INTERNATIONAL STANDARDS LABORATORY

No. 65, Ku Dai Keng St., Hsichih, Taipei 221, R.O. C. Tel: 886-2-2646-2550 FAX: 886-2-26464641
No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd. Lung-Tan Hsiang,
Tao Yuan County 325, Taiwan, R.O.C. Tel: 886-3-407-1718 FAX:886-3-407-1738

Certificate

Test Report No.: ISL-05HE125FB
Issue Date: 2005/07/28

Product Name:	Keyboard
Model:	**5107A**
Responsible Party	**BEHAVIOR TECH COMPUTER CORP.**
Address:	2F,51,Tung Hsing Rd., Taipei 110 Taiwan, R. O. C.
Contact Person:	Authur Chen/Input Device Division
FCC Rule Part(s):	**FCC Rules Part 15 Subpart B Class B** **ANSI C63.4-2003** **ANSI C63.4-2003**

We, **International Standards Laboratory**, certify that

The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (see Test Report if any modifications were made for compliance).

I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

We certify that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988.21 U.S.C. 853(a)

NVLAP Lab. Code: 200234-0

Eddy Hsiung

Eddy Hsiung/Director
International Standards Laboratory

TEST REPORT

FOR

FCC PART 15 Subpart B

of

Product Name

Keyboard

Model

5107A

Applied by:

BEHAVIOR TECH COMPUTER CORP.
2F,51,Tung Hsing Rd.,
Taipei 110
Taiwan, R. O. C.

Test Performed by:
International Standards Laboratory

(NVLAP Lab. Code: 200234-0)

(V) Hsichih LAB	Lung-Tan LAB
Site Registration No.: (NVLAP Lab. Code: 200234-0)	**Site Registration No.:** (NVLAP Lab. Code: 200234-0)
No. 65, Ku Dai Keng St.	No. 120, Lane 180, San Ho Tsuen, Hsin Ho Rd.
Hsichih, Taipei Hsien 22117	Lung-Tan Hsiang, Tao Yuan County 325
Taiwan, R.O.C.	Taiwan, R.O.C
Tel:(02)2646-2550	Tel:(03)407-1718
Fax:(02)2646-4641	Fax:(03)407-1738

Contents of Report

1. General

1.1 Certification of Accuracy of Test Data

Standards:	ANSI C63.4-2003, CFR 47 Part 15 Subpart B Section 15.107 and 15.109 Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 4: 2004
Equipment Tested:	Keyboard
Model:	5107A
Applied by	BEHAVIOR TECH COMPUTER CORP.
Sample received Date:	2005/07/25
Final test Date :	refer to the date of test data
Test Result	**PASS**
Test Engineer:	David Y.Y. Wu

All the tests in this report have been performed and recorded in accordance with the standards described above and performed by an independent electromagnetic compatibility consultant, International Standards Laboratory.

The test results contained in this report accurately represent the radiated and power line conducted electromagnetic emissions generated by sample equipment under test at the time of the test.

The sample equipment tested as described in this report is in compliance with the limits of above standards.

Approve & Signature

Eddy Hsiung/Director

Test results given in this report apply only to the specific sample(s) tested under stated test conditions. This report shall not be reproduced other than in full without the explicit written consent of ISL. This report totally contains 29 pages, including 1 cover page , 1 contents page, and 27 pages for the test description. This report must not be use to claim product endorsement by NVLAP or any agency of the U.S. Government.

This test data shown below is traceable to NIST or national or international standard. International Standards Laboratory certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 853(a).

1.2 Applicant Information

Applicant: BEHAVIOR TECH COMPUTER CORP.
2F,51,Tung Hsing Rd.,
Taipei 110
Taiwan, R. O. C.

1.3 Operation Environment

Test Site: OATS 01; Conduction 01

Test Distance 10M

Temperature refer to each site test data
Humidity: refer to each site test data

input power: Conduction input power: AC 110 V / 60 Hz
Radiation input power: AC 110 V / 60 Hz

2. Powerline Conducted Emissions

2.1 Configuration and Procedure

2.1.1 EUT Configuration

The EUT was set up on the non-conductive table that is 1.0 by 1.5 meter, 80cm above ground. The wall was 40cm to the rear of the EUT.

Power to the EUT was provided through the LISN. The impedance vs. frequency characteristic of the LISN is complied with the limit of standards used.

Both lines (neutral and hot) were connected to the LISN in series at testing. A coaxial-type connector which provides one 50 ohms impedance termination was connected to the test instrument. The excess length of the power cord was folded back and forth at the center of the lead to form a bundle 30cm to 40cm in length.

Any changes made to the configuration or modifications made to EUT during testing, are noted in the following test record.

If EUT has an extra auxiliary AC outlet which can provide power to an external monitor, all measurements will be made with the monitor power from EUT-mounted AC outlet and then from floor-mounted AC outlet.

2.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The main power line conducted EMI tests were run on both hot and neutral conductors of the power cord and the results were recorded. The effect of varying the position of the interface cables has been investigated to find the configuration that produces maximum emission.

At the frequencies where the peak values of the emissions were higher than 6dß below the applicable limits, the emissions were also measured with the quasi-peak detectors. At the frequencies where the quasi-peak values of the emissions were higher than 6dß below the applicable average limits, the emissions were also measured with the average detectors.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

