

Certificate

Issue Date: 2008/05/14
Ref. Report No. ISL-07HE130FB-MA

Product Name: : Network Attached Storage
: **TS-209Pro;TS-209;TS-209A;TS-209M;VioStor-209;VioStor-209P;VioStor-209V;VioStor-209A;VioStor-209C;VioStor-209D;VioStor-209S;VioStor-209PA;VioStor-209VA;VioStor-209CA;VioStor-209SA;VioStor-209AA;VioStor-209DA;VioStor-209G;VioStor-209GA;VioStor-209L;VioStor-209LA;VioStor-209Pro;VioStor-209M;VioStor-209MA;TS-209 Pro II;TS-209 Pro III;TS-209 II;TS-209 III**

Model Number(s)

Responsible Party : **QNAP System, Inc.**
Address : 21F,No.77,Sec. 1,Xintai 5th Rd.,
Xizhi City,Taipei Country,221, Taiwan,R.O.C

Contact Person :

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

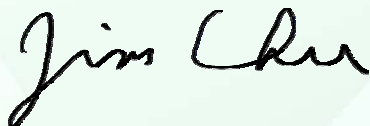
The device bearing the trade name and model specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified. (refer to Test Report if any modifications were made for compliance).

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
Class B
ANSI C63.4-2003

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)



Jim Chu/ Director

International Standards Laboratory Lung-Tan LAB:

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Declaration of Conformity

This device complies with Part 15 of the FCC Rules. The test result has been shown in the ISL test report with number ISL-07HE130FB-MA. 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.

Product Name:	Network Attachde Storage
Model:	TS-209Pro;TS-209;TS-209A;TS-209M;VioStor-209;VioStor-209P;VioStor-209V;VioStor-209A;VioStor-209C;VioStor-209D;VioStor-209S;VioStor-209PA;VioStor-209VA;VioStor-209CA;VioStor-209SA;VioStor-209AA;VioStor-209DA;VioStor-209G;VioStor-209GA;VioStor-209L;VioStor-209LA;VioStor-209 Pro;VioStor-209M;VioStor-209MA;TS-209 Pro II;TS-209 Pro III;TS-209 II;TS-209 III
Name of Responsible Party:	QNAP System, Inc.
Address of Responsible Party:	21F,No.77,Sec. 1,Xintai 5th Rd. Xizhi City,Taipei Country,221 Taiwan,R.O.C
Contact Person:	
Phone No.:	(02)8698-2000 Ext:1616
Fax No.:	(02)8698-2270

We, QNAP System, Inc., hereby declare that the equipment bearing the trade name and model number specified above was tested conforming to the applicable FCC Rules under the most accurate measurement standards possible, and that all the necessary steps have been taken and are in force to assure that production units of the same equipment will continue to comply with the Commissions requirements.

QNAP System, Inc.

Issue Date: 2008/05/14

FCC TEST REPORT

of

CFR 47 Part 15 Subpart B Class B

Application Type: Declaration of Conformity

Product : **Network Attachde Storage**

Model(s): **TS-209Pro;TS-209;TS-209A;TS-209M;
VioStor-209;VioStor-209P;VioStor-209V;
VioStor-209A;VioStor-209C;VioStor-209D;
VioStor-209S;VioStor-209PA;VioStor-209VA;
VioStor-209CA;VioStor-209SA;VioStor-209AA;
VioStor-209DA;VioStor-209G; VioStor-209GA;
VioStor-209L;VioStor-209LA; VioStor-209 Pro;
VioStor- 209M; VioStor-209MA;TS-209 Pro II;TS-209
Pro III;TS-209 II;TS-209 III**

Applicant: **QNAP System, Inc.**

Address: **21F,No.77,Sec. 1,Xintai 5th Rd.
Xizhi City,Taipei Country,221
Taiwan,R.O.C**

Test Performed by:

International Standards Laboratory

<HC LAB>

*Site Registration No.

BSMI:SL2-IN-E-0037; SL2-R1/R2-E-0037; TAF: 1178; NVLAP: 200234-0; IC: IC4067;

VCCI: R-341,C-354; NEMKO: ELA 113A

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Hsichih, Taipei Hsien 22117, Taiwan

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Report No.: **ISL-07HE130FB-MA**

Issue Date : **2008/05/14**

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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: Network Attachde Storage

Model: Please refer to page 21

Applied by QNAP System, Inc.

Sample received Date: 2007/07/31

Final test Date : refer to the date of test data

Test Result: **PASS**

Report Engineer: Lily L.C. Tseng

Test Engineer: James Hsieh
 James CL Hsieh

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

Jim Chu

 Jim Chu / 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 31 pages, including 1 cover page , 1 contents page, and 29 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: QNAP System, Inc.
21F, No. 77, Sec. 1, Xintai 5th Rd.
Xizhi City, Taipei Country, 221
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 115 V / 60 Hz
Radiation input power: AC 115 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 6dB 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 6dB below the applicable average limits, the emissions were also measured with the average detectors.

