

EMC COMPLIANCE TEST REPORT

For

Notebook PC

Trade Name : Acer; Quanta
Model Number : ZG1S
Serial Number : N/A
Report Number : 021367-T
Date : December 25, 2002

Prepared for:

Quanta Computer Inc.
No. 188, Wen Hua 2nd Rd., Kuei Shan Hsiang,
Taoyuan Shien, Taiwan, R.O.C.

Prepared by:



C&C LABORATORY, CO., LTD.

#B1, 1st Fl., Universal Center,
No. 183, Sec. 1, Tatung Rd., Hsi Chih,
Taipei Hsien, Taiwan, R.O.C.

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C&C Laboratory Co., Ltd.**

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VERIFICATION OF COMPLIANCE

Equipment Under Test: Notebook PC
Trade Name: Acer; Quanta
Model Number: ZG1S
Serial Number: N/A
Applicant: **Quanta Computer Inc.**
No. 188, Wen Hua 2nd Rd., Kuei Shan Hsiang,
Taoyuan Shien, Taiwan, R.O.C.

Manufacturer: **Quanta Computer Inc.**
No. 188, Wen Hua 2nd Rd., Kuei Shan Hsiang,
Taoyuan Shien, Taiwan, R.O.C.

Type of Test: EMC Directive 89/336/EEC for CE Marking
Measurement Procedure: EN 55022: 1994 + A1: 1995 + A2: 1997
EN 61000-3-2: 1995 + A1: 1998 + A2: 1998
EN 61000-3-3: 1995
EN 55024: 1998 (IEC 61000-4-2: 2001, IEC 61000-4-3: 1995,
IEC 61000-4-4: 1995, IEC 61000-4-5: 1995,
IEC 61000-4-6: 1996, IEC 61000-4-11: 1994)

File Number: 021367-T
Date of test: December 23 ~ 24, 2002
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst data: See below

Test Item	Freq.(MHz)	Measured data	Margin (M μ C)	Remark
Radiated Emission	601.61	34.8 (dB/m)	-2.2 dB (\pm 1.6672 dB)	
Conducted Emission	0.182	50.90 (dB)	-13.40 dB (\pm 2.8104 dB)	

- The negative sign in Margin cell means under the specific limit.
- This test result traceable to national or international standards

The above equipment was tested by C&C Laboratory Co., Ltd. for compliance with the requirements set forth in EMC Directive 89/336/EEC, Amended by 92/31/EEC & 93/68/EEC & 98/13/EC and the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Approved by Authorized Signatory: Susan Su for
Lucky Chen / EMC. Director



VERIFICATION OF COMPLIANCE

Equipment Under Test: Notebook PC
Trade Name: Acer; Quanta
Model Number: ZG1S
Serial Number: N/A
AC power during test: 120VAC/60Hz
Applicant: **Quanta Computer Inc.**
No. 188, Wen Hua 2nd Rd., Kuei Shan Hsiang,
Taoyuan Shien, Taiwan, R.O.C.

Manufacturer: **Quanta Computer Inc.**
No. 188, Wen Hua 2nd Rd., Kuei Shan Hsiang,
Taoyuan Shien, Taiwan, R.O.C.

Type of Test: FCC Class B (DoC)
Measurement Procedure: ANSI C63.4: 1992
File Number: 021367-T
Date of test: December 23 ~ 24, 2002
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst data: See below

Test Item	Freq.(MHz)	Measured data	Margin (M _μ C)	Remark
Radiated Emission	601.61	34.8 (dB/m)	-2.2 dB (± 1.6672 dB)	
Conducted Emission	0.153	52.20 (dB)	-13.6dB (± 2.8104 dB)	

- The negative sign in Margin cell means under the specific limit.
- This test result traceable to national or international standards

The above equipment was tested by C&C Laboratory, Co., Ltd. for compliance with the requirements set forth in the FCC Rules and Regulations Part 15, Subpart B and the measurement procedure according to ANSI C63.4. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Responsible Party