2.1.3 EMI Receiver/Spectrum Analyzer Configuration (for the frequencies tested)

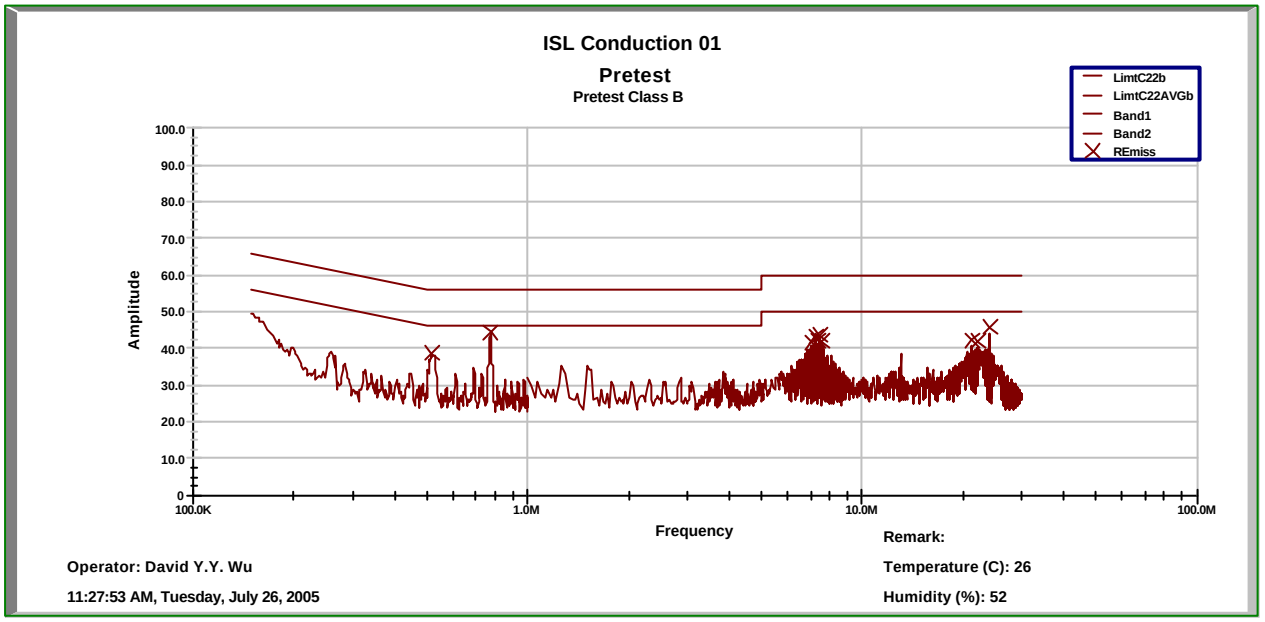
Frequency Range:	150KHz~30MHz
Detector Function:	Quasi-Peak / Average Mode
Resolution Bandwidth:	9KHz

2.2 Conduction Test Data: Configuration 1

Table 2.2.1 Power Line Conducted Emissions (Hot)

Operator: David Y.Y. Wu
Temperature (C): 26
11:28:38 AM, Tuesday, July 26, 2005 Humidity (%): 52

Frequency	LISN LOSS	Cable Loss	QP Corrct.	QP Limit	QP Margin	AVE Corrct.	AVE Limit	AVE Margin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.517625	0.10	0.30	38.75	56.000	-17.25	38.75	46.00	-7.25
0.772625	0.10	0.38	44.57	56.000	-11.43	44.57	46.00	-1.43
7.04167	0.30	0.78	42.13	60.000	-17.87	42.13	50.00	-7.87
7.28333	0.31	0.76	43.81	60.000	-16.19	43.81	50.00	-6.19
7.38	0.31	0.76	42.65	60.000	-17.35	42.65	50.00	-7.35
7.47667	0.32	0.75	44.09	60.000	-15.91	44.09	50.00	-5.91
7.57333	0.32	0.75	42.29	60.000	-17.71	42.29	50.00	-7.71
21.3242	0.95	0.89	43.25	60.000	-16.75	43.25	50.00	-6.75
22.0975	0.98	0.90	43.11	60.000	-16.89	43.11	50.00	-6.89
24.0067	1.06	0.94	47.02	60.000	-12.98	47.02	50.00	-2.98



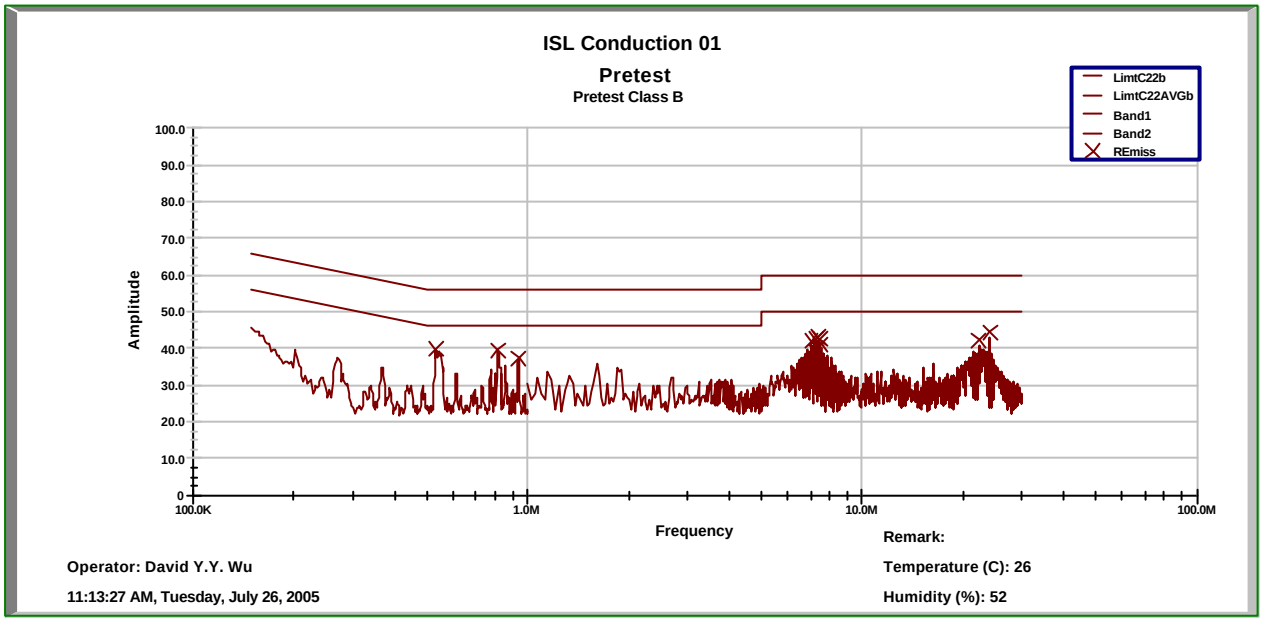
* Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit

Note: Peak receiver was used and the result complied with QP and AVE Limits.

