

FCC PART 15

EMI MEASUREMENT AND TEST REPORT

For

SHANGHAI JUJO ELECTRONICS CO., LTD

ROOM 1001-1004, 440 ZHONGSHAN SOUTH 2 RD, SHANGHAI, P.R. CHINA

FCC ID: PITK002

March 31, 2004

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: USB Dongle - ITE
Test Engineer: William Chen	
Report Number: RSH04032202	
Test Date: March 25, 2004	
Reviewed By: Hans Mellberg	
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Note: The test report is specially limited to the use of the above client company and the product model. It may not be duplicated without prior written consent of Bay Area Compliance Laboratory Corporation. This report **must not** be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government

TABLE OF CONTENTS

GENERAL INFORMATION.....	3
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	3
OBJECTIVE	3
RELATED SUBMITTAL(S)/GRANT(S).....	3
TEST METHODOLOGY	3
TEST FACILITY	3
SYSTEM TEST CONFIGURATION.....	5
JUSTIFICATION	5
EUT EXERCISE SOFTWARE.....	5
SPECIAL ACCESSORIES	5
EQUIPMENT MODIFICATIONS	5
CONFIGURATION OF TEST SYSTEM	6
TEST SETUP BLOCK DIAGRAM	6
§15.107 - CONDUCTED EMISSIONS	7
MEASUREMENT UNCERTAINTY	7
EUT SETUP.....	7
SPECTRUM ANALYZER SETUP	8
TEST EQUIPMENT LIST AND DETAILS.....	8
TEST PROCEDURE	8
TEST DATA	9
TEST RESULT: PASS	10
PLOT(S) OF TEST DATA.....	10
§15.109 - RADIATED EMISSION.....	12
MEASUREMENT UNCERTAINTY	12
EUT SETUP.....	12
SPECTRUM ANALYZER SETUP	13
TEST EQUIPMENT LIST AND DETAILS.....	13
TEST PROCEDURE	13
CORRECTED AMPLITUDE & MARGIN CALCULATION	14
TEST DATA	14
TEST RESULT: PASS	15

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *SHANGHAI JUJO ELECTRONICS CO., LTD* 's product, model: USB KEY 8K/USB KEY 1K or the "EUT" as referred to in this report is a USB dongle which measures approximately 5.2cm L x 1.2cm W x 0.8cm H, rated input voltage: DC 5V. This USB dongle with 8K of non-volatile memory, allows the user to store encryption codes for file protection.

** The test data gathered are from production sample, serial number: 040334, provided by the manufacturer.*

Objective

The following test report is prepared on behalf of *SHANGHAI JUJO ELECTRONICS CO., 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 obtain an FCC ID & determine compliance with FCC PART 15 B limits for Information Technology Equipment.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2001, 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 Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The open Area Test site used by Bay Area Compliance Laboratory Corporation to collect radiated electromagnetic disturbance and disturbance voltage measurement data is located in the No. 3 building JingHua Courtyard, Shennanzhong Rd ShenZhen, Guandong 518031, P.R. C.

Test site at Bay Area Compliance Laboratory Corporation has been fully described in reports submitted to the Federal Communication Commission (FCC) and Voluntary Control Council for Interference (VCCI). The details of these reports has been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 11 and December 10, 1997 and Article 8 of the VCCI regulations on December 25, 1997. The facility also complies with the measurement methods and procedures set forth in ANSI C63.4-2001.

The Federal Communications Commission and Voluntary Control Council for Interference has the reports on file and is listed under FCC file 31040/SIT 1400F2 and VCCI Registration No.: C-1298 and R-1234. The test site has been approved by the FCC and VCCI for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratory Corporation is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (NVLAP). The scope of the accreditation covers the FCC Method - 47 CFR Part 15 - Digital Devices, IEC/CISPR 22: 1998, and AS/NZS 3548: Electromagnetic Interference - Limits and Methods of measurement of Information Technology Equipment test methods under NVLAP Lab Code 200167-0.

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 manufacturer, can let the EUT being sending. Normally operation.

