FCC CLASS B

TEST REPORT

of

Keyboard

Model

6300

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)

Hsichih LAB	(V) Lung-Tan LAB
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Report Number: ISL-04LE123FB **Issue Date: 2004/04/29**

Contents of Report

1. General

1.1 Certification of Accuracy of Test Data

Standards:	ANSI C63.4-2001, CFR 47 Part 15 Subpart B or EN55022:1998/A1:2000 Industry Canada Interference-Causing Equipment Standard ICES-003 Issue 4: 2004
Equipment Tested:	Keyboard
Model/Type/Machine Type:	6300
Applied by	BEHAVIOR TECH COMPUTER CORP.
Sample received Date:	2004/04/21
Final test Date :	refer to the date of test data
Test Engineer:	Angus Chu 2004/04/30 Angus Chu

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

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 34 pages, including 1 cover page , 1 contents page, and 32 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, Taiwan, R. O. C.

1.3 Operation Environment

Test Site:	Chamber 02; Conduction 02	
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 Test Data: Test Mode One

Table 2.2.1 Power Line Conducted Emissions (Hot)

Operator: Angus Chu
Temperature (C): 24
10:32:24 AM, Thursday, April 22, 2004 Humidity (%): 54

Frequency MHz	LISN Loss (dB)	Cable Loss (dB)	QP Corrct. Amp.(dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVE Corrct. Amp.(dBuV)	AVE Limit (dBuV)	AVE Margin (dB)
0.32571	0.10	0.02	42.74	60.98	-18.24	42.48	50.98	-8.50
0.4347	0.11	0.03	40.18	57.87	-17.68	39.74	47.87	-8.12
0.75973	0.16	0.05	35.67	56.00	-20.33	34.84	46.00	-11.16
0.86886	0.18	0.06	37.89	56.00	-18.11	36.86	46.00	-9.14
0.97913	0.20	0.07	35.74	56.00	-20.26	34.87	46.00	-11.13
1.4136	0.38	0.08	33.89	56.00	-22.11	33.40	46.00	-12.60
2.06609	0.20	0.10	35.02	56.00	-20.98	33.89	46.00	-12.11
3.15168	0.26	0.11	33.44	56.00	-22.56	32.10	46.00	-13.90
3.26078	0.26	0.11	33.99	56.00	-22.01	32.90	46.00	-13.10
3.80298	0.29	0.12	34.00	56.00	-22.00	32.45	46.00	-13.55

* 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
Uncertainty of Measurement please to see report page 25

Graph 2.2.1 Power Line Conducted Emissions (Hot)

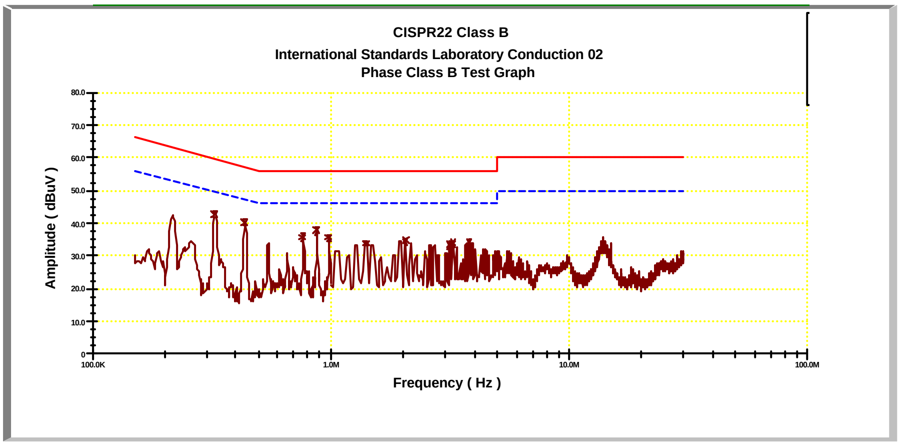


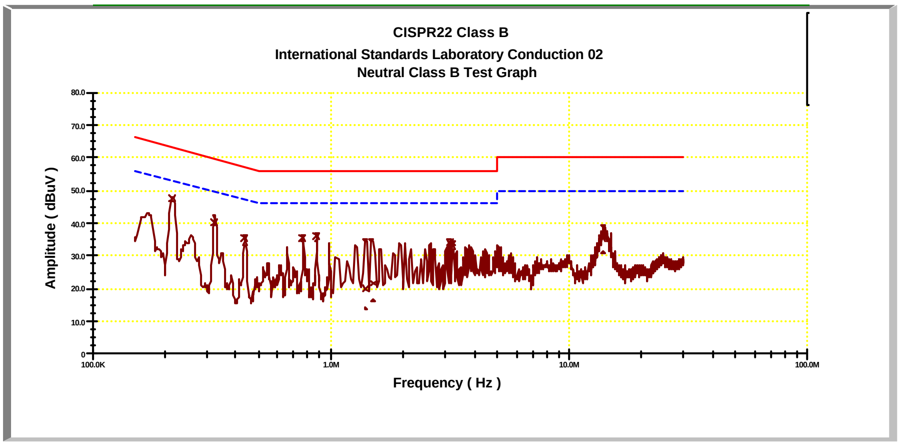
Table 2.2.2 Power Line Conducted Emissions (Neutral)

Operator: Angus Chu
Temperature (C): 24
10:23:24 AM, Thursday, April 22, 2004 Humidity (%): 54