Susan Su for

Lucky Chen / EMC. Director

Officer of the Responsible Party



VERIFICATION OF COMPLIANCE

Equipment Under Test: Notebook PC
Trade Name: Acer; Quanta
Regulatory Model Number: ZG1S
Serial Number: N/A
AC power during test: 240VAC/50Hz
Applicant: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.
Manufacturer: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.
Type of Test: C-Tick Class B
Measurement Procedure: AS/NZS 3548: 1995 + A1: 1997 + A2: 1997
File Number: 021367-T
Date of test: December 23 ~ 24, 2002
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst data: See below

Test Item	Freq.(MHz)	Measured data	Margin (M μ C)	Remark
Radiated Emission	601.61	34.8 (dB/m)	-2.2dB (\pm 1.6672 dB)	
Conducted Emission	0.167	51.40 (dB)	-13.70dB(\pm 2.8104 dB)	

- The negative sign in Margin cell means under the specific limit.
- This test result traceable to national or international standards

The above equipment was tested by C&C Laboratory Co., Ltd. for compliance with the requirements set forth in the Australian EMC regulations and the requirements procedure according to AS/NZS 3548: 1995. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Susan Su for

Lucky Chen / EMC. Director



VERIFICATION OF COMPLIANCE

Equipment Under Test: Notebook PC
Trade Name: Acer; Quanta
Regulatory Model Number: ZG1S
Serial Number: N/A
AC power during test: 100VAC/60Hz
Applicant: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.

Manufacturer: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.

Type of Test: VCCI Class B
Measurement Procedure: V-2/02.04 & V-3/02.04
File Number: 021367-T
Date of test: December 23 ~ 24, 2002
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst data: See below

Test Item	Freq.(MHz)	Measured data	Margin (M μ C)	Remark
Radiated Emission	601.61	34.8 (dB/m)	-2.2 dB (\pm 1.6672 dB)	
Conducted Emission	0.152	52.40 (dB)	-13.40 dB (\pm 2.8104 dB)	

- The negative sign in Margin cell means under the specific limit.
- This test result traceable to national or international standards

The above equipment was tested by C & C Laboratory Co., Ltd. for compliance with the requirements set forth in the VCCI regulations and the requirements procedure according to V-2/02.04 & V-3/02.04. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Susan Su for

Lucky Chen / EMC. Director



VERIFICATION OF COMPLIANCE

Equipment Under Test: Notebook PC
Trade Name: Acer; Quanta
Regulatory Model Number: ZG1S
Serial Number: N/A
AC power during test: 110VAC/60Hz
Applicant: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.

Manufacturer: **Quanta Computer Inc.**
No. 188, Wen Hua 2dn Rd., Kuei Shan Hsiang,
Taoyuan Hsien, Taiwan, R.O.C.

Type of Test: BSMI Class B
Measurement Procedure: CNS 13438
File Number: 021367-T
Date of test: December 23 ~ 24, 2002
Deviation: None
Condition of Test Sample: Normal
Final Result: Pass
Worst data: See below

Test Item	Freq.(MHz)	Measured data	Margin (M μ C)	Remark
Radiated Emission	601.61	34.8 (dB/m)	-2.2 dB (\pm 1.6672 dB)	
Conducted Emission	0.153	51.10 (dB)	-14.70 dB (\pm 2.8104 dB)	

● The negative sign in Margin cell means under the specific limit.
● This test result traceable to national or international standards

The above equipment was tested by C & C Laboratory Co., Ltd. for compliance with the requirements set forth in the BSMI regulations and the requirements procedure according to CNS 13438. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Susan Su for