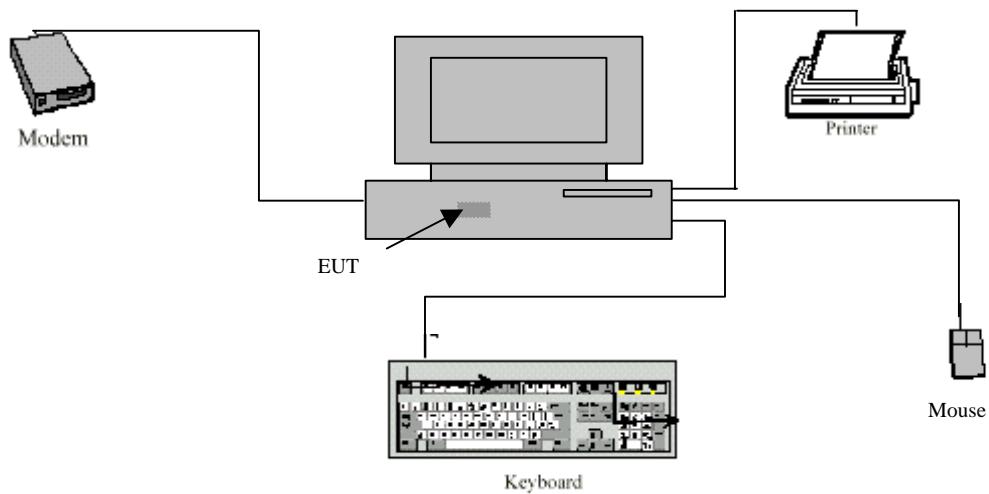
Special Accessories

As shown in section 2.6, interface cable used for compliance testing is shielded as normally supplied by *SHANGHAI JUJO ELECTRONICS CO., LTD*, and its respective support equipment manufacturers.