Frequency MHz	LISN Loss (dB)	Cable Loss (dB)	QP Corrct. Amp.(dBuV)	QP Limit (dBuV)	QP Margin (dB)	AVE Corrct. Amp.(dBuV)	AVE Limit (dBuV)	AVE Margin (dB)
0.21716	0.10	0.02	47.50	64.08	-16.58	47.20	54.08	-6.88
0.32433	0.10	0.02	40.29	61.02	-20.73	39.87	51.02	-11.15
0.43475	0.11	0.03	35.42	57.86	-22.44	33.73	47.86	-14.14
0.75973	0.16	0.05	35.48	56.00	-20.52	34.59	46.00	-11.41
0.86848	0.18	0.06	36.23	56.00	-19.77	34.72	46.00	-11.28
1.40272	0.26	0.08	19.92	56.00	-36.08	13.99	46.00	-32.01
1.51266	0.25	0.09	21.60	56.00	-34.40	16.31	46.00	-29.69
3.15068	0.20	0.11	34.05	56.00	-21.95	32.76	46.00	-13.24
3.26041	0.20	0.11	33.88	56.00	-22.12	32.68	46.00	-13.32
13.886	0.38	0.27	35.46	60.00	-24.54	30.90	50.00	-19.10

* 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
Uncertainty of Measurement please to see report page 25

Graph 2.2.2 Power Line Conducted Emissions (Neutral)



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 Test Data:.Test Mode One

Table 3.2.1 Open Field Radiated Emissions (Horizontal)

Operator: Angus
Temperature (C): 23
09:24:42 AM, Monday, April 26, 2004   Humidity (%): 41

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant. Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg)
74.62	8.32	6.15	1.80	0.00	16.26	30.00	-13.74	396.00	300.00
78.5	11.62	6.69	1.86	0.00	20.17	30.00	-9.83	396.00	104.00
82.38	8.73	7.26	1.89	0.00	17.89	30.00	-12.11	396.00	283.00
133.79	3.65	11.16	2.12	0.00	16.92	30.00	-13.08	396.00	137.00
137.67	3.54	10.81	2.18	0.00	16.53	30.00	-13.47	396.00	154.00
161.92	5.90	8.68	2.58	0.00	17.16	30.00	-12.84	396.00	283.00
165.8	5.56	8.64	2.64	0.00	16.84	30.00	-13.16	396.00	267.00
177.44	7.66	8.67	2.63	0.00	18.96	30.00	-11.04	396.00	283.00
181.32	8.62	8.69	2.67	0.00	19.97	30.00	-10.03	396.00	300.00
994.18	2.30	20.87	7.81	0.00	30.98	37.00	-6.02	196.00	122.00

* 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
Uncertainty of Measurement please to see report page 28

Graph 3.2.1 Open Field Radiated Emissions (Horizontal)

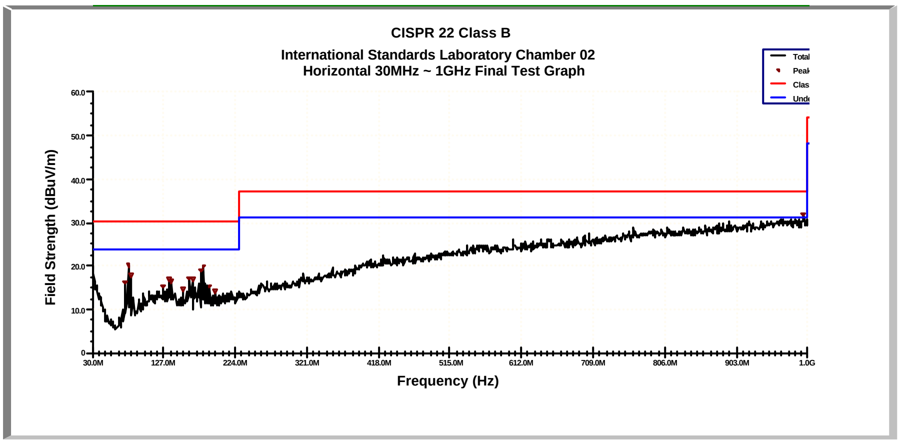


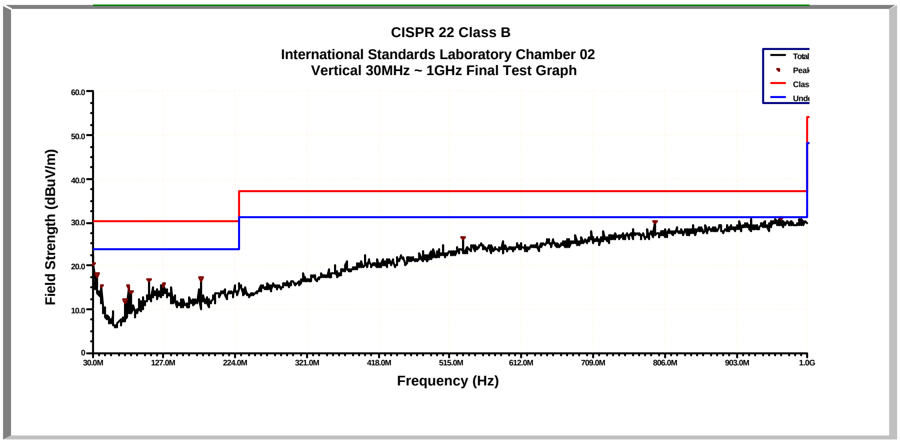
Table 3.2.2 Open Field Radiated Emissions (Vertical)