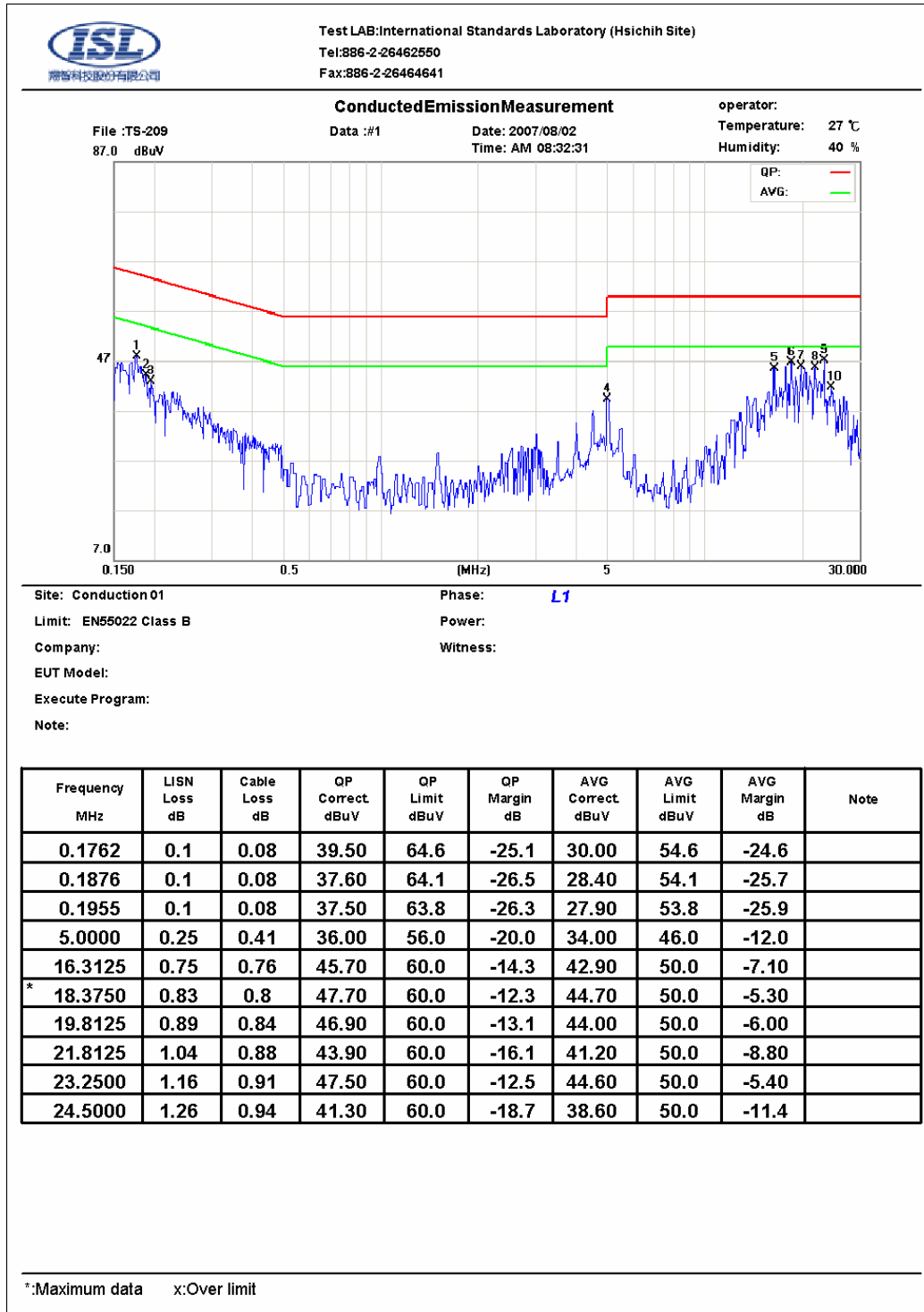
The highest emissions were analyzed in details by operating the spectrum analyzer in fixed tuned mode to determine the nature of the emissions and to provide information which could be useful in reducing their amplitude.