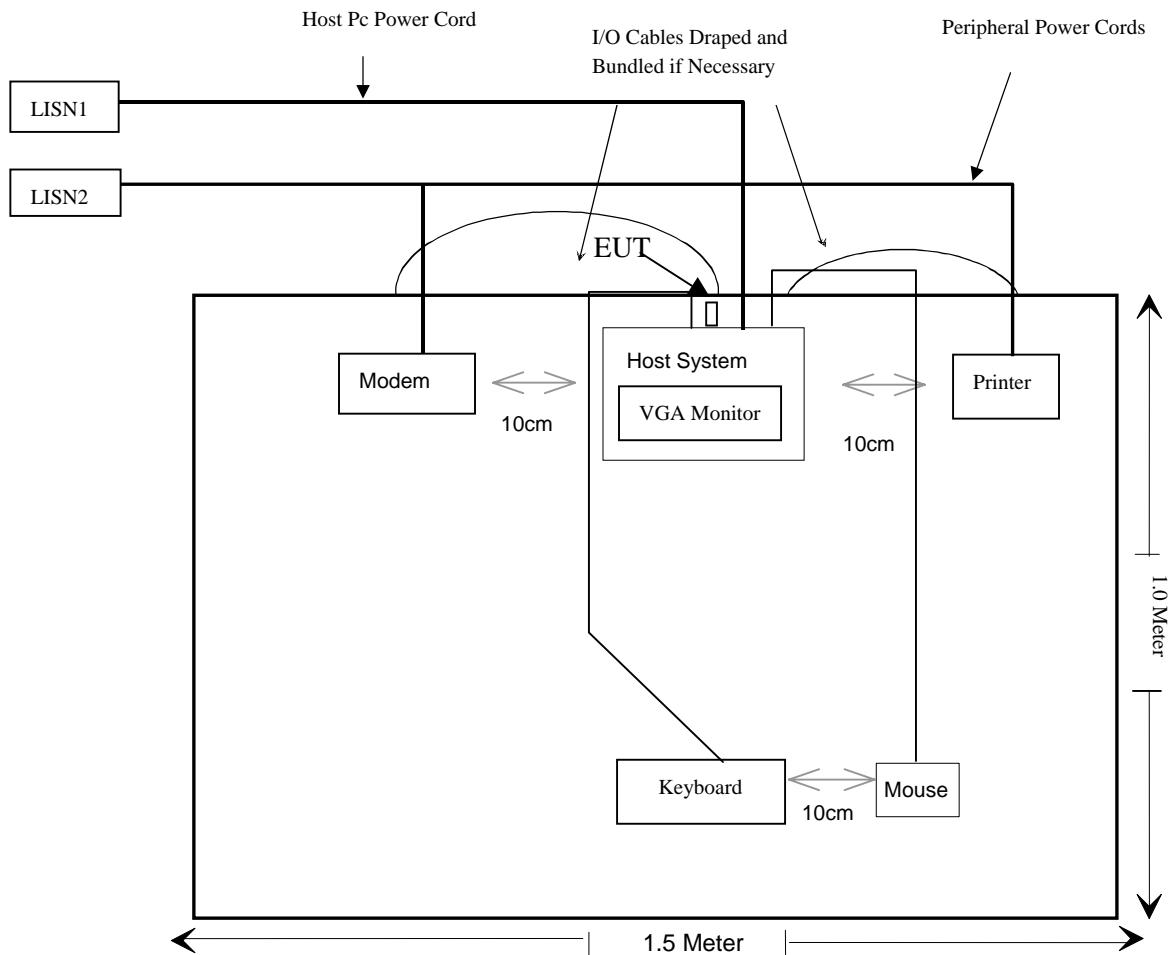
Equipment Modifications

The EUT tested was not modified by BACL.

Configuration of Test System



Test Setup Block Diagram



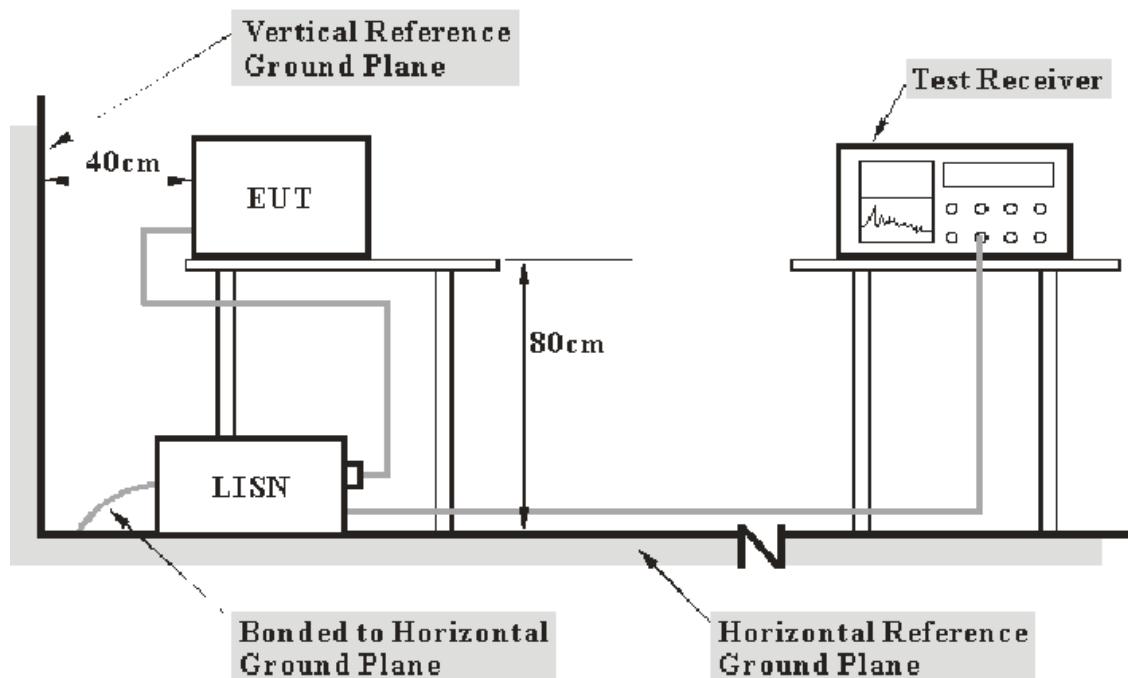
§15.107 - CONDUCTED EMISSIONS

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 BACL 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 C63.4-2001 measurement procedure. The specification used was with the FCC PART 15 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 Host PC was connected to a 120 VAC/ 60Hz power source.

Spectrum Analyzer Setup

The spectrum analyzer was set to investigate the spectrum from 150 kHz to 30Mhz.