Operator: Angus
Temperature (C): 23
09:27:46 AM, Monday, April 26, 2004 Humidity (%): 41

Frequency	Rx Amp.	Ant Fact	CableLoss	PreAmpGain	Corrct. Emi.	Limit	Margin	Ant.Pos.	Table Pos.
MHz	(dBuV)	(dB/m)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	(cm)	(deg.)
31.94	2.40	17.07	1.00	0.00	20.47	30.00	-9.53	303.00	235.00
35.82	1.85	14.82	1.09	0.00	17.76	30.00	-12.24	396.00	70.00
42.61	2.91	11.09	1.28	0.00	15.28	30.00	-14.72	203.00	271.00
78.5	6.52	6.69	1.86	0.00	15.06	30.00	-14.94	203.00	92.00
106.63	3.42	11.30	1.93	0.00	16.65	30.00	-13.35	203.00	271.00
127	1.78	11.62	2.05	0.00	15.45	30.00	-14.55	102.00	40.00
177.44	5.52	8.67	2.63	0.00	16.82	30.00	-13.18	102.00	267.00
532.46	3.32	17.94	5.12	0.00	26.38	37.00	-10.62	303.00	235.00
792.42	3.54	19.87	6.70	0.00	30.11	37.00	-6.89	396.00	269.00
964.11	2.61	20.68	7.70	0.00	30.99	37.00	-6.01	303.00	89.00

* 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
Uncertainty of Measurement please to see report page 28

Graph 3.2.2 Open Field Radiated Emissions (Vertical)



4. Appendix

4.1 Appendix A: Warning Labels

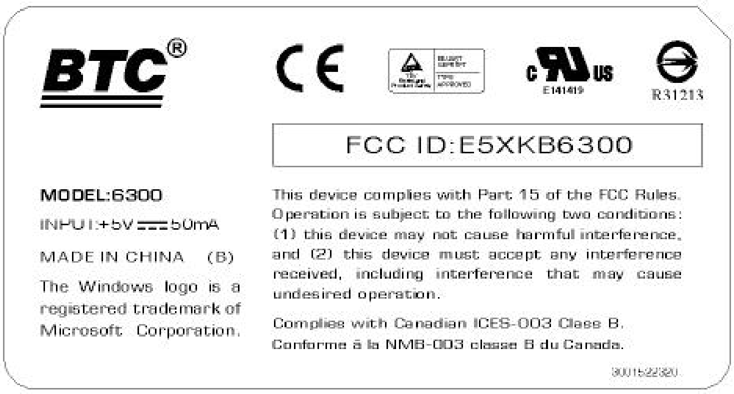
Label Requirements

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	CDN T2 03	FCC Inc.	FCC-801-T2	02066	01/07/2004	01/07/2005
Conduction	CDN T4 04	FCC Inc.	FCC-801-T4	02069	01/07/2004	01/07/2005
Conduction	Coaxial Cable 1F-C2	Harbourindustries	RG400	1F-C2	06/02/2003	06/02/2004
Conduction	Current Probe	Schaffner	SMZ 11	18030	12/30/2003	12/30/2004
Conduction	Digital Hygro-Thermometer Conduct	MicroLife	HT-2126G	ISL-Conduction02	12/04/2002	12/04/2004
Conduction	EMI Receiver 03	HP	85460A	3448A00209	01/08/2004	01/08/2005
Conduction	ISN T4	Schaffner	ISN T400	16593	12/19/2003	12/19/2004
Conduction	ISN T4 02	FCC	F-CMISN-CAT5	02003	12/29/2003	12/29/2004
Conduction	LISN 01	R&S	ESH2-Z5	890485/013	04/30/2003	04/30/2004
Conduction	LISN 04	EMCO	3810/2	9604-1429	12/18/2003	12/18/2004
Radiation	BILOG Antenna 04	Schaffner	CBL6112B	2764	06/03/2003	06/03/2004
Radiation	Coaxial Cable Chmb 02-10M	Belden	RG-8/U	Chmb 02-10M	09/09/2003	09/09/2004
Radiation	Digital Hygro-Thermometer Chmb 02	MicroLife	HT-2126G	Chmb 02	12/04/2002	12/04/2004
Radiation	EMI Receiver 02	HP	85460A	3448A00183	10/02/2003	10/02/2004
Radiation	EMI Receiver 04	AFJ	ER 55CR	55390143233	05/20/2003	05/20/2004
Radiation	Loop Antenna 01	R&S	HFH2-Z2	881056/46	01/20/2004	01/20/2005
Radiation	Microwave Cable Chmb 02 3M	HUBER+SUHNER AG.	Sucoflex 103	42731/3 & 42729/3	03/15/2004	03/15/2005
Radiation	Spectrum Analyzer 13	Advantest	R3132	121200411	02/12/2004	02/12/2005
Rad. Above 1Ghz	BILOG Antenna 07	Schaffner	CBL6112B	2755	12/19/2003	12/19/2006
Rad. Above 1Ghz	Digital Hygro-Thermometer Chmb 05	MicroLife	HT-2126G	Chmb 05	12/04/2002	12/04/2004
Rad. Above 1Ghz	High Pass Filter 01	HEWLETT-PACKARD	84300-80038	001	N/A	N/A
Rad. Above 1Ghz	High Pass Filter 02	HEWLETT-PACKARD	84300-80039	005	N/A	N/A
Rad. Above 1Ghz	Horn Antenna 02	Com-Power	AH-118	10088	02/17/2004	02/17/2005
Rad. Above 1Ghz	Horn Antenna 04	Com-Power	AH-826	081-001	01/07/2004	01/07/2005
Rad. Above 1Ghz	Horn Antenna 05	Com-Power	AH-640	100A	09/18/2003	09/18/2005

