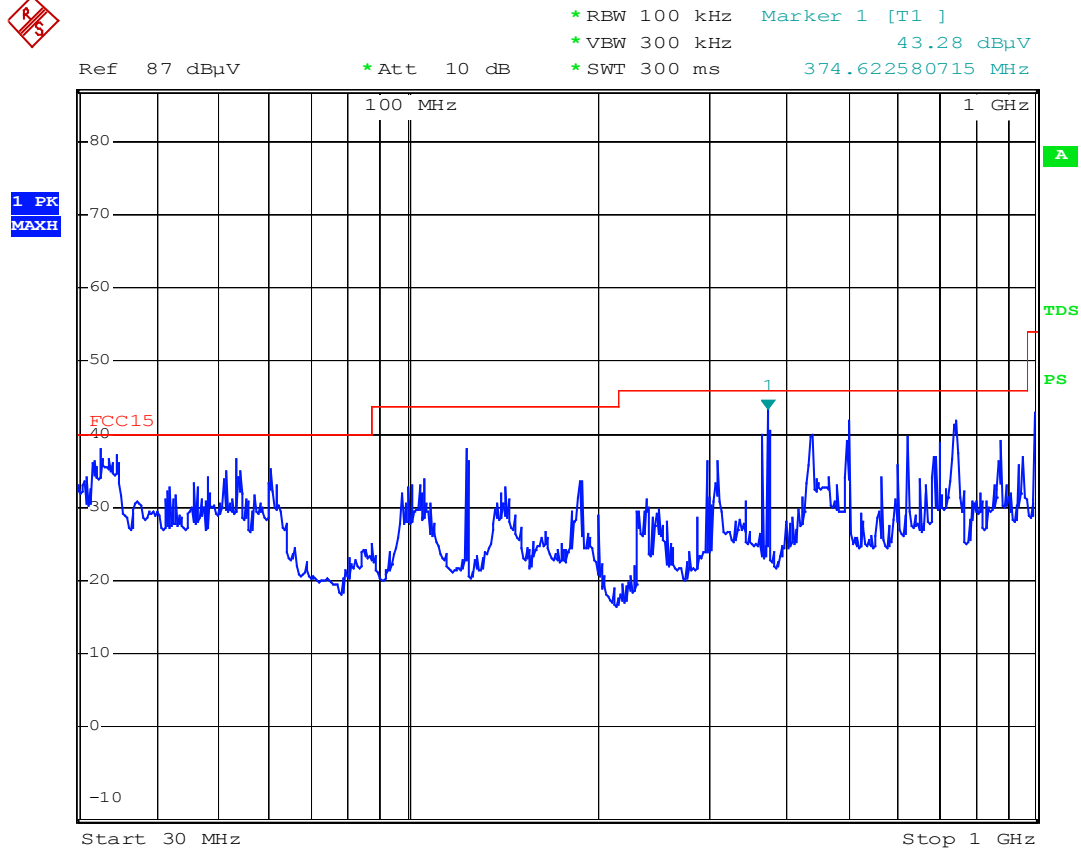
Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.



Peplink winti winti2.4 horizontal

Date: 7.NOV.2005 09:30:30



Peplink vertical

Date: 7.NOV.2005 09:48:41