Table 2.2.2 Power Line Conducted Emissions (Neutral)

Operator: David Y.Y. Wu
Temperature (C): 26
11:13:33 AM, Tuesday, July 26, 2005 Humidity (%): 52

Frequency	LISN Loss	Cable Loss	QP Corrct.	QP Limit	QP Margin	AVE Corrct.	AVE Limit	AVE Margin
MHz	(dB)	(dB)	Amp.(dBuV)	(dBuV)	(dB)	Amp.(dBuV)	(dBuV)	(dB)
0.530375	0.10	0.31	39.86	56.000	-16.139	39.86	46.00	-6.14
0.815125	0.10	0.40	39.62	56.000	-16.384	39.62	46.00	-6.38
0.938375	0.10	0.43	37.35	56.000	-18.647	37.35	46.00	-8.65
7.04167	0.25	0.78	42.25	60.000	-17.753	42.25	50.00	-7.75
7.28333	0.25	0.76	42.89	60.000	-17.108	42.89	50.00	-7.11
7.38	0.26	0.76	43.26	60.000	-16.740	43.26	50.00	-6.74
7.47667	0.26	0.75	42.75	60.000	-17.252	42.75	50.00	-7.25
7.525	0.26	0.75	41.31	60.000	-18.693	41.31	50.00	-8.69
22.3875	0.65	0.91	42.71	60.000	-17.294	42.71	50.00	-7.29
24.0067	0.68	0.94	45.07	60.000	-14.929	45.07	50.00	-4.93



* Note:
Margin = Corrected Amplitude - Limit
Corrected Amplitude = Receiver Reading + LISN Loss + Cable Loss
A margin of -8dB means that the emission is 8dB below the limit

Note: Peak receiver was used and the result complied with QP and AVE Limits.

3. Open Field Radiated Emissions

3.1 Configuration and Procedure

3.1.1 EUT Configuration

The equipment under test was set up on a non-conductive table 80cm above ground, on a 10 meter open field or 10 meter chamber. The excess length of the power cord was folded back and forth at the center of the lead to form a bundle 30cm to 40cm in length.

Any changes made to the configuration, or modifications made to the EUT, during testing are noted in the following test record.

If EUT has an extra auxiliary AC outlet which can provide power to an external monitor, all measurements will be made with the monitor power from EUT-mounted AC outlet and then from floor-mounted AC outlet.

3.1.2 Test Procedure

The system was set up as described above, with the EMI diagnostic software running. The maximum emission was measured by varying the height of antenna and then by rotating the turntable. Both polarization of antenna, horizontal and vertical, were measured.

The highest emissions between 30 MHz to 1000 MHz were analyzed in details by operating the spectrum analyzer and/or EMI receiver in quasi-peak mode to determine the precise amplitude of the emissions. While doing so, the interconnecting cables and major parts of the system were moved around, the antenna height was varied between one and four meters, its polarization was varied between vertical and horizontal, and the turntable was slowly rotated, to maximize the emission. The highest emissions of frequency higher than 1000 MHz was analyzed in peak mode and/or average mode to determine the precise amplitude of the emission.

3.1.3 Spectrum Analyzer Configuration (for the frequencies tested)

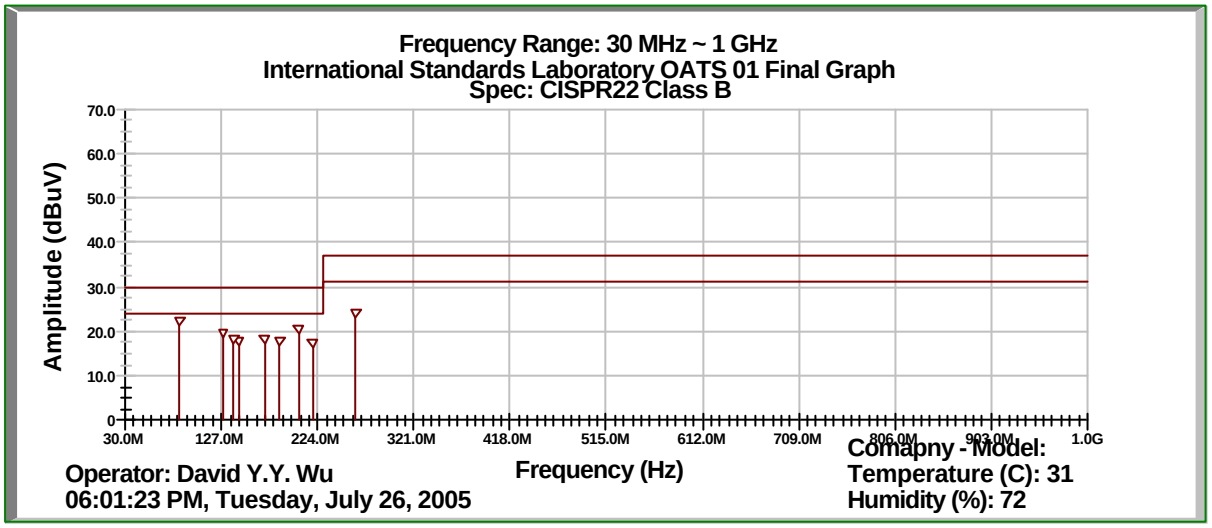
Frequency Range:	30MHz--1000MHz
Detector Function:	Quasi-Peak Mode
Resolution Bandwidth:	120KHz
Frequency Range:	Above 1000Mhz
Detector Function:	Peak/Average Mode
Resolution Bandwidth:	1MHz

3.2 Radiation Test Data: Configuration 1

Table 3.2.1 Radiated Emissions (Horizontal)

Operator: David Y.Y. Wu
Temperature (C): 31
06:01:21 PM, Tuesday, July 26, 2005 Humidity (%): 72