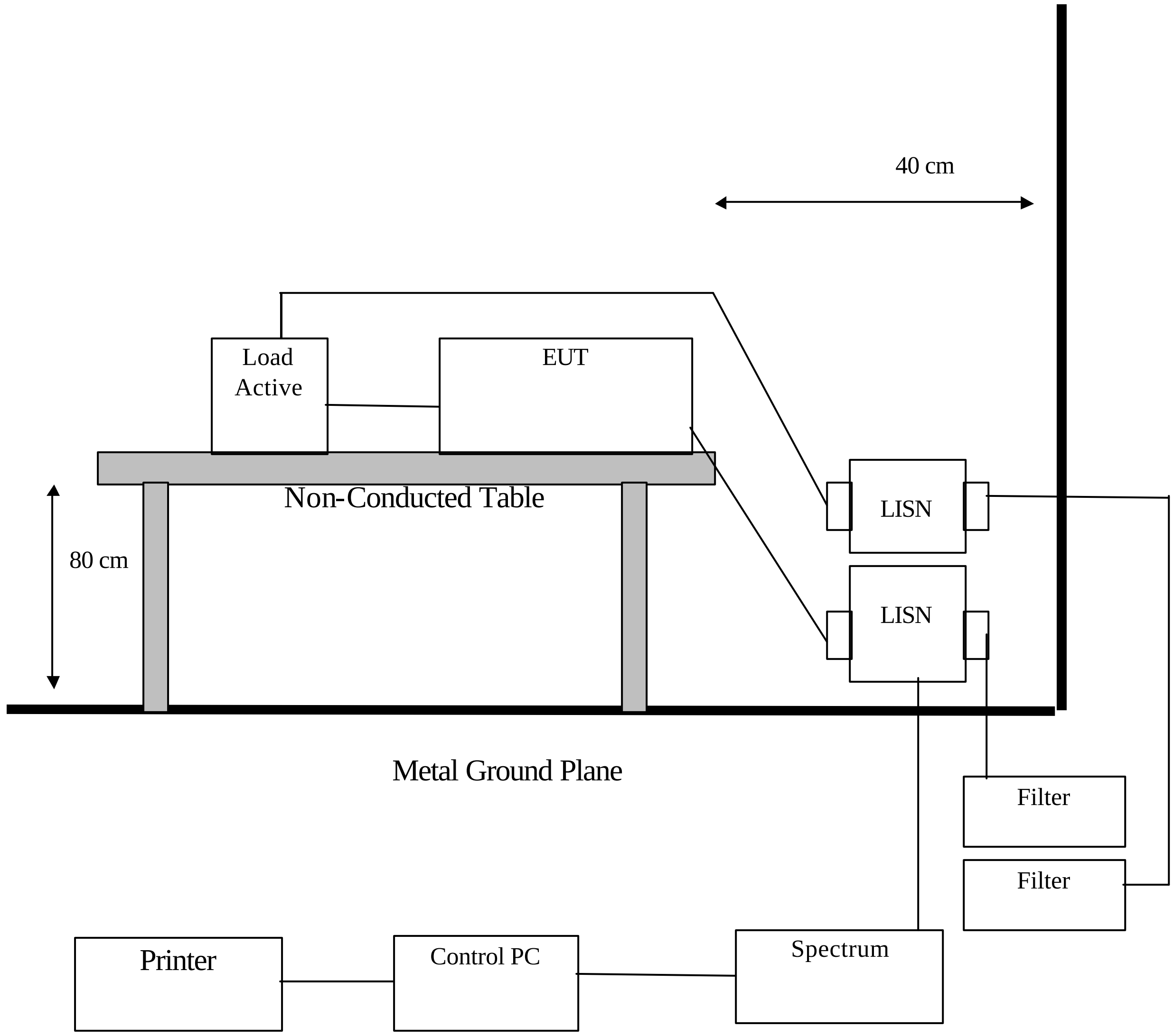
Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Rad. Above 1Ghz	Microwave Cable RF SK-01	HUBER+SUHNER AG.	Sucoflex 102	22139 /2	02/17/2004	02/17/2005
Rad. Above 1Ghz	Microwave Cable RF SK-03	HUBER+SUHNER AG.	Sucoflex 102	20085 /2	06/19/2003	06/19/2004
Rad. Above 1Ghz	Peak Power Analyzer	HP	8990A	3621A01269	01/02/2004	01/02/2005
Rad. Above 1Ghz	Power Meter 01	HP	438A	3513U06187	01/07/2004	01/07/2005
Rad. Above 1Ghz	Power Sensor -4-3/-6	HP	8482A	3318A29614	01/09/2004	01/09/2005
Rad. Above 1Ghz	Power Sensor Radar	HP	84815A	3318A01828	01/02/2004	01/02/2006
Rad. Above 1Ghz	Power Sensor RF 01	HP	8481H	MY41091048	06/17/2003	06/17/2004
Rad. Above 1Ghz	Preamplifier 02	MITEQ	AFS44-00102650-40-10P-44	728229	05/13/2003	05/13/2004
Rad. Above 1Ghz	Preamplifier 09	MITEQ	AFS44-00102650-40-10P-44	858687	05/13/2003	05/13/2004
Rad. Above 1Ghz	Preamplifier 10	MITEQ	JS-26004000-27-5A	818471	N/A	N/A
Rad. Above 1Ghz	Spectrum Analyzer 07	Advantest	R3182	110600649	04/08/2004	04/08/2005