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

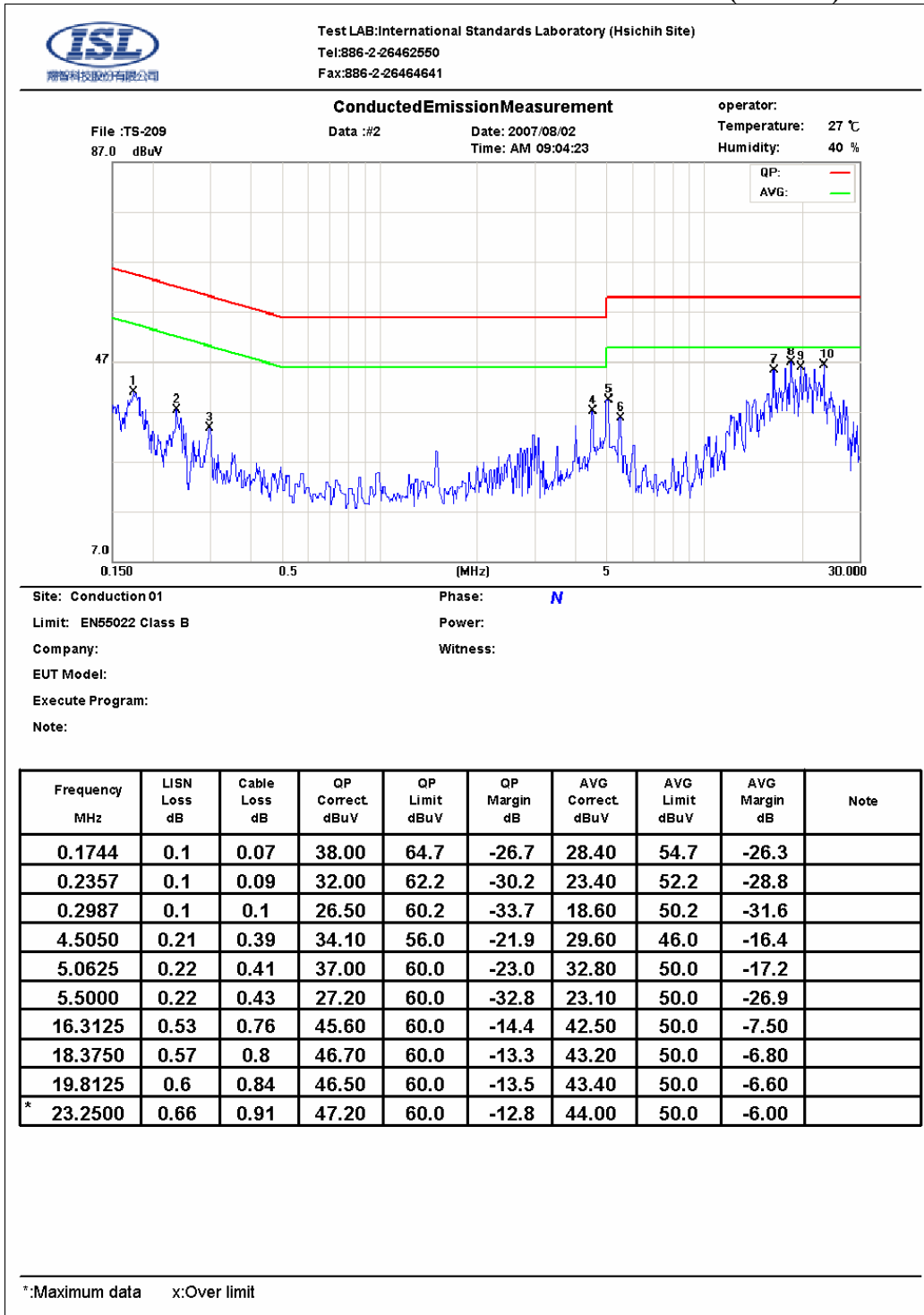
2.2 Conduction Test Data: Configuration 1

Table 2.2.1 Power Line Conducted Emissions (Hot)



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

Table 2.2.2 Power Line Conducted Emissions (Neutral)



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

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.

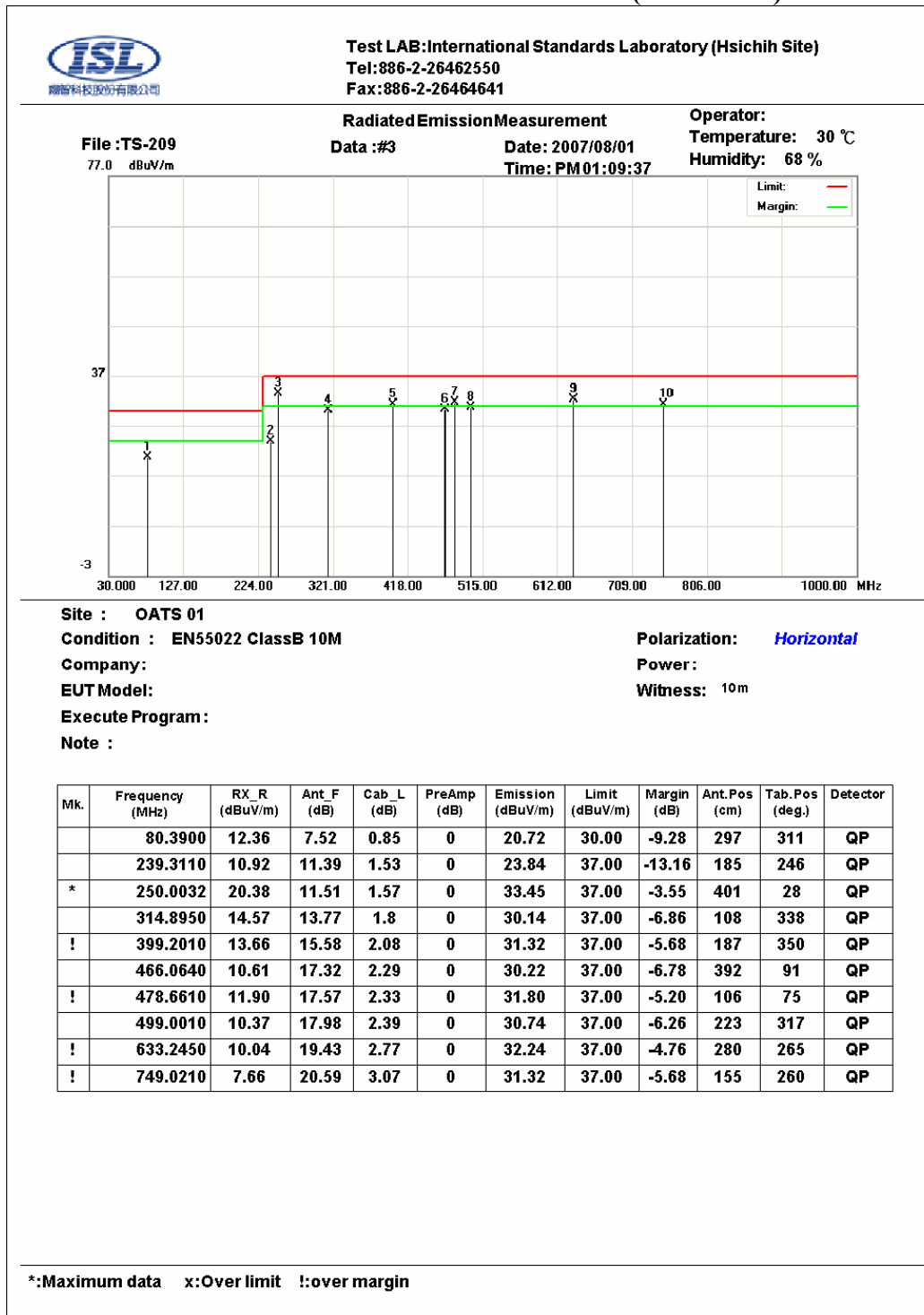
3.1.3 Spectrum Analyzer Configuration (for the frequencies tested)