Frequency	Rx Amp.	Ant Fact	Cb Loss	PreAmp.	Corrct. Emi.	Limit	Margin*	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	Gain (dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)
85.225	12.74	7.89	1.61	0.00	22.24	30.00	-7.76	400	345
128.871	6.34	11.33	2.03	0.00	19.70	30.00	-10.30	400	280
139.58	5.54	10.73	2.13	0.00	18.39	30.00	-11.61	400	333
144.01	5.41	10.34	2.15	0.00	17.90	30.00	-12.10	400	116
170.501	7.13	8.69	2.37	0.00	18.20	30.00	-11.80	400	67
186.13	6.78	8.60	2.46	0.00	17.84	30.00	-12.16	400	92
204.42	8.94	8.77	2.64	0.00	20.35	30.00	-9.65	400	188
218.91	6.17	8.42	2.78	0.00	17.37	30.00	-12.63	400	331
262.56	7.82	13.35	3.09	0.00	24.26	37.00	-12.74	400	147

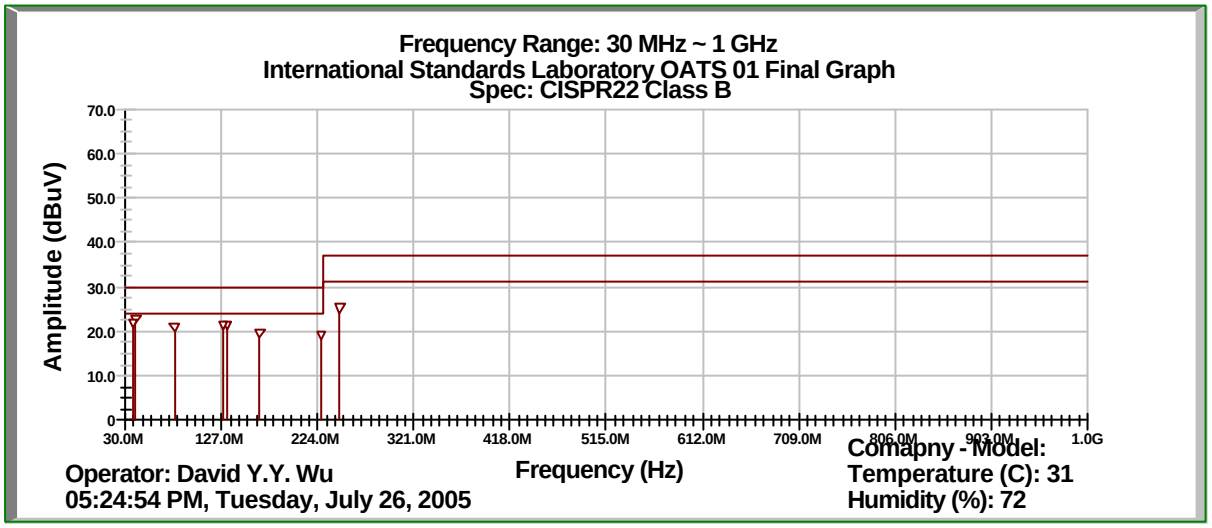


* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

Table 3.2.1 Radiated Emissions (Vertical)

Operator: David Y.Y. Wu
Temperature (C): 31
05:24:52 PM, Tuesday, July 26, 2005 Humidity (%): 72

Frequency	Rx Amp.	Ant Fact	Cb Loss	PreAmp.	Corrct. Emi.	Limit	Margin*	Ant.Pos.	TablePos.
MHz	(dBuV)	(dB/m)	(dB)	Gain (dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)
37.752	5.69	14.94	1.10	0.00	21.73	30.00	-8.27	100	109
40.56	8.55	13.18	1.14	0.00	22.87	30.00	-7.13	100	111
79.421	12.34	6.91	1.54	0.00	20.80	30.00	-9.20	100	266
128.72	8.16	11.34	2.02	0.00	21.52	30.00	-8.48	100	334
132.72	8.38	11.14	2.05	0.00	21.57	30.00	-8.43	100	249
165.661	8.39	8.83	2.34	0.00	19.56	30.00	-10.44	100	88
227.682	7.55	8.94	2.82	0.00	19.31	30.00	-10.69	100	219
246.12	10.88	11.40	2.97	0.00	25.25	37.00	-11.75	125	115



* Note:
Margin = Corrected Amplitude – Limit
Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain
A margin of -8dB means that the emission is 8dB below the limit
BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz
Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

4. Appendix

4.1 Appendix A: Warning Labels

Label Requirements

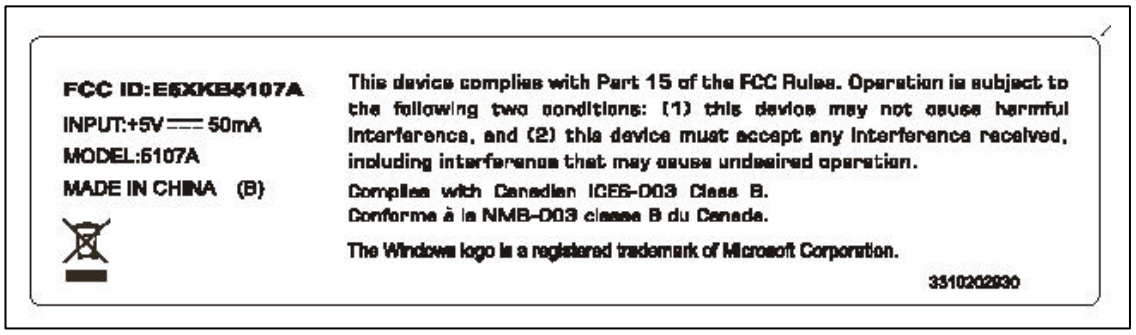
Label Requirements

A Class B digital device subject to FCC shall carry a label which includes the following statement:

*** * * W A R N I N G * * ***

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The sample label shown shall be permanently affixed at a conspicuous location on the device and be readily visible to the user at the time of purchase.



4.2 Appendix B: Warning Statement

Statement Requirements

The operators manual for a Class B digital device shall contain the following statements or their equivalent:

*** * * W A R N I N G * * ***

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equivalent.