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

<i>Frequency Range</i>	<i>RBW</i>	<i>Video B/W</i>
150KHz - 30MHz	10KHz	10KHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
COM Power	LISN	LI-200	12208	2003-10-30	2004-10-29
COM Power	LISN	LI-200	12005	2003-10-30	2004-10-29
HP	Spectrum Analyzer	8568B	2517A01610	2003-10-30	2004-10-29
HP	Spectrum Analyzer Display Unit	8568B	2517A10039	2003-10-30	2004-10-29
HP	Quasi-Peak Adapter	8565A	3107A01572	2003-10-30	2004-10-29
R/S	Spectrum Analyzer	FSEM	849720/019	2003-10-30	2004-10-29
R/S	Spectrum Analyzer	FSEM	849720/019	2003-10-30	2004-10-29
FLUKE	True RMS Multimeter	187	78540402	2004-3-23	2005-3-22

* **Statement of Traceability:** BACL Corp. certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the host PC system power cord was connected to the outlet of the first LISN, with the monitor and all other support equipment power cords 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 detection mode.

Test Data

Date of Test : March 25-2004 Temperature : 25°C
 EUT : HARDKEY/EG PRO Humidity : 70%
 M/N : USB KEY 8K Operating Mode : Running
 S/N : 040334 Test Engineer: William chen

LINE CONDUCTED EMISSIONS				FCC PART 15 B	
Frequency MHz	Amplitude dB μ V	Detector QP/AV/Peak	Phase Line/Neutral	Limit dB μ V	Margin dB
0.69	42.6	AV	Neutral	46	-3.4
0.69	52.1	QP	Neutral	56	-3.9
0.87	35.8	AV	Line	46	-10.2
0.87	43.8	QP	Line	56	-12.2
11.64	37.6	AV	Line	50	-12.4
5.56	34.5	AV	Line	50	-15.6
5.71	33.5	AV	Neutral	50	-16.5
11.64	33.5	AV	Neutral	50	-16.5
11.64	42.5	QP	Line	60	-17.5
5.56	39.9	QP	Line	60	-20.1
5.71	38.5	QP	Neutral	60	-21.5
11.64	38.4	QP	Neutral	60	-21.6

Date of Test : March 25-2004 Temperature : 25°C
 EUT : HARDKEY/EG PRO Humidity : 70%
 M/N : USB KEY 1K Operating Mode : Running
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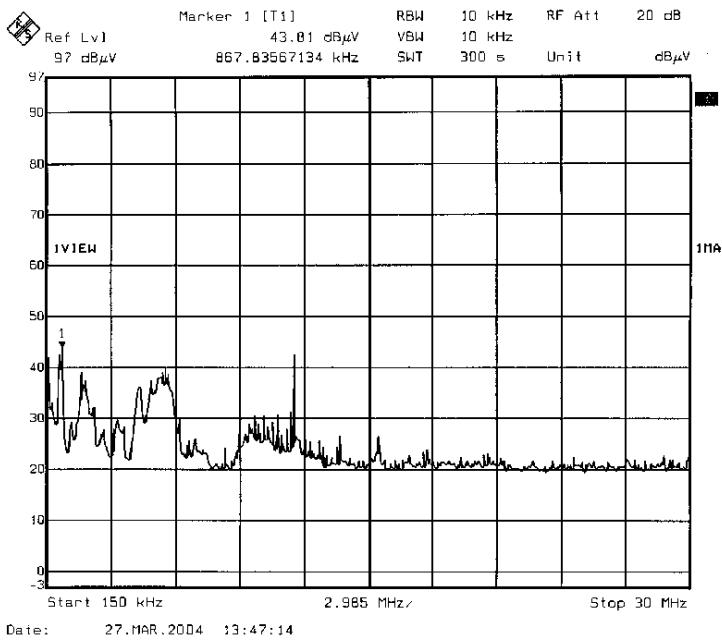
LINE CONDUCTED EMISSIONS				FCC PART 15 B	
Frequency MHz	Amplitude dB μ V	Detector QP/AV/Peak	Phase Line/Neutral	Limit dB μ V	Margin dB
2.42	41.8	AV	Line	46	-4.2
0.16	50.0	AV	Line	55.46	-5.5
0.16	59.8	QP	Line	65.46	-5.7
0.15	50.2	AV	Neutral	56	-5.8
0.15	59.2	QP	Neutral	66	-6.8
9.73	42.4	AV	Neutral	50	-7.6
2.42	48.3	QP	Line	56	-7.7
6.50	51.6	QP	Line	60	-8.4
11.78	41.5	AV	Neutral	50	-8.5
6.50	40.4	AV	Line	50	-9.6
9.73	50.3	QP	Neutral	60	-9.7
11.78	48.9	QP	Neutral	60	-11.1