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)



* Note:

Margin = Corrected Amplitude – Limit

Corrected Amplitude = Radiated Amplitude + Antenna Correction Factor + Cable Loss – Pre-Amplifier Gain

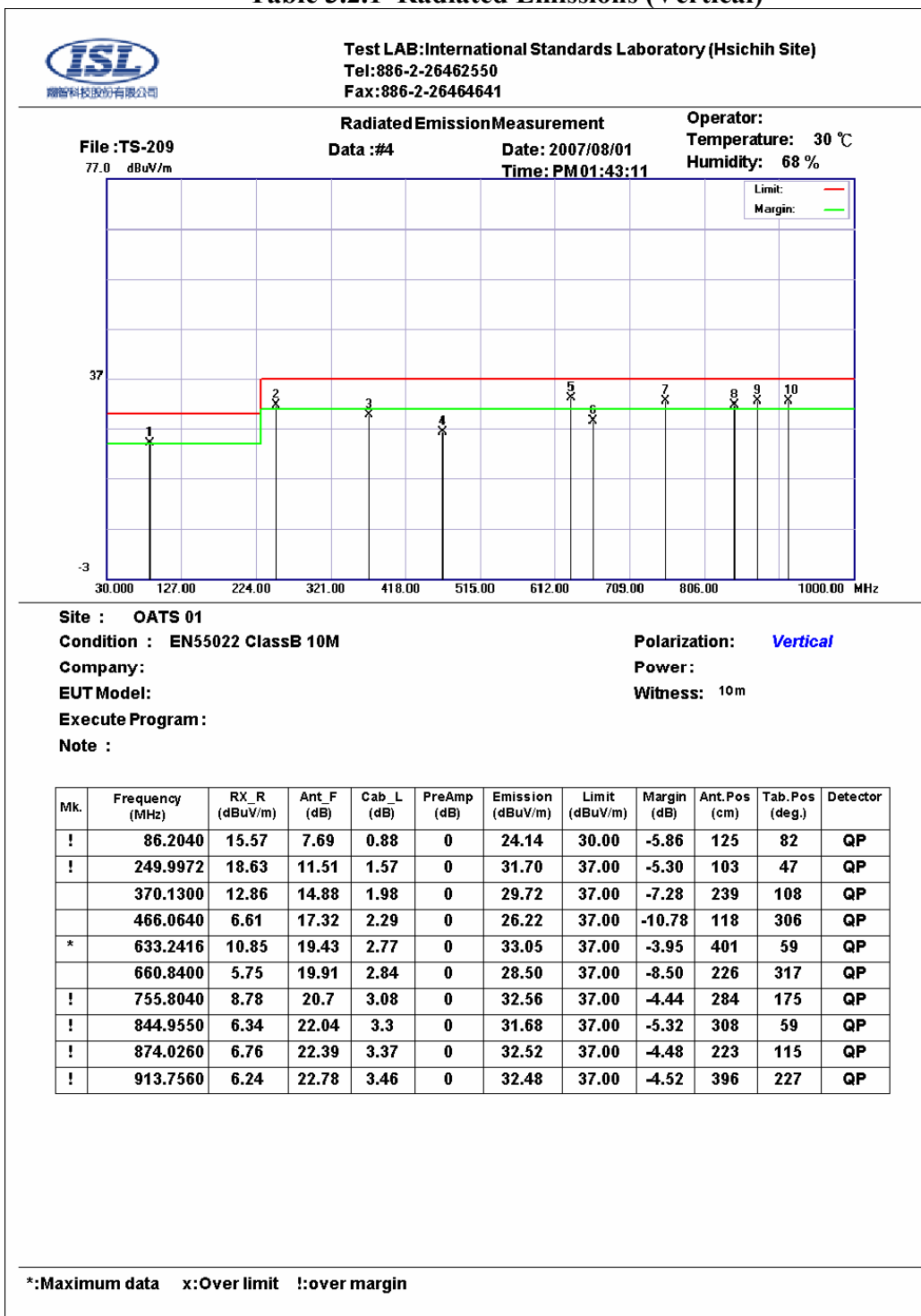
A margin of -8dB means that the emission is 8dB below the limit