*** * * * * * * * ***

If the EUT was tested with special shielded cables the operators manual for such product shall also contain the following statements or their equivalent:

Shielded interface cables and/or AC power cord, if any, must be used in order to comply with the emission limits.

4.3 Appendix C: Measurement Procedure for Powerline Conducted Emissions

The measurements are performed in a 3.5m x 3.4m x 2.5m shielded room, which referred as Conduction 01 test site, or a 3m x 3m x 2.3m test site, which referred as Conduction 02 test site. The EUT was placed on non-conduction 1.0m x 1.5m table, which is 0.8 meters above an earth-grounded.

Power to the EUT was provided through the LISN which has the Impedance (50ohm/50uH) vs. Frequency Characteristic in accordance with the standard. Power to the LISNs were filtered to eliminate ambient signal interference and these filters were bonded to the ground plane. Peripheral equipment required to provide a functional system (support equipment) for EUT testing was powered from the second LISN through a ganged, metal power outlet box which is bonded to the ground plane at the LISN.

If the EUT is supplied with a flexible power cord, the power cord length in excess of the distance separating the EUT from the LISN shall be folded back and forth at the center of the lead so as to form a bundle not exceeding 40cm in length. If the EUT is provided with a permanently coiled power cord, bundling of the cord is not required. If the EUT is supplied without a power cord, the EUT shall be connected to the LISN by a power cord of the type specified by the manufacturer which shall not be longer than 1 meter. The excess power cord shall be bundled as described above. If a non-flexible power cord is provided with the EUT, it shall be cut to the length necessary to attach the EUT to the LISN and shall not be bundled.

The interconnecting cables were arranged and moved to get the maximum measurement. Both the line of power cord, hot and neutral, were measured.

The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

4.4 Appendix D: Test Procedure for Radiated Emissions

Preliminary Measurements in the Anechoic Chamber

The radiated emissions are initially measured in the anechoic chamber at a measurement distance of 3 meters. Desktop EUT are placed on a wooden stand 0.8 meter in height. The measurement antenna is 3 meters from the EUT. The test setup in anechoic chamber is the same as open site. The turntable rotated 360?C. The antenna height is varied from 1-2.5m. The primary objective of the radiated measurements in the anechoic chamber is to identify the frequency spectrum in the absence of the electromagnetic environment existing on the open test site. The frequencies can then be pre-selected on the open test site to obtain the corresponding amplitude. The initial scan is made with the spectrum analyzer in automatic sweep mode. The spectrum peaks are then measured manually to determine the exact frequencies.

Measurements on the Open Site or 10m EMC Chamber

The radiated emissions test will then be repeated on the open site or 10m EMC chamber to measure the amplitudes accurately and without the multiple reflections existing in the shielded room. The EUT and support equipment are set up on the turntable of one of 3 or 10 meter open field sites. Desktop EUT are set up on a wooden stand 0.8 meter above the ground.

For the initial measurements, the receiving antenna is varied from 1-4 meter height and is changed in the vertical plane from vertical to horizontal polarization at each frequency. Both reading are recorded with the quasi-peak detector with 120KHz bandwidth. For frequency between 30 MHz and 1000MHz, the reading is recorded with peak detector or quasi-peak detector. For frequency above 1 GHz, the reading is recorded with peak detector or average detector with 1 MHz bandwidth.

At the highest amplitudes observed, the EUT is rotated in the horizontal plane while changing the antenna polarization in the vertical plane to maximize the reading. The interconnecting cables were arranged and moved to get the maximum measurement. Once the maximum reading is obtained, the antenna elevation and polarization will be varied between specified limits to maximize the readings.