Test Result: Pass**Plot(s) of Test Data**

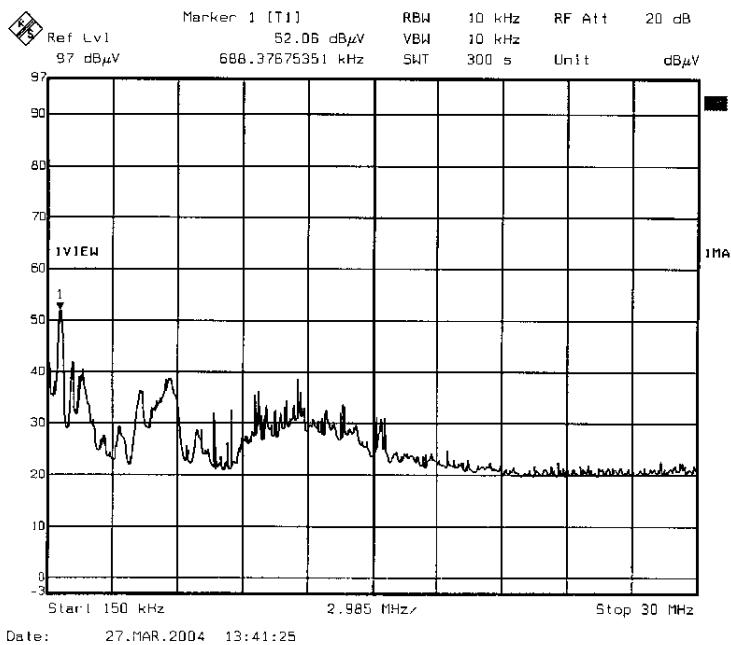
Plot(s) of Test Data is presented hereinafter as reference.

USB Key 8K

Line:

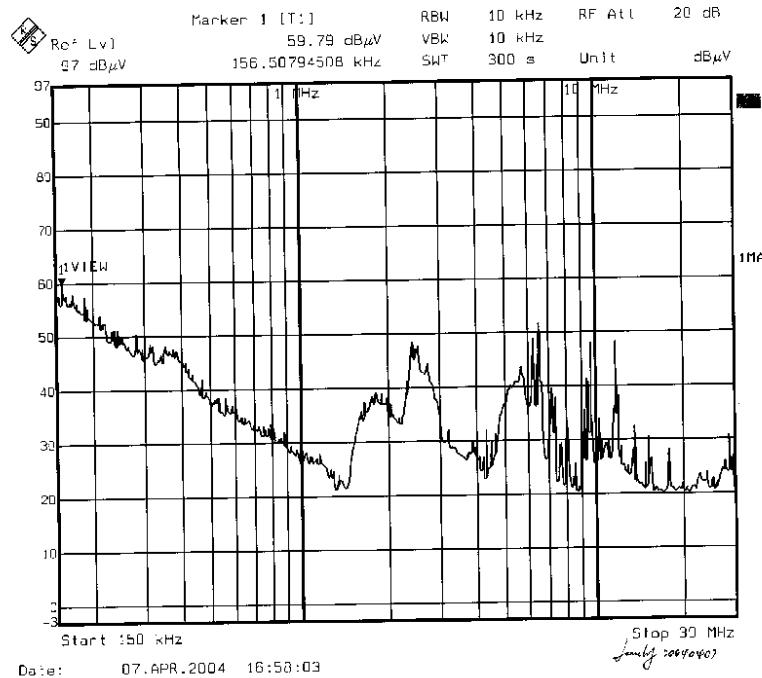


Neutral:

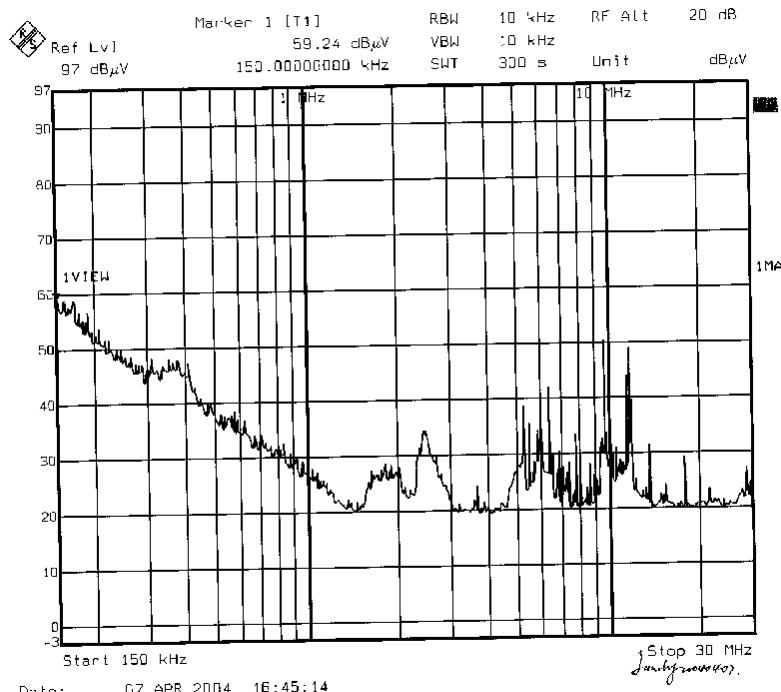


USB Key 1K

Line:



Neutral:



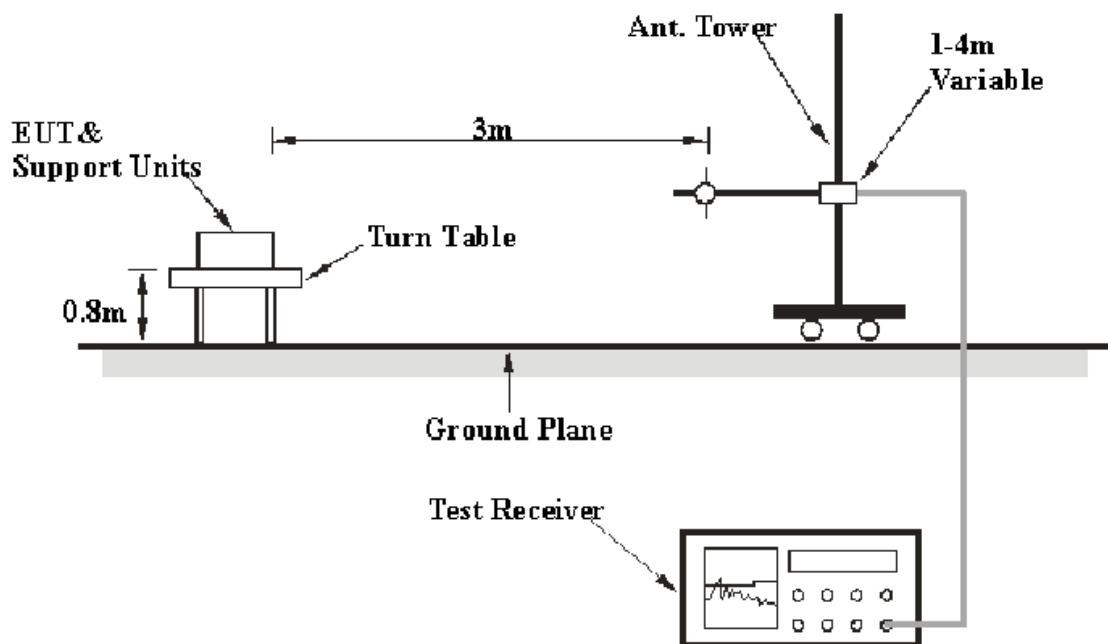
§15.109 - RADIATED EMISSION

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 BACL is ± 4.0 dB.

EUT Setup



The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the ANSI C63.4-2001. The specification used was the FCC PART 15 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 Host PC was connected to a 120 VAC/ 60Hz power source.