BILOG Antenna Distance: 10 meter, Frequency: under 1000MHz

Horn Antenna Distance: 3 meter, Frequency: 1000MHz—18GHz

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Table 3.2.1 Radiated Emissions (Vertical)



* 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

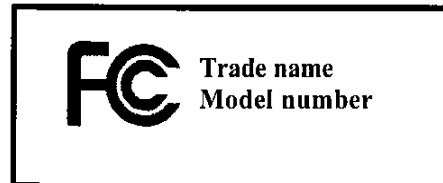
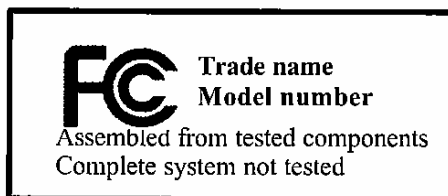
Label Requirements

A Class B digital device subject to Declaration of Conformity of 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°. 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 readings 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

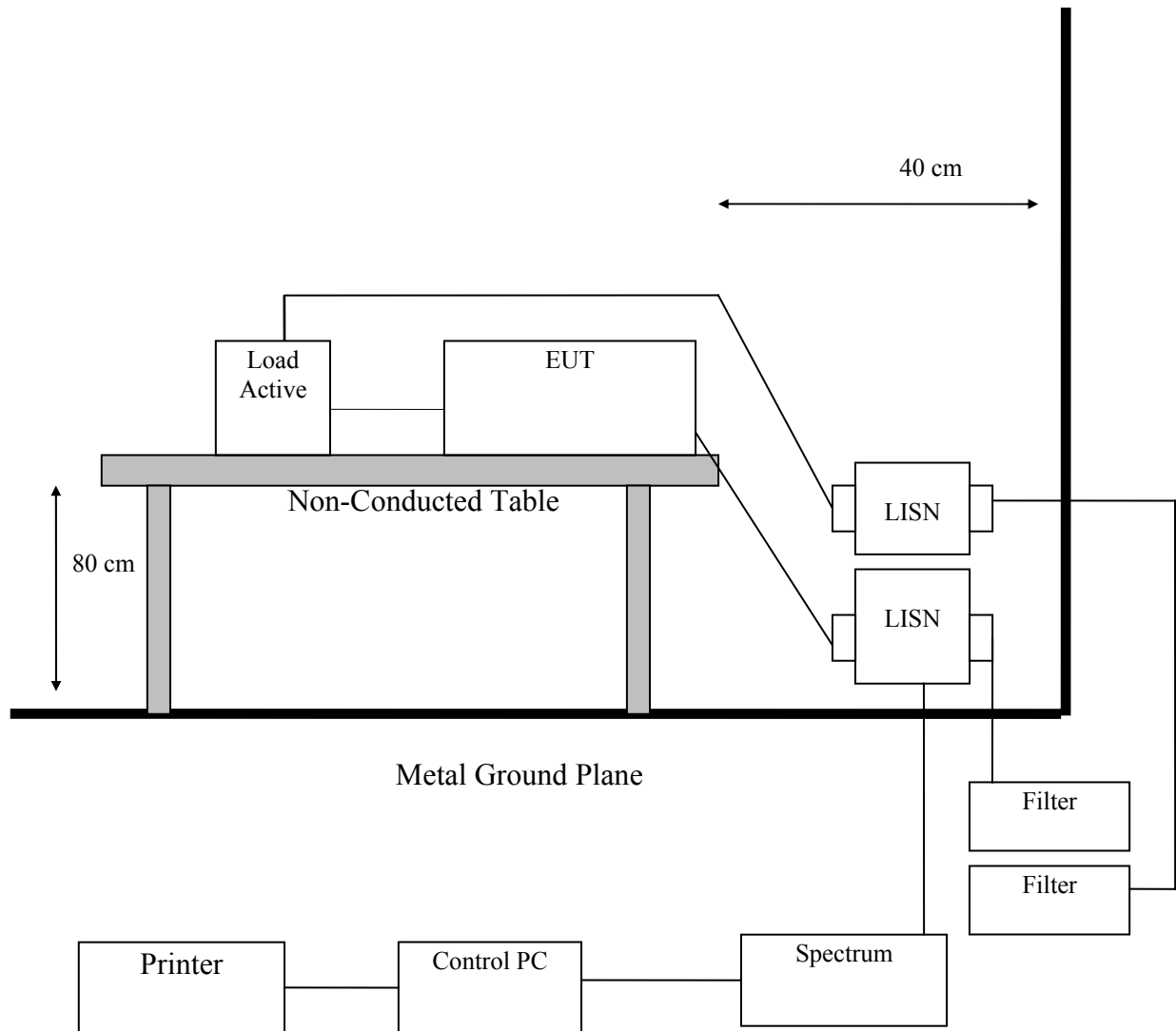
Location	Equipment Name	Brand	Model	S/N	Last Cal. Date	Next Cal. Date
Conduction	Coaxial Cable 1F-C1	Harbourindustries	RG400	1F-C1	10/17/2006	10/17/2007
Conduction	Digital Thermo-Hygro Meter Conduction	MicroLife		ISL-C-002	11/30/2006	11/30/2008
Conduction	LISN 02	EMCO	3825/2	1407	07/02/2007	07/02/2008
Conduction	LISN 03	R&S	ESH3-Z5 831.5518.52	828874/010	07/02/2007	07/02/2008
Conduction	ISN T4 04	Schaffner	ISN T400	21644	02/12/2007	02/12/2008
Conduction	Current Probe	SOLAR	9208-1	0411602	02/12/2007	02/12/2008
Conduction	Capacitive Voltage Probe 01	Schaffner	CVP2200A	18711	07/06/2007	07/06/2008
Conduction	EMI Receiver 08	Schwarzbeck Mess-Elektronik	FCKL 1528	1528-202	09/01/2006	09/01/2007
Conduction	Spectrum Analyzer 05	HP	8594EM	3619A00192	02/07/2007	02/07/2008
Radiation	BILOG Antenna 10	Sumol Sciences	JB1	A013004-1	07/10/2007	07/10/2008
Radiation	Coaxial Cable 3F-10M	MIYAZAKI	8D-8F	10M-1	10/17/2006	10/17/2007
Radiation	Coaxial Cable 3F-3M	BELDEN	RG-8/U	3F-3M	10/17/2006	10/17/2007
Radiation	Spectrum Analyzer 12	Advantest	R3132	130200208	03/05/2007	03/05/2008
Radiation	Thermo-Hygro Meter OATS 01	CRECER	HD30	ISL-C-001	11/30/2006	11/30/2008
Rad. above 1Ghz	Horn Antenna 01	EMCO	3115	9504-4462	10/25/2006	10/25/2007
Rad. above 1Ghz	Horn Antenna 03	COM-Power	AH-826	100A	02/14/2007	02/14/2008
Rad. above 1Ghz	Microwave Cable RF07-3	HUBER+SUHNER AG.	Sucoflex 103	42728/3	07/11/2007	07/11/2008
Rad. above 1Ghz	Preamplifier 01	R&S	ESMI-Z7	1045.502	07/11/2007	07/11/2008
Radiation	Signal Generator 01	HP	8656B	2635A04675	08/17/2006	08/17/2007
Radiation	EMI Receiver 09	Schwarzbeck Mess-Elektronik	FCVU 1534	1534-150	04/17/2007	04/17/2008