Lucky Chen / EMC. Director



PRODUCT INFORMATION

Housing Type:	Plastic
EUT Power Rating:	DCV from Power Adapter
AC power during Test:	230VAC/ 50Hz to Power Adapter
AC Power Adapter Manufacturer:	DELTA Model: ADP-75FB LITEON Model: PA-1750-02
AC Power Adapter Rating:	I/P: 100-240VAC, 50-60Hz, 1.5A (for DELTA) O/P: 19VDC, 3.95A (for DELTA) I/P: 100-240VAC, 50-60Hz, 2.3A (for LITEON) O/P: 19VDC, 3.95A (for LITEON)
AC Power Cord Type:	Unshielded, 1.8m (Detachable) to Power Adapter
DC Power Cable Type:	Unshielded, 1.8m (Non-Detachable) with a core at Power Adapter
CPU Manufacturer:	Intel Model: P4 1.3GHz P4 1.4GHz P4 1.5GHz P4 1.6GHz
OSC/Clock Frequencies:	133MHz
Memory Capacity:	Installed: 128MB 256MB 512MB
14" LCD Panel Manufacturer:	QDI Model: QD141X1LH12
15" LCD Panel Manufacturer:	AU Model: B150XG01 B150PG01 LG Model: LP150X05 LP150E02 Hitachi Model: TX38D81VC1CAB TX38D91VC1FAB
HDD Manufacturer:	Hitachi Model: DK23EA-20 (20GB) DK23EA-30 (30GB) DK23EA-40 (40GB) DK23EA-60 (60GB) Fujitsu Model: MHS2030AT (30GB) MHS2040AT (40GB)



		MHS2060AT (60GB)
	Toshiba	Model: MK2018GAP (20GB)
		MK3021GAS (30GB)
		MK4021GAS (40GB)
		MK6021GAS (60GB)
		MK6022GAX (60GB)
CD-ROM Manufacturer:	QSI	Model: SCR-242 (9SCR242S959)
DVD-ROM Manufacturer:	QSI	Model: SDR-083
	Panasonic	Model: SR-8177
COMBO Manufacturer:	QSI	Model: SBW-242
	Panasonic	UJDA740
Battery Manufacturer (Li-ion):	Sanyo	Model: 8 cell, 4400mAH
	Simplo	Model: 8 cell, 4400mAH
Modem Manufacturer:	Ambit	Model: U98M005
Modem/ Bluetooth Combo Manufacturer:	Ambit	Model: T60M665
Wireless LAN Manufacturer:	Intel	Model: WM3B2100 (802.11b)
	Ambit	Model: T60H677 (802.11a+b)
LAN Card Manufacturer:	On Board	
VGA Card Manufacturer:	On Board	EasyPort
One to Two Adapter Cable Manufacturer:	Acer	Model: EasyPort
One to Two Adapter Cable Type: (Included one SIO Port and one PIO Port)	Shielded, 0.1m (Detachable)	



I/O Port of Notebook PC:

I/O PORT TYPES	Q'TY	TESTED WITH
1.) Parallel Port	1	1
2.) Video Port	1	1
3.) Line In Port	1	1
4.) Line Out Port	1	1
5.) Microphone Port	1	1
6.) Line Port	1	1
7.) LAN Port	1	1
8.) USB Port	4	4
9.) SCSI Port	1	1
10.) 1394 Port	1	1
11.) S-Video Port	1	1



TEST FACILITY

- Location:** No. 81-1, 210 Lane, Pa-de 2nd Road, Lu-Chu Hsiang, Taoyuan, Taiwan, R. O. C.
- Description:** There are four 3/10m open area test sites and three line conducted labs for final test. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4:and CISPR 16 requirements.
- Site Filing:** A site description is on file with the Federal Communications Commission, 7435 Oakland Mills Road, Columbia, MD 21046.
- Registration also was made with Voluntary Control Council for Interference (VCCI).
- Site Accreditation:** Accredited by NEMKO (Authorization #: ELA 124) for EMC & A2LA (Certificate #: 824.01) for Emission
- Also accredited by BSMI for the product category of Information Technology Equipment.
- Instrument Tolerance:** All measuring equipment is in accord with ANSI C63.4 and CISPR 22 requirements that meet industry regulatory agency and accreditation agency requirement.

Ground Plane:Two conductive reference ground planes were used during the Line Conducted Emission, one in vertical and the other in horizontal. The dimensions of these ground planes are as below. The vertical ground plane was placed distancing 40 cm to the rear of the wooden test table on where the EUT and the support equipment were placed during test. The horizontal ground plane projected 50 cm beyond the footprint of the EUT system and distanced 80 cm to the wooden test table. For Radiated Emission Test, one horizontal conductive ground plane extended at least 1m beyond the periphery of the EUT and the largest measuring antenna, and covered the entire area between the EUT and the antenna. It has no holes or gaps having longitudinal dimensions larger than one-tenth of a wavelength at the highest frequency of measurement up to 1GHz.