4.5 Appendix E: Test Equipment

4.5.1 Test Equipment List

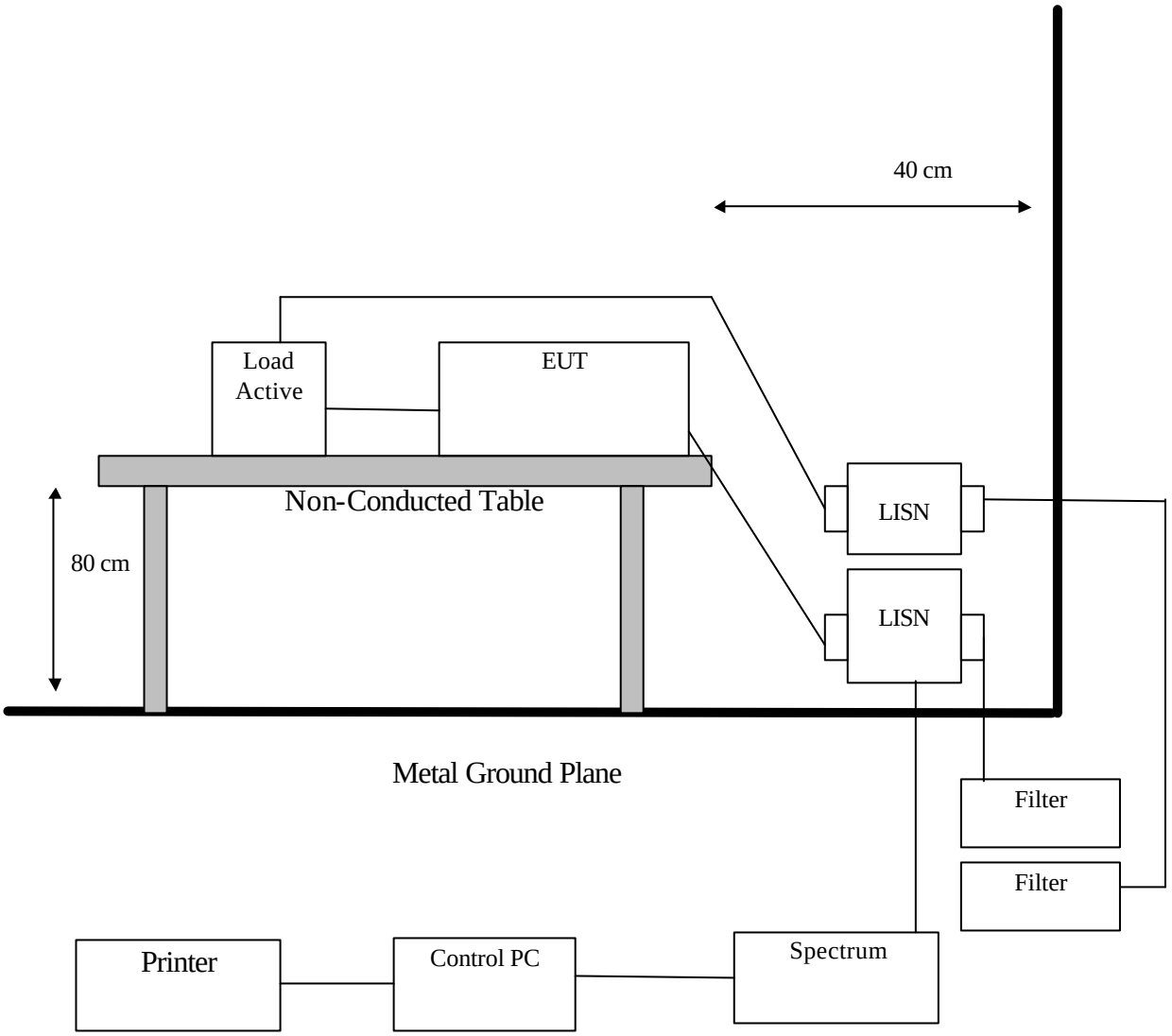
Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction	Coaxial Cable 1F-C1	Harbourindustries	RG400	1F-C1	06/02/2005	06/02/2006
Conduction	Digital Thermo-Hygro Meter Conduc	MicroLife		ISL-C-002	12/04/2004	12/04/2006
Conduction	EMI Receiver 01	R&S	ESMI; rev. 02.80	8491821013	10/14/2004	10/14/2005
Conduction	LISN 02	EMCO	3825/2	1407	06/28/2005	06/28/2006
Conduction	LISN 03	R&S	ESH3-Z5 831.5518.52	828874/010	06/28/2005	06/28/2006
Radiation	BILOG Antenna 01	CHASE	CBL6112	2487	11/05/2004	11/05/2005
Radiation	Coaxial Cable 3F-10M	Belden	RG-8/U	3F-10M	06/02/2005	06/02/2006
Radiation	Coaxial Cable 3F-3M	Harbourindustries	9913	3F-3M	06/02/2005	06/02/2006
Radiation	EMI Receiver 05	AFJ	ER 55CR	55390143234	06/20/2005	06/20/2006
Radiation	Spectrum Analyzer 12	Advantest	R3132	130200208	02/17/2005	02/17/2006
Radiation	Thermo-Hygro Meter OATS 01	CRECER	HD30	ISL-C-001	12/04/2004	12/04/2006
Rad. above 1Ghz	Coaxial Cable CHMB	Harbourindustries	RG 213U	CHMB	06/02/2005	06/02/2006
Rad. above 1Ghz	Horn Antenna 01	EMCO	3115	9504-4462	10/29/2004	10/29/2005
Rad. above 1Ghz	Horn Antenna 03	COM-Power	AH-826	100A	01/31/2005	01/31/2006
Rad. above 1Ghz	Microwave Cable RF07-3	HUBER+SUHNER AG.	Sucoflex 103	42728/3	07/07/2005	07/07/2006
Rad. above 1Ghz	Preamplifier 01	R&S	ESMI-Z7	1045.502	07/07/2005	07/07/2006
Radiation	Signal Generator 01	HP	8656B	2635A04675	08/06/2004	08/06/2005

4.5.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

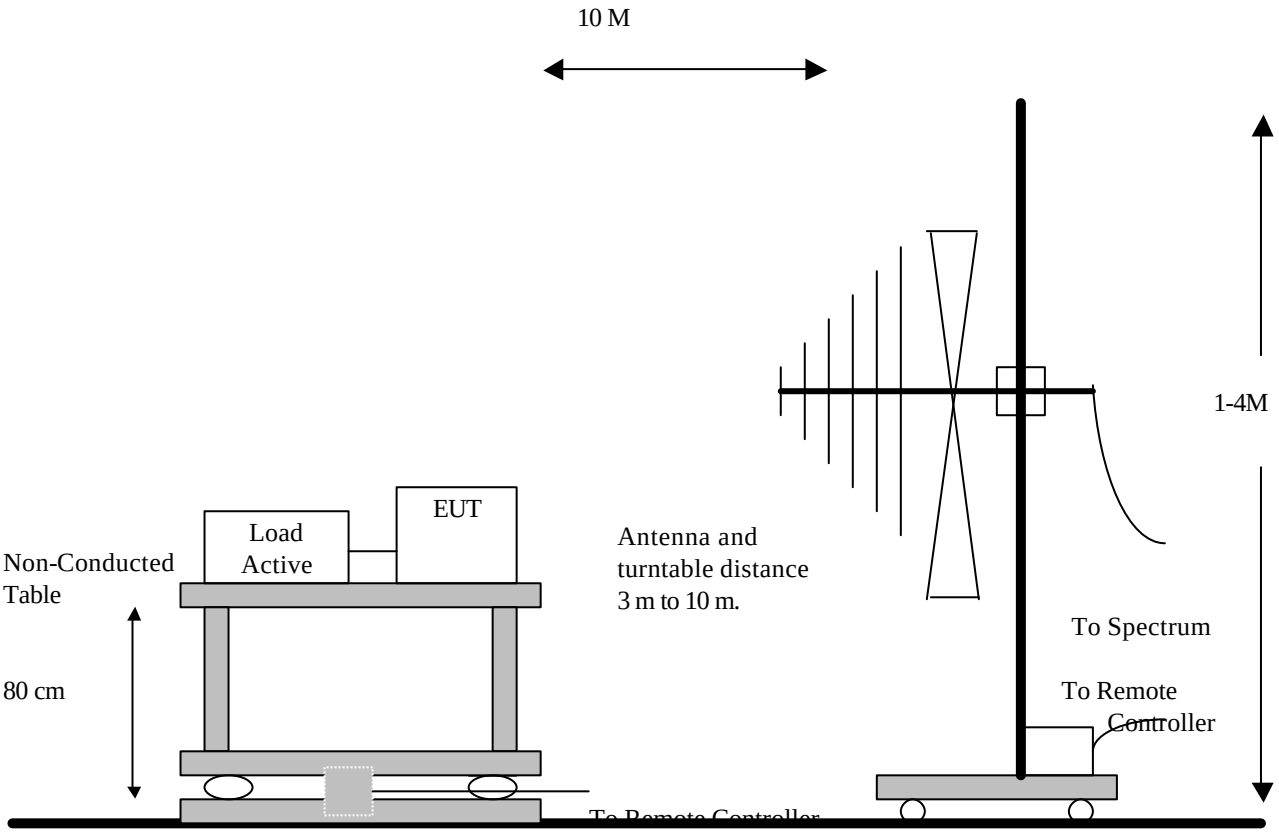
Radiation/Conduction	Filename	Version	Issued Date
Hsichih Conduction	Tile.exe	2.0.P	2/12/2002
Hsichih Radiation	Tile.exe	2.0.P	2/12/2002
Lung_Tan Conduction	Tile.exe	2.3.B	12/30/2003
Lung_Tan Radiation	Tile.exe	2.3.B	12/30/2003