4.5.2 Software for Controlling Spectrum/Receiver and Calculating Test Data

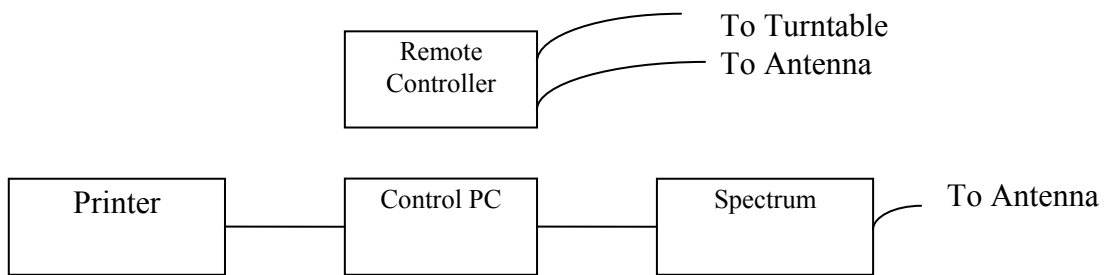
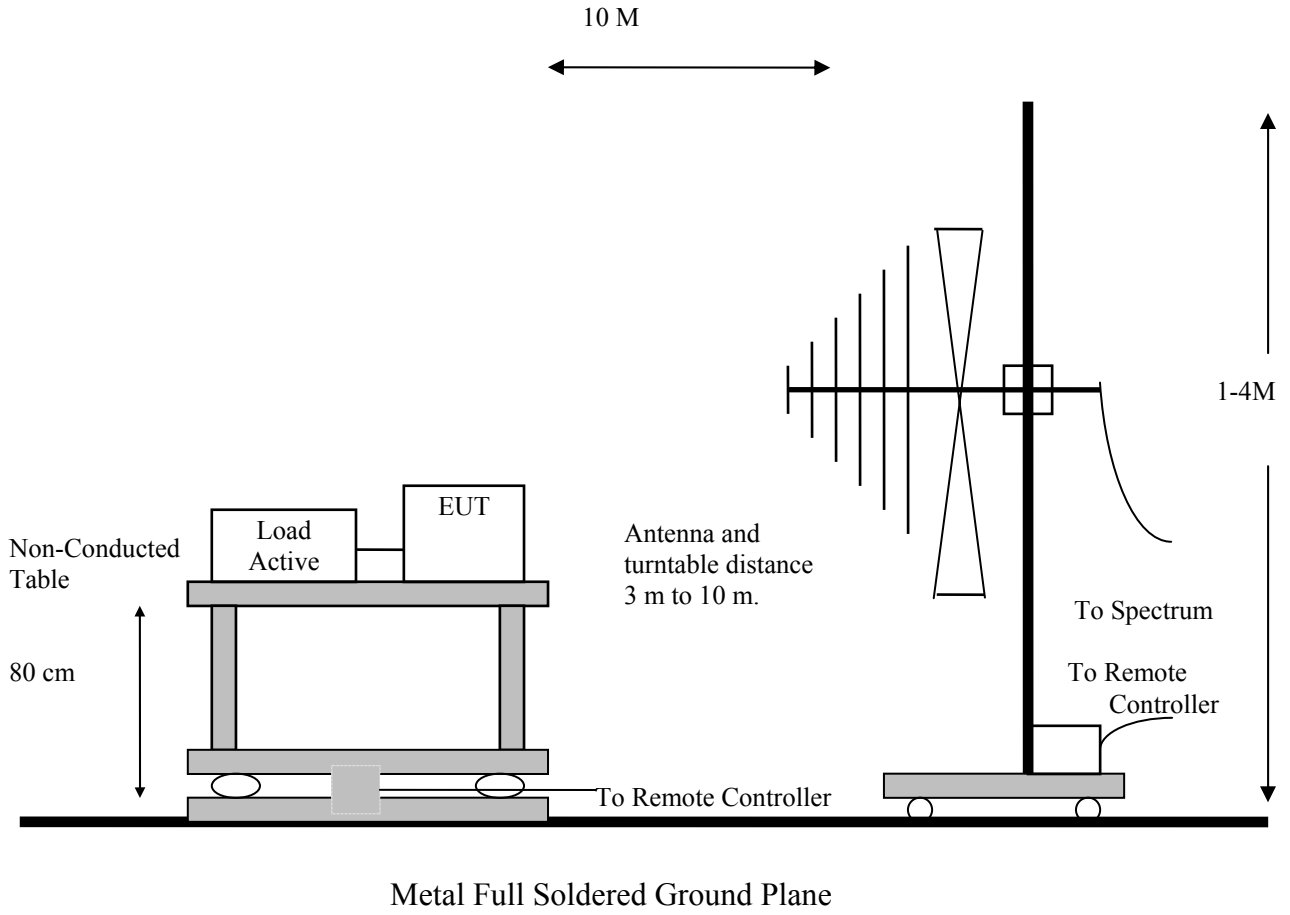
Radiation/Conduction	Filename	Version	Issued Date
Hsichih Conduction	EZ EMC	1.1.4.2	2/10/2007
Hsichih Radiation	EZ EMC	1.1.4.2	1/24/2007
Lung_Tan Conduction	EZ EMC	1.1.4.2	2/10/2007
Lung_Tan Radiation	EZ EMC	1.1.4.2	1/24/2007