Site # 3 & #4 Line Conducted Test Site: At Shielding Room



THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

C & C LABORATORY CO., LTD
Hsi Chin, Taipei Hsien, Taiwan, R.O.C

for technical competence in the field of

Electrical Testing

The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 - 1999 "General Requirements for the Competence of Testing and Calibration Laboratories" and any additional program requirements in the identified field of testing. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002 (1994).

Presented this 30th day of January, 2002.



Peter Blay
President
For the Accreditation Council
Certificate Number 024-01
Valid to January 31, 2004

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025:1999

C & C LABORATORY CO., LTD¹
No. 81-1, Lane 218, No. 27th Rd.,
Lu Chia Hsiang, Taoyuan, TAIWAN, R.O.C.
Karl Chen Phone: 081 886 1 124 0312
Fax: 081 886 1 524 5235

ELECTRICAL (EMC)

Valid to: January 31, 2004

Certificate Number: 0824-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Test Industries:

Test Methods:

Emissions:

Radiated & Conducted

CFR 47, FCC Part 151B using ANSI C63.4/1952A/2000,
AS/NZS 1348, VCCI V3 (2001), CNS 1343B,
CNS 1343R, CNS 01781, CNS 13805, CNS 14112
CISPR 11; EN 55011, CISPR 14-1; EN 55014-1;
CISPR 15; EN 55015, CISPR 22; EN 55022;
EN 50062-1/EN 61000-6-3: 2001;
EN 50062-1/EN 61000-6-4: 2001

Immunity:

Electrostatic Discharge (ESD)
Radiated Immunity
Electrical Fast Transients/Burst
Surge Immunity
Conducted Immunity
Power Frequency Magnetic
Field Immunity
Voltage Dips, Short Interruptions, and
Line Voltage Variations
Harmonics/Voltage

IEC/EN 61000-4-2, IEC 60317
IEC/EN 61000-4-3, IEC 60317
IEC/EN 61000-4-4, IEC 60314
IEC/EN 61000-4-5
IEC/EN 61000-4-6
IEC/EN 61000-4-8
IEC/EN 61000-4-11
IEC/EN 61000-3-2, IEC/EN 61000-3-3

Peter Blay

¹ Note: This accreditation covers testing performed at the main laboratory listed above, and the satellite laboratory located at No. 199, Chung Sheng Road, Hsin-Tien City, Taipei, TAIWAN, R.O.C.

A2LA Cert. No. 0824-01-013002

Page 1 of 2

3881 Berkeleyville Pike, Suite 300 • Frederick, MD 21704-6573 • Phone: 301-644-5248 • Fax: 301-662-2914

Product Immunity / Generic Immunity

ITE Product	CISPR 24; EN 55024
Home Appliances	CISPR 14-2; EN 55014-2
Residential, commercial and light industry	EN 50061-2/EN 61000-6-1: 2001
Industry	EN 50062-2/EN 61000-6-2: 2001

On the following products/equipment:

Computer Components and Peripherals, Networking Components, Wireless Communications Components, Electronic Components, Televisions, Home Appliances.

01/23/02

Peter Blay

A2LA Cert. No. 0824-01-013002

Page 2 of 2



FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
1481 Chalkland Mills Road
Columbia, MD 21046

February 27, 2001

Registration Number: 00471

C & C Laboratory Co. Ltd.
RFL Int'l. No. 111, Sec. 1
Tung Shu, Taipei
Taipei
Taiwan, R.O.C.
Attention: Ken Chen

Re: Measurement facility located in Taiwan
Site No. 1 & 1-G & H issued
Date of Listing February 27, 2000

Outlines

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.4(a) of the FCC Rules. The descriptive info, however, was placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in compliance with applications for Certifications under Part 15 or 18 of the Commission's Rules. Please note that the filing must be updated for any changes made to the facility, and at least every three years from the date of being on file as it must be certified correct.