4.6 Appendix F: Layout of EUT and Support Equipment

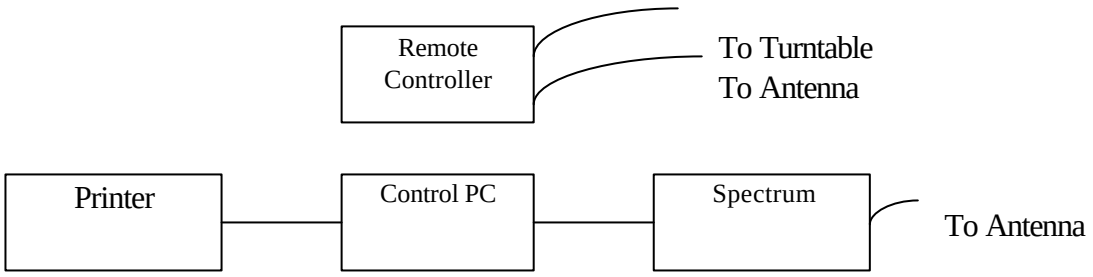
4.6.1 General Conducted Test Configuration



4.6.2 General Radiation Test Configuration



Metal Full Soldered Ground Plane



4.7 Appendix G: Description of Support Equipment

4.7.1 Description of Support Equipment

Support Unit 1.

Description:	HP Printer (for parallel interface port)
Model Number:	C2642E
Serial Number:	N/A
Power Supply Type:	AC Adaptor (HP Model: C2175A)
Power Cord:	Non-shielded, Detachable
Data Cable:	Shielded, Detachable, With Metal Hood
FCC ID:	N/A

Support Unit 2.

Description:	DELL Mouse
Model Number:	M-SAW34
Serial Number:	LZE24108086
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	DZL211029

Support Unit 3.

Description:	Aceex Modem (for serial interface port)
Model Number:	DM1414
Serial Number:	0301000557
Power Supply Type:	Linear, Power Adapter (AC to AC Xfmr, Wall Mounted Type)
Power Cord:	Nonshielded, Without Grounding Pin
FCC ID:	IFAXDM1414

Support Unit 4.

Description:	Acer Monitor
Model:	7377xe
Serial Number:	999027100501700055P644E1 P
Power Supply Type:	Switching
Power Cord:	Nonshielded, Detachable
FCC ID:	(Comply with FCC DOC)

Support Unit 5.

Description:	Personal Computer
Model:	C8-865G
Serial Number:	N/A
Motherboard:	Aopen (Model: MX46-800N)
CPU:	Speed: 100MHz Pentium 4 1.7GHz
Power Supply Type:	AOpen (Model: FSP350-60PN)
Hard Disk Driver:	Seagate (Model: ST380011SA) 80GB
CD-ROM Driver:	BTC (Model: DRW1116IM) 16X
Power Cord:	Non-shielded, Detachable
Keyboard Connector:	one 6-pin
Mouse Connector:	one 6-pin
USB 2.0 Connector:	two 2-pin
Parallel Port:	one 25-pin
Serial Port:	one 9-pin
Microphone Port:	one
Speaker Port:	one
Line In Port:	one
LAN Port:	one 8-pin (10Mbps /100Mbps)
DDR Memory:	256 MB*1

4.7.2 Software for Controlling Support Unit

Test programs exercising various part of EUT were used. The programs were executed as follows:

A. Read and write to the disk drives.
B. Press the "H" font key, Send H pattern to the WordPad file show on the monitor screen.
C. Send H pattern to the parallel port device (Printer).
D. Send H pattern to the serial port device (Modem).
E. Send H pattern to the video port device (Monitor).
F. Repeat the above steps.

	Filename	Issued Date
Monitor	HH.bat	8/20/1991
Modem 1	Hm.bat	8/20/1991
Printer1	Wordpad.exe	11/11/1999
WordPad	WordPad.exe	8/21/2002

4.7.3 I/O Cable Condition of EUT and Support Units

Description	Path	Cable Length	Cable Type	Connector Type
AC Power Cord	110V (~240V) to EUT SPS	1.8M	Nonshielded, Detachable	Plastic Head
Monitor Data Cable	Monitor to PC VGA port	1.6M	Shielded, Un-detachable	Metal Head
Modem Data Cable	Modem to PC COM 1 port	1.5M	Shielded, Detachable	Metal Head
Mouse Data Cable	Mouse to PC Mouse port	1.8M	Shielded, Un-detachable	Metal Head
Printer Data Cable	Printer to PC Parallel port	1.5M	Shielded, Detachable	Metal Head
PS/2 Data Cable	EUT PS/2 Port to Personal Computer PS/2 port	1.5M	Shielded, Detachable	Metal Head

4.8 Appendix H: Description of Equipment Under Test

EUT

Description:	Keyboard
Condition:	Pre-Production
Model:	5107A
Serial Number:	N/A
Power:	From Personal Computer PS/2 port
PS/2 Connector:	one
PS/2 Signal Data Cable:	Shielded, Detachable
Other Function Keys:	Sleep, Shut down, alarm clock

The test configuration is listed below:

Configuration 1:

The EUT inserted into the PS/2 port on Personal Computer.