4.5.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

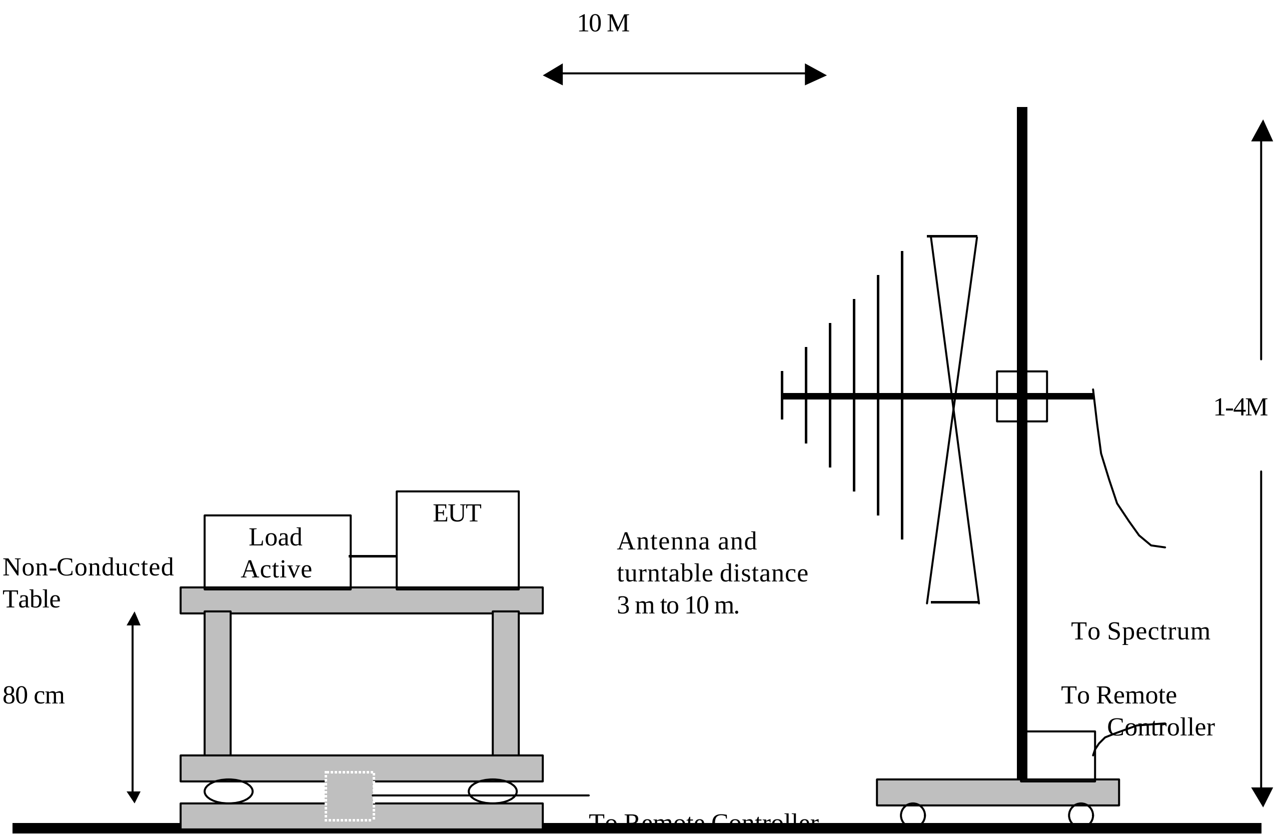
Radiation/Conduction	Filename	Version	Issued Date
Conduction	Tile.exe	2.0.P	2/12/2002
Radiation	Tile.exe	2.0.P	2/12/2002

4.6 Appendix F: Layout of EUT and Support Equipment

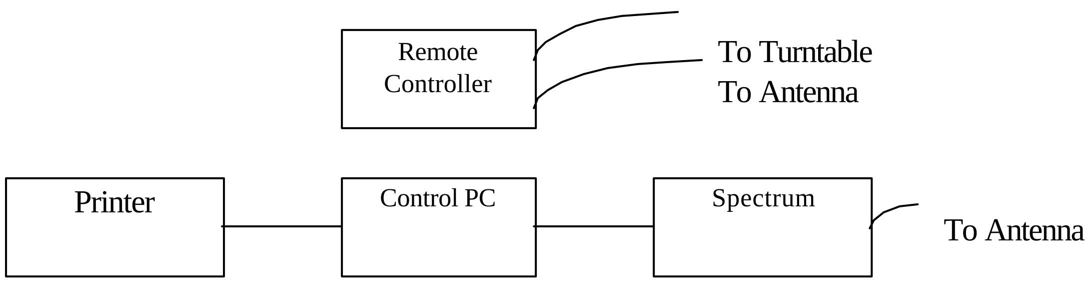
4.6.1 General Conducted Test Configuration



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:	KOKA Headphone
Model Number:	ST-304
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 2.

Description:	KOKA Headphone
Model Number:	ST-304
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 3.

Description:	USB 2.0 Card Reader/Writer
Model Number:	UID12W
Serial Number:	N/A
Power Supply Type:	From USB Port
USB 2.0 Port:	one 4-pin
SD/MMC Card Slot:	one
SecureDigital Card (Option):	SD (Model: SD-M16B1) 16MB
USB Cable:	Shielded, Detachable (With Cord)
FCC ID:	(Comply with FCC DOC)

Support Unit 4.