If requested, the above mentioned facility has been added to our list of those who perform their measurement services for the public as a fee basis. An up-to-date list of such public use facilities is available on file located at the FCC Website at WWW.FCC.ORG, Section 1871 Equipment Evaluation Electronic Filing.

Sincerely,

Thomas W. Phillips
Electronic Engineer

COMMERCE
MINISTRY OF COMMERCE
Ta Ministry Tsaiwanese

ENG 39
AJD

22 January 1998

C & C Laboratory Co Ltd
14/F
No. 344
Fa Ching Street
Taipei
TAIWAN ROC

Attention: Mr Tony Hsiung

Dear Sir

LABORATORY APPROVAL

Thank you for your submission of 21 January regarding the approval of your testing laboratory to the Ministry of Commerce's laboratory approval criteria. Thank you for your interest in this matter.

I am pleased to advise that your submission has been successful and your laboratory has been added to the list of Ministry-approved laboratories. Your approved status is valid until 31 December 1998. At this time, the Approved Laboratory scheme will cease operation with the implementation of the new telecommunications regulations. Test reports from your laboratory will be accepted under the new framework. Please find enclosed a copy of the Ministry's discussion paper, DP16, outlining the proposed compliance process from 1 January 1999.

If you have any further questions on this matter please do not hesitate to contact me.

Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Division of Commerce Building, 14 Roosevelt Road, Singapore, (see Contact)
PO Box 2027, Singapore. 246270/2026, Fax: 24627026

COMMERCE
MINISTRY OF COMMERCE
Ta Ministry Tsaiwanese

ENG 39
AJD

22 January 1998

C & C Laboratory Co Ltd
14/F
No. 344
Fa Ching Street
Taipei
TAIWAN ROC

Attention: Mr Tony Hsiung

Dear Sir

LABORATORY APPROVAL

Thank you for your submission of 21 January regarding the approval of your testing laboratory to the Ministry of Commerce's laboratory approval criteria. Thank you for your interest in this matter.

I am pleased to advise that your submission has been successful and your laboratory has been added to the list of Ministry-approved laboratories. Your approved status is valid until 31 December 1998. At this time, the Approved Laboratory scheme will cease operation with the implementation of the new telecommunications regulations. Test reports from your laboratory will be accepted under the new framework. Please find enclosed a copy of the Ministry's discussion paper, DP16, outlining the proposed compliance process from 1 January 1999.

If you have any further questions on this matter please do not hesitate to contact me.

Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Division of Commerce Building, 14 Roosevelt Road, Singapore, (see Contact)
PO Box 2027, Singapore. 246270/2026, Fax: 24627026



World-wide Testing and Certification

ELA 4RTTE

EMC Laboratory Authorisation

Aut. No. : ELA 192

**Testing of
Radio & Telecommunications Terminal Equipment**

EMC Laboratory: C & C Laboratory Co., Ltd.
No. 15, 14 Lin, Chia Tzu Chh, Lu Chu Hsiang,
Tayuan 338, Taiwan R.O.C.

Scope of Authorisation: All CENELEC and ETSI standards (ENs and ETNs that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards). This authorisation covers all of the EMC-related testing and documentation within the scope of the *Radio and Telecommunications Terminal Equipment (RATTE) Directive (i.e. 1990/39/EEC)*.

NOTE: This authorisation also covers EMC-related testing and documentation that is within the scope of Article 18.5 of the EMC Directive (i.e. 89/332/EEC as amended by 92/31/EEC).

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfills the conditions described in Nemko Document ELA 10. During NEMKO's visit to the laboratory, an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union's Directive specified above.

For Type Examination Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain this Authorisation, the information given in the enclosed ELA-DMP(s) (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31. December 2003.