Spectrum Analyzer Setup

The system was investigated from 30MHz to 1000MHz.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

<u>Frequency Range</u>	<u>RBW</u>	<u>Video B/W</u>
30 – 1000MHz	100KHz	100KHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R/S	Spectrum Analyzer	FSEM	849720/019	2003-10-30	2004-10-29
HP	Amplifier	8447D	2944A09795	2003-8-5	2004-8-4
ETS	Log Periodic Antenna	3146	9603-4421	2003-8-5	2004-8-4
ETS	Biconical Antenna	3110B	3360	2003-8-5	2004-8-4
FLUKE	True RMS Multimeter	187	78540402	2004-3-24	2005-3-23
HP	Amplifier (1-26.5GHz)	8449B	3147A00400	2003-11-5	2004-11-4
A.H.System	Horn Antenna (700MHz-18GHz)	SAS-200/571	261	2003-11-5	2004-11-4
YOKOROWA	Coaxial Cable 1#	N/A	NO: 001	2003-8-5	2004-8-4
YOKOROWA	Coaxial Cable 1#	N/A	NO: 002	2003-8-5	2004-8-4

* **Statement of Traceability:** **BACL Corp.** certifies that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the power cord of the host system and all support equipment were connected to the AC floor outlet.

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

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

Corrected Amplitude & Margin Calculation

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

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

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB μ V means the emission is 7dB μ V 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 Data

Date of Test :	March 25-2004	Temperature :	25°C
EUT :	HARDKEY/EG PRO	Humidity :	70%
M/N :	USB KEY 8K	Operating Mode :	Running
S/N :	040334	Test Engineer:	William chen

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15 B	
Frequency MHz	Ampl. dB μ V/m		Angle Degree	Height Meter	Polar H/ V	Antenna dB μ V/m	Cable dB		Limit dB μ V/m	Margin dB
84	51.49	45	1.0	v	9.6	0.6	25	36.7	40	-3.3
131.99	50.89	270	1.0	v	12.6	1.0	25	39.5	43.5	-4.0
156	50.49	60	1.0	h	13.0	0.7	25	39.2	43.5	-4.3
120.01	49.79	60	1.2	v	12.1	1.2	25	38.1	43.5	-5.4
107.99	49.17	180	1.2	h	11.4	1.2	25	36.8	43.5	-6.7
156.01	47.59	45	1.2	v	13.0	0.7	25	36.3	43.5	-7.2
179.6	46.15	45	1.2	h	13.4	0.9	25	35.5	43.5	-8.1
179.01	45.59	90	1.2	v	13.4	0.9	25	34.9	43.5	-8.6
120.02	46.53	45	1.0	h	12.1	1.2	25	34.8	43.5	-8.7
198.02	44.19	180	1.2	v	14.4	1.2	25	34.8	43.5	-8.7
84.6	45.69	45	1.0	h	9.6	0.6	25	30.9	40	-9.1
174.03	42.83	180	1.2	h	13.3	0.9	25	32.0	43.5	-11.5

Date of Test : March 25-2004 Temperature : 25°C
 EUT : HARDKEY/EG PRO Humidity : 70%
 M/N : USB KEY 1K Operating Mode : Running
 S/N : 040334 Test Engineer: William chen

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC PART 15 B	
Frequency MHz	Ampl. dB μ V/m		Angle Degree	Height Meter	Polar H/V	Antenna dB μ V/m	Cable dB		Corr. Ampl. dB μ V/m	Limit dB μ V/m
156	50.11	60	1.0	v	13.0	0.7	25	38.8	43.5	-4.7
131.99	50.1	180	1.2	h	12.6	1.0	25	38.7	43.5	-4.8
84	49.36	45	1.2	v	9.6	0.6	25	34.6	40	-5.4
107.99	49.03	180	1.2	h	11.4	1.2	25	36.6	43.5	-6.9
156.01	47.77	270	1.0	h	13.0	0.7	25	36.5	43.5	-7.0
198.02	45.61	90	1.2	h	14.4	1.2	25	36.2	43.5	-7.3
120.01	47.54	60	1.0	v	12.1	1.2	25	35.8	43.5	-7.7
84.6	46.26	45	1.0	h	9.6	0.6	25	31.5	40	-8.5
120.02	46.28	45	1.0	h	12.1	1.2	25	34.6	43.5	-8.9
179.6	45.26	45	1.2	v	13.4	0.9	25	34.6	43.5	-8.9
179.01	44.83	45	1.2	v	13.4	0.9	25	34.1	43.5	-9.4
174.03	43.79	180	1.2	v	13.3	0.9	25	33.0	43.5	-10.5

Test Result: Pass