The major different between there two models number are for different Brand name:

BRAND	MODEL
BTC	5107A
EMPREX	5107A

EMI Noise Source:

Crystal: 4MHz (U1).

EMI Solution:

None..

4.9 Appendix I: Uncertainty of Measurement

The measurement uncertainties mentioned below refer to CISPR 16-4: 2002 Uncertainty in EMC measurements.

Test Site: Conduction 01

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
1	Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	k=1	0.098	k=1	0.098
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.682	k=1	0.341
3	Receiver: Sine wave voltage	Normal	k=2	0.500	k=2	0.250
4	Receiver: Pulse amplitude response	Rectangular	k=1.73	0.500	k=1	0.289
5	Receiver: Pulse repetition rate response	Rectangular	k=1.73	0.500	k=1	0.289
6	Receiver: Noise floor proximity	Normal	k=1.73	0.500	k=1	0.250
7	LISN Loss Calibration	Normal	k=2	1.200	k=1	0.600
8	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
9	Combined Standard Uncertainty Uc(y)	Normal			k=1	1.014
10	**Total Uncertainty @95% minimum Confidence Level**	**Normal**			**k=2**	**2.027**

Measurement Uncertainty Calculations:

Uc (y) = square root ($u_1 (y)^2 + u_2 (y)^2 + \ldots\ldots\ldots + u_n (y)^2$)

U = 2 * Uc (y)

Test Site: OATS01-10M (30M~1GHz)

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
			k	(dB)	k	(dB)
1	Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	1	0.143	1	0.143
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	1	0.821	1	0.821
3	Antenna Factor Calibration	Normal	2	1.400	1	0.700
4	Receiver: Sine wave voltage	Normal	2	0.470	1	0.235
5	Receiver: Pulse amplitude response	Rectangular	1.73	1.600	1	0.925
6	Receiver: Pulse repetition rate response	Rectangular	1.73	0.400	1	0.231
7	Receiver: Noise floor proximity	Normal	2	0.500	1	0.250
8	Mismatch: antenna-receiver	U-shaped	1.5	1.000	1	0.667
9	Antenna: AF freq. Interpolation	Rectangular	1.73	0.300	1	0.173
10	Antenna: Directivity difference	Rectangular	1.73	1.000	1	0.578
11	Antenna: Balance	Rectangular	1.73	0.300	1	0.173
12	Site separation distance	Rectangular	1.73	0.300	1	0.173
13	Cable Loss Calibration	Normal	2	1.000	1	0.500
14	Combined Standard Uncertainty Uc(y)	Normal			1.000	1.825
15	**Total Uncertainty @95% minimum Confidence Level**	**Normal**			**2.000**	**3.650**

Measurement Uncertainty Calculations:

Uc (y) = square root ($u_1 (y)^2 + u_2 (y)^2 + ...+u_n (y)^2$)

U = 2 * Uc (y)

Test Site: OATS01-3M (1GHz~)

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
			k	(dB)	k	(dB)
1	Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	1	0.036	1	0.036
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	1	0.040	1	0.040
3	Antenna Factor Calibration	Normal	2	0.700	1	0.350
4	Receiver: Sine wave voltage	Normal	2	0.500	1	0.250
5	Receiver: Pulse amplitude response	Rectangular	1.73	0.500	1	0.289
6	Receiver: Pulse repetition rate response	Rectangular	1.73	0.500	1	0.289
7	Receiver: Noise floor proximity	Normal	2	0.500	1	0.250
8	Mismatch: antenna-receiver	U-shaped	1.5	1.000	1	0.667
9	Antenna: AF freq. Interpolation	Rectangular	1.73	0.300	1	0.173
10	Antenna: Directivity difference	Rectangular	1.73	1.000	1	0.578
11	Antenna: Balance	Rectangular	1.73	0.300	1	0.173
12	Site separation distance	Rectangular	1.73	0.300	1	0.173
13	Cable Loss Calibration	Normal	2	1.000	1	0.500
14	Combined Standard Uncertainty Uc(y)	Normal			1.000	1.239
15	**Total Uncertainty @95% minimum Confidence Level**	**Normal**			**2.000**	**2.479**

Measurement Uncertainty Calculations:

Uc (y) = square root ($u_1 (y)^2 + u_2 (y)^2 + ...+u_n (y)^2$)

U = 2 * Uc (y)

4.10 Appendix J: Photographs of EUT Configuration Test Set Up

The measurement results along with the appropriate limits for comparison shall be presented in tabular form. If an alternate test method is used, the test report must identify that method and justification for its use shall be provided. Instrumentation, instrument attenuator and bandwidth settings, detector function, EUT arrangements, a sample calculation with all conversion factors and all other pertinent details shall be included along with the measurement results. When automatic scan techniques are used, an explanation of how each emission from the EUT was maximized shall be included in the test report along with the scan rate used to obtain each level.

The justification for selecting a particular EUT configuration and particular length of interface cable to produce maximized emissions must be documented in the test report. Photographs clearly showing the test set-up and interface cable arrangement for the highest radiated and line conducted emission measured shall be included.

The Front View of Highest Conducted Set-up For EUT

The Back View of Highest Conducted Set-up For EUT

The Front View of Highest Radiated Set-up For EUT

The Back View of Highest Radiated Set-up For EUT

4.11 Appendix K: Photographs of EUT

Please refer to the File of **ISL-*05HE125*P**