4.6 Appendix F: Layout of EUT and Support Equipment

4.6.1 General Conducted Test Configuration



4.6.2 General Radiation Test Configuration



4.7 Appendix G: Description of Support Equipment

4.7.1 Description of Support Equipment

Support Unit 1.

Description:	External Hard Disk Case
Manufacturer :	TeraSys
Model Number:	F12-UF
Serial Number	NA
Power Supply Type:	YHI(Model:YS-1015U12) or From Personal Computer USB/1394 Port Supply
1394 Port:	one 6-Pin
USB:	one 4-Pin
Power In:	one
Power Cable:	Non-shielded, Detachable, (Can Dismantle)
FCC ID:	(Complied with FCC DOC)

Support Unit 2.

Description:	External Hard Disk Case
Manufacturer :	TeraSys
Model Number:	F12-UF
Serial Number	NA
Power Supply Type:	YHI(Model:YS-1015U12) or From Personal Computer USB/1394 Port Supply
1394 Port:	one 6-Pin
USB:	one 4-Pin
Power In:	one
Power Cable:	Non-shielded, Detachable, (Can Dismantle)
FCC ID:	(Complied with FCC DOC)

Support Unit 3.

Description:	External Hard Disk Case
Manufacturer :	TeraSys
Model Number:	F12-UF
Serial Number	NA
Power Supply Type:	YHI(Model:YS-1015U12) or From Personal Computer USB/1394 Port Supply
1394 Port:	one 6-Pin
USB:	one 4-Pin
Power In:	one
Power Cable:	Non-shielded, Detachable, (Can Dismantle)
FCC ID:	(Complied with FCC DOC)

Support Unit 4.

Description:	DELL Notebook Personal Computer
Model:	Latitude D400
Serial Number:	N/A
CPU:	Pentium M- 1.5GHz(FSB 400 MHz)
A/C Adapter Type:	LITEON 65W (Model PA-1650-05D) 3 Pins
Hard Disk Driver:	Toshiba (Model: MK4019GAX) 40 GB
LAN	one 8-pins(10/100/1000Mbps)
MDC Modem:	Conexant (Model: RD01-D480)
RAM:	Nanya DDR 256MB x 1
LCD Panel:	Toshiba 12.1"XGA (Model: LTM12C505D)
Inverter:	RICOH KEIKI (Model: K3E19T5 0090)
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. R/W External Hard Disk from USB Port.
- C. Send signal from EUT to server through LAN port.
- D. Repeat the above steps.