Description:	USB 2.0 Card Reader/Writer
Model Number:	UID12W
Serial Number:	N/A
Power Supply Type:	From USB Port
USB 2.0 Port:	one 4-pin
SD/MMC Card Slot:	one
SecureDigital Card (Option):	SD (Model: SD-M16B1) 16MB
USB Cable:	Shielded, Detachable (With Cord)
FCC ID:	(Comply with FCC DOC)

Support Unit 5.

Description:	Microsoft Joy Stick
Model Number:	90873
Serial Number:	02132661
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	C3KMGP1
BSMI ID:	3862A202

Support Unit 6.

Description:	KOKA Microphone
Model Number:	DM-510
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A
FCC ID:	N/A

Support Unit 7.

Description:	Coson radio cassette player
Model Number:	C-2087
Serial Number:	N/A
Power Supply Type:	N/A
Power Cord:	N/A

Support Unit 8.

Description:	HP Printer (for parallel interface port)
Model Number:	C2642A
Serial Number:	TH84T1N3J3
Power Supply Type:	AC Adaptor (HP Model: C2175A)
Power Cord:	Non-shielded, Detachable
Data Cable:	Shielded, Detachable, With Metal Hood
FCC ID:	B94C2642X

Support Unit 9.

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

Support Unit 10.

Description:	Aceex Modem (for serial interface port)
Model Number:	DM1414
Serial Number:	0301000558
Power Supply Type:	Linear, Power Adapter (AC to AC Xfmr, Wall Mounted Type)
Power Cord:	Nonshielded, Without Grounding Pin
FCC ID:	IFAXDM1414

Support Unit 11.

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 12.

Description:	DELL 19" Monitor
Model:	P992
Serial Number:	JP-08D468-47743-2B2-203T
Power Cord:	Non-shielded, Detachable
FCC ID:	(Comply with FCC DOC)

Support Unit 13.

Description:	Acer Personal Computer
Model:	VT7200
Serial No.:	N/A
Power Supply Type:	Delta (Model: DPS-300GB-1)
Hard Disk Drive:	Maxtor (Model:53073U6)30GB
Floppy Driver:	Panasonic (Model: JU-256A047P K2)
CD-ROM Drive:	AOpen (Model: CD-952E/AKH)
VGA Card:	WinFast (Model: LRI2830)
Modem Card:	AMBIT(Model: 1456VQH20E-04)
Parallel Port:	one 25-pin
Serial Port:	two 9-pin
LAN Port:	one 8-pin
Keyboard Connector:	one 6-pin
Mouse Connector:	one 6-pin
USB Connector:	two 4-pin
Game Port:	one 15-pin
Speaker Port:	one
Microphone Port:	one
Line In Port:	one
Power Cord:	Non-shielded, Detachable

Support Unit 14.

Description:	Acer Personal Computer
Model:	VT7200
Serial No.:	N/A
Power Supply Type:	Delta (Model: DPS-300GB-1)
Hard Disk Drive:	Maxtor (Model:53073U6)30GB
Floppy Driver:	Panasonic (Model: JU-256A047P K2)
CD-ROM Drive:	AOpen (Model: CD-952E/AKH)
VGA Card:	WinFast (Model: LRI2830)
Modem Card:	AMBIT(Model: 1456VQH20E-04)
Parallel Port:	one 25-pin
Serial Port:	one 9-pin
LAN Port:	one 8-pin
Keyboard Connector:	one 6-pin
Mouse Connector:	one 6-pin
USB Connector:	two 4-pin
Game Port:	one 15-pin
Speaker Port:	one
Microphone Port:	one
Line In Port:	one
Power Cord:	Non-shielded, Detachable

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. Send audio signal to the headphone.
C. R/W memory card form EUT USB Port through Card Reader/Writer
D. Receive audio signal from the microphone.
E. Receive audio signal from walkman.
F. Send H pattern to the parallel port device (Printer).
G. Send H pattern to the serial port device (Modem).
H. Send H pattern to the video port device (Monitor).
I. Send signal from EUT to server through LAN port.
J. Press the "H" font key, Send H pattern to the WordPad file show on the monitor screen.
K. Repeat the above steps.

	Filename	Issued Date
LAN	EMC.exe	11/22/1996
Monitor	HH.bat	8/20/1991
Modem	Hm.bat	8/20/1991
Printer	Wordpad.exe	11/11/1999
Winthrax	Winthrax.exe	5/21/1996
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 AC Power Cord Inlet (3-pin)	1.8M	Nonshielded, Detachable	Plastic Head
Server Data Cable	Server to EUT LAN Port	33 feet	Non-shielded, Detachable	RJ-45, with Plastic Head
Monitor Data Cable	Monitor to PC VGA port	1.6M	Shielded, Un-detachable	Metal Head
Modem Data Cable x2	Modem to PC COM 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
Audio-in Data Cable	Walkman to PC Line In Port	2M	Non-shielded, Detachable	Plastic Head
Microphone Data Cable	Microphone to PC Line In Port	1.5M	Nonshielded, Undetachable	Plastic Head
Headphone Data Cable x2	Headphone to PC Line Out Port	1.2M	Nonshielded, Undetachable	Plastic Head
Joy Stick Data Cable	Joystick to PC Game port	1.95M	Shielded, Un-detachable	Metal Head
USB Data Cable x2	EUT USB Port to Card Reader/Writer	1.0 M	Shielded, detachable (with cord)	Metal Head
PS/2 Data Cable	EUT PS/2 Port to Personal Computer PS/2 port	1.7M	Shielded, Un-detachable	Metal Head

4.8 Appendix H: Description of Equipment Under Test

EUT

Description:	Keyboard
Condition:	Pre-Production
Model:	6300
Serial Number:	N/A
Power:	From Personal Computer PS/2 port
PS/2 Connector:	one 6 pin
PS/2 Signal Data Cable:	Shielded, Un-detachable

The test configuration is listed below:

Configuration 1:

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

EMI Noise Source:

None

EMI Solution:

1. On PS/2 Signal Data Cable end of Keyboard add a Core. Vendor: FYE, Model: 10.4*6*4。
2. Adding one aluminum foil on the back of the keyboard Type。

4.9 Appendix I: Uncertainty of Measurement

Test Site: Condcution 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		k=2	0.000
4	Receiver: Pulse amplitude response	Rectangular	k=1.73	1.000	k=1	0.577
5	Receiver: Pulse repetition rate response	Rectangular	k=1.73		k=1	0.000
6	Receiver: Noise floor proximity	Normal	k=1.73	0.000	k=1	0.000
7	LISN Factor 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	1.034
10	Total Uncertainty @95% mim. Confidence Level	Normal			k=2	2.068

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)

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

Test Site: Conduction 02

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=2	0.104	k=1	0.052
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.330	k=1	0.165
3	Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
4	LISN Factor Calibration	Normal	k=2	1.200	k=1	0.600
5	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
6	Combined Standard Uncertainty Uc(y)	Normal			k=1	0.850
7	**Total Uncertainty @95% mim. Confidence Level**	**Normal**	**k=2**	**1.701**		

Measurement Uncertainty Calculations:

$Uc (y) = \text{square root} (u_1 (y)^2 + u_2 (y)^2 + ... + u_n (y)^2)$
$U = 2 * Uc (y)$

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

OATS 01

Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
Systematic Effects: (Assessment from 20 repeat observation; 1 reading on EUT)	Normal	k=2	0.286	k=1	0.143
Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	1.642	k=1	0.821
Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
Antenna Factor Calibration	Normal	k=2	1.400	k=1	0.700
Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
Combined Standard Uncertainty Uc(y)	Normal			k=1	1.232
Total Uncertainty @95% mim. Confidence Level	Normal			k=2	2.464

Measurement Uncertainty Calculations:
$Uc(y) = \text{square root}(u_1(y)^2 + u_2(y)^2 + \text{..........} + u_n(y)^2)$
$U = 2 * Uc(y)$

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

Test Site: Chamber 01-3M

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	0.036	k=1	0.036
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=1	0.040	k=1	0.040
3	Antenna Factor Calibration	Normal	k=2	1.400	k=1	0.700
4	Receiver: Sine wave voltage	Normal	k=2	0.500	k=1	0.250
5	Receiver: Pulse amplitude response	Rectangular	k=1.73	1.000	k=1	0.577
6	Receiver: Pulse repetition rate response	Rectangular	k=1.73	1.000	k=1	0.577
7	Receiver: Noise floor proximity	Normal	k=2	0.500	k=1	0.250
8	Mismatch: antenna-receiver	U-shaped	k=1	0.670	k=1	0.670
9	Antenna: AF freq. Interpolation	Rectangular	k=1.73	1.000	k=1	0.577
10	Antenna: AF height deviation	Rectangular	k=1.73	1.000	k=1	0.577
11	Antenna: Directivity diffrence	Rectangular	k=1.73	1.000	k=1	0.577
12	Antenna: Balance	Rectangular	k=1	1.000	k=1	1.000
13	Site imperfections	Triangular	k=1.73	1.000	k=1	0.577
14	Site separation distance	Rectangular	k=1.73	1.000	k=1	0.577
15	Table height	Normal	k=2	1.000	k=1	0.500
16	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
17	Combined Standard Uncertainty Uc(y)	Normal			k=1	2.214
18	Total Uncertainty @95% mim. Confidence Level	Normal			k=2	4.427

Measurement Uncertainty Calculations:
Uc (y) = square root ($u_1 (y)^2 + u_2 (y)^2 + \dots\dots\dots\dots + u_n (y)^2$)
U = 2 * Uc (y)

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

Test Site: Chamber 02-10M

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=2	0.134	k=1	0.067
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.206	k=1	0.103
3	Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
4	Antenna Factor Calibration	Normal	k=2	1.400	k=1	0.700
5	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
6	Combined Standard Uncertainty Uc(y)	Normal			k=1	0.916
7	**Total Uncertainty @95% mim. Confidence Level**	**Normal**	**k=2**	**1.831**		

Measurement Uncertainty Calculations:

$Uc(y) = \text{square root} (u_1 (y)^2 + u_2 (y)^2 + ...+u_n (y)^2)$
$U = 2 * Uc(y)$

Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

Test Site: Chamber 02-3M

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=2	0.067	k=1	0.034
2	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.103	k=1	0.052
3	Receiver Calibration	Rectangular	k=1.73	1.000	k=1	0.577
4	Antenna Factor Calibration	Normal	k=2	1.700	k=1	0.850
5	Cable Loss Calibration	Normal	k=2	1.000	k=1	0.500
6	Combined Standard Uncertainty Uc(y)	Normal			k=1	1.029
7	**Total Uncertainty @95% mim. Confidence Level**	**Normal**	**k=2**	**2.059**		

Measurement Uncertainty Calculations:

$Uc\ (y) = \text{square root}\ (\ u_1\ (y)^2\ + u_2\ (y)^2 + \ldots\ldots\ldots\ldots + u_n\ (y)^2\ )$
$U = 2 * Uc\ (y)$

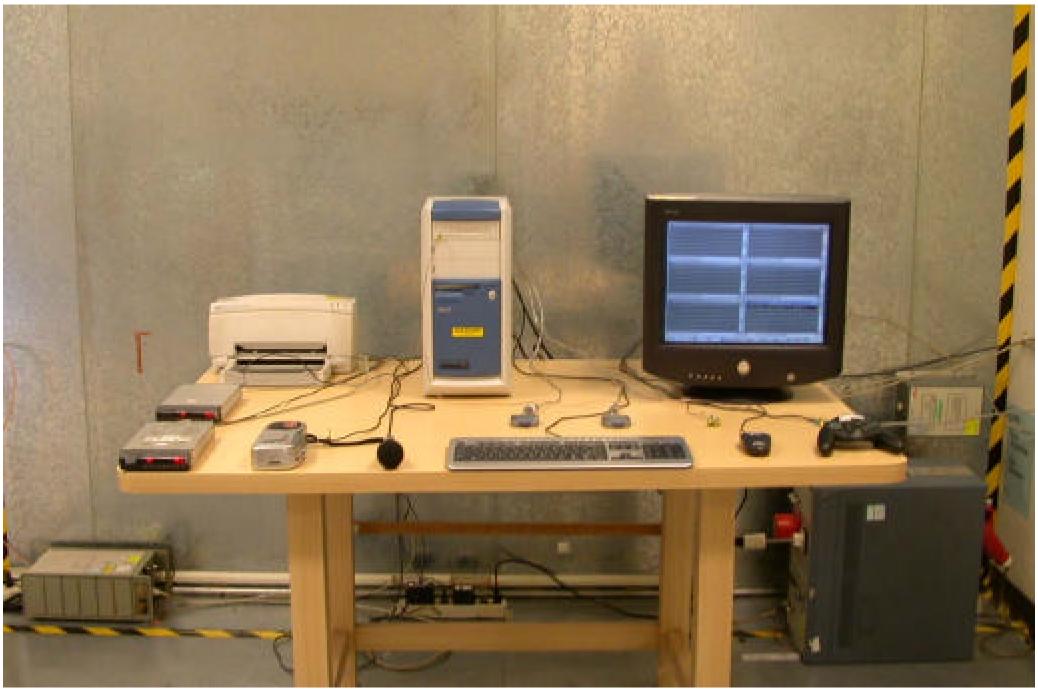
Note: The measurement Uncertainties mentioned above also refer to NIS 81-1994 of NAMAS : The treatment of Uncertainty in EMC Measurement.

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.

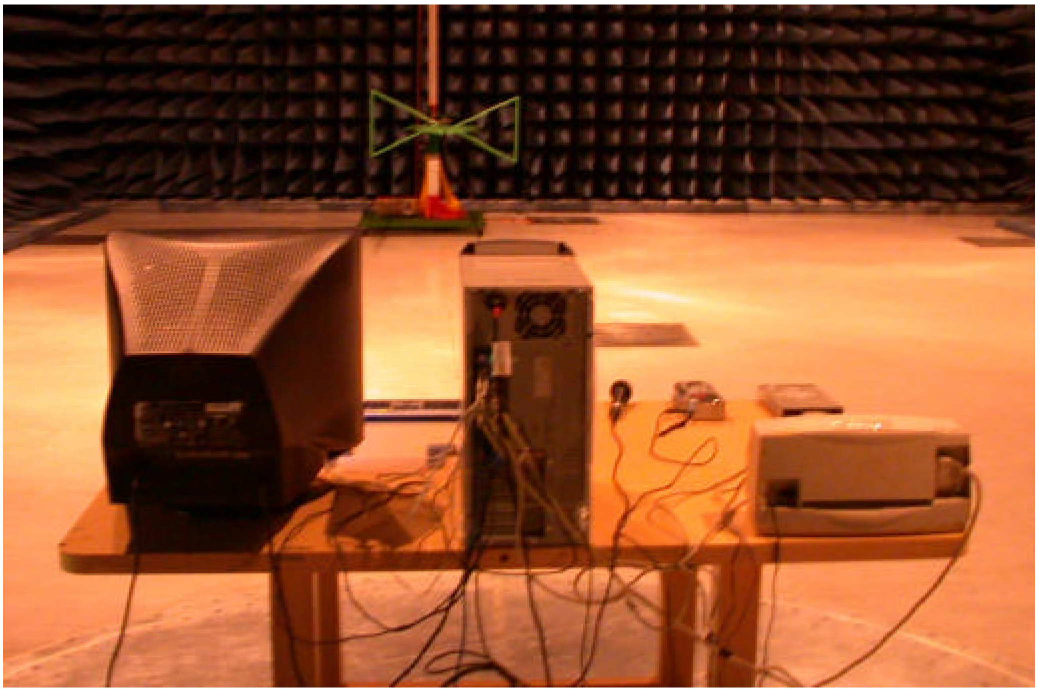
The justification for selecting a particular EUT configuration and particular length of interface cable to produce maximized emissions must be documented in the test report. Photographs clearly showing the test set-up and interface cable arrangement for the highest radiated and line conducted emission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

The Front View of Highest Conducted Set-up For EUT



The 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 find this appendix in the File of **ISL-04LE123P**