	Filename	Issued Date
LAN	ping.exe	05/05/1999
LAN	Tfgen.exe	06/23/1999
External Hard Disk Case	Winthrax.exe	5/21/1996

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
LAN Data Cable	Server to EUT RJ 45 Connector	33 feet	Non-shielded, Detachable	RJ-45, with Plastic Head
USB Data Cable*3	External Hard Disk Case USB Port to EUT USB Port	2M	Non-shielded, Detachable	Metal Head

4.8 Appendix H: Description of Equipment Under Test

EUT

Description:	Network Attached Storage
Condition:	Pre-Production
Model:	TS-209Pro; TS-209; TS-209A; TS-209M; VioStor-209; VioStor-209P; VioStor-209V; VioStor-209A; VioStor-209C; VioStor-209D; VioStor-209S; VioStor-209PA; VioStor-209VA; VioStor-209CA; VioStor-209SA; VioStor-209AA; VioStor-209DA; VioStor-209G; VioStor-209GA; VioStor-209L; VioStor-209LA; VioStor-209 Pro; VioStor- 209M; VioStor-209MA; TS-209 Pro II; TS-209 Pro III; TS-209 II; TS-209 III
Serial Number:	N/A
Power Supply Type:	DVE (Model: DSA-60W-12) AC Input: 100~240V~ 50-60Hz 1.5A DC Output: +12.0V/5A Non-Shielded, Detachable with Ferrite Core
Power Switch Button:	one
Back up Button:	one
DC Power Port:	one
USB 2.0 Connector:	Three 4-pins
RJ45 Connector:	one 8-pin (10/100M/1000M)
Hard Disk1:	Western Digital (Model: WD2500YS-01SHBO) 250GB (Option)
Hard Disk2:	Seagate (Model: ST3250620AS) 250GB (Option)

All types of EUT Connect have been tested. The worst data listed in this test report.

Test Configuration (Model: TS-209 Pro):

Western Digital (Model: WD2500YS-01SHBO) 250G +
Seagate (Model: ST3250620AS) 250G + USB2.0 connect +
LAN (1000M) + DVE Switching Adapter

EMI Noise Source

Crystal: 25MHz (X1), 12MHz (Y1)

EMI Solution:

1. DVE Switching Adapter Cable with Ferrite Core.
2. Added four gaskets on the front main board to contact with housing.
3. Added three Copper foil tapes on the USB2.0 connector to contact with housing.

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)	
			k=2	0.043	k=1	0.021
1	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	k=2	0.043	k=1	0.021
2	Receiver: Sine wave voltage	Normal	k=2	0.800	k=2	0.400
3	LISN Loss Calibration	Normal	k=2	1.200	k=1	0.600
4	Cable Loss Calibration	Normal	k=2	1.024	k=1	0.512
5	Combined Standard Uncertainty Uc(y)	Normal			k=1	0.885
6	Total Uncertainty @95% mim. Confidence Level	Normal			k=2	1.769

Measurement Uncertainty Calculations:

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

$$U = 2 * Uc(y)$$

Test Site: OATS 01-10M OATS01-10M (30M~1GHz)

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
			k	(dB)	k	(dB)
1	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	2	0.094	1	0.047
2	Antenna Factor Calibration	Normal	2	1.400	1	0.700
3	Receiver: Sine wave voltage	Normal	2	0.800	1	0.400
4	Mismatch: antenna-receiver	U-shaped	1.5	1.000	1	0.667
5	Antenna: AF freq. Interpolation	Rectangular	1.73	0.300	1	0.173
6	Antenna: Directivity difference	Rectangular	1.73	1.000	1	0.578
7	Antenna: Balance	Rectangular	1.73	0.300	1	0.173
8	Site separation distance	Rectangular	1.73	0.300	1	0.173
9	Cable Loss Calibration	Normal	2	0.913	1	0.457
10	Combined Standard Uncertainty Uc(y)	Normal			1	1.315
11	Total Uncertainty @95% mim. Confidence Level	Normal			2	2.630

Measurement Uncertainty Calculations:

$$U_c(y) = \text{square root} (u_1(y)^2 + u_2(y)^2 + \dots + u_n(y)^2)$$

$$U = 2 * U_c(y)$$

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

Item	Source of Uncertainty	Probability Distribution	Total Uncertainties (dB)		Standard Uncertainty (dB)	
			k	(dB)	k	(dB)
1	Random Effects: (Assessment from 20 random observations; 1 reading on EUT)	Normal	1	0.345	1	0.345
2	Antenna Factor Calibration	Normal	2	1.700	1	0.850
3	Receiver: Sine wave voltage	Normal	2	0.500	1	0.250
4	Mismatch: antenna-receiver	U-shaped	1.5	1.000	1	0.667
5	Antenna: AF freq. Interpolation	Rectangular	1.73	0.300	1	0.173
6	Antenna: Directivity difference	Rectangular	1.73	1.000	1	0.578
7	Antenna: Balance	Rectangular	1.73	0.300	1	0.173
8	Site separation distance	Rectangular	1.73	0.300	1	0.173
9	Cable Loss Calibration	Normal	2	1.000	1	0.500
10	Combined Standard Uncertainty Uc(y)	Normal			1.000	1.422
11	Total Uncertainty @95% mim. Confidence Level	Normal			2.000	2.845

Measurement Uncertainty Calculations:

$$U_c(y) = \text{square root} (u_1(y)^2 + u_2(y)^2 + \dots + u_n(y)^2)$$

$$U = 2 * U_c(y)$$

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



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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-07HE130P-MA**