On 26 April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: Oslo, Norway
Phone: +47 22 00 00 00
Fax: +47 22 00 00 00
E-mail: info@nemko.no



World-wide Testing and Certification

ELA 4RTTE

EMC Laboratory Authorisation

Aut. No. : ELA 192

(Page 2 of 2)

SCOPE OF AUTHORISATION

Generic and product-family standards, R&TTE

EN 501 524-1/00 + A1/A2	EN 501 522-1-1/02	EN 501 489-18-2/00
EN 501 524-2/00	EN 501 489-17-2/00	
EN 501 489-2-2/00	EN 501 489-18-1-1/02	EN 501 489-2-2/00
EN 501 489-18-1/02	EN 501 489-18-2/00	
EN 501 489-18-2/00	EN 501 489-17-2/00	EN 501 489-17/00
EN 501 489-18-2/00	EN 501 489-17/00	EN 501 489-17/00
EN 501 489-18-2/00		

Basic standards

EN 50064-2:2005 + A1:06 IEC 60064-2:2005 + A1:06	EN 50064-1:2005 + A1:06 IEC 60064-1:2005 + A1:06	EN 50064-3:2005 IEC 60064-3:2005
EN 50065-1:2005 IEC 60065-1:2005	IEC 60335-1/04 EN 50101:04 + A1:04 EN 50101:04/05	EN 50064-4:2005 IEC 60064-4:2005
EN 50064-3:2005 IEC 60064-3:2005	EN 50064-1:2005 IEC 60064-1:2005	EN 50064-2:2005 IEC 60064-2:2005
EN 50064-1:2005 IEC 60064-1:2005	EN 50064-3:2005 IEC 60064-3:2005	

On 26 April 2001

Kjell Bergh, Nemko Group EMC Co-ordinator

Postal address: Oslo, Norway
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E-mail: info@nemko.no



World-wide Testing and Certification

ELA 4

**EMC Laboratory
Authorisation**

Aut. No. : ELA 124

EMC Laboratory: C & C Laboratory Co., Ltd.
No. 15, 14 Lin, Chia Tzu Chh, Lu Chu Hsiang,
Tayuan 338, Taiwan R.O.C.

Scope of Authorisation: All CENELEC standards (ENs) for EMC that are listed on the accompanying page, and, all of the corresponding CISPR, IEC, and ISO EMC standards that are listed on the accompanying page.

This Authorisation Document confirms that the above-mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfills the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation given on the accompanying page. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under the European Union EMC Directive (89/332/EEC as amended by 92/31/EEC and 95/1/EEC).

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain this Authorisation, the information given in the enclosed ELA-DMP(s) (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory, which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31 December 2003.

On 26 April 2001

For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

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E-mail: info@nemko.no



World-wide Testing and Certification

ELA 4

**EMC Laboratory
Authorisation**

Aut. No. : ELA 160

EMC Laboratory: C & C Laboratory Co., Ltd.
No. 15, 14 Lin, Chia Tzu Chh, Lu Chu Hsiang,
Tayuan 338, Taiwan R.O.C.

Scope of Authorisation: EN 60601-1-2 and IEC 60601-1-2, the Colateral Standards for electromedical products, with particular application to EMC requirements only.

This Authorisation Document confirms that the above mentioned EMC Laboratory has been validated against EN 45001 and found to be compliant. The laboratory also fulfills the conditions described in Nemko Document ELA 10. During Nemko's visit to the laboratory an assessment was made of the relevant parts of your organisation - i.e. facilities, personnel qualifications, test equipment, and testing practices. It was found that the EMC Laboratory is capable of performing tests within the Scope of Authorisation listed above. Accordingly, Nemko will accept your test reports as a basis for attesting conformity to these EMC Standards for the products in question under either the European Union Medical Device Directive (MDD), 93/42/EEC, or the European Union Active Implantable Medical Device Directive (AIMD), 90/269/EEC, as applicable.

In case of applications for Product Certification(s) to be issued by Nemko, your EMC Laboratory's test report(s) will be accepted by Nemko if they are enclosed with the Application Form submitted by the manufacturer.

In order to maintain this Authorisation, the information given in the enclosed ELA-DMP(s) (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time be withdrawn if the conditions are no longer considered to be fulfilled.

The Authorisation is valid through 31. December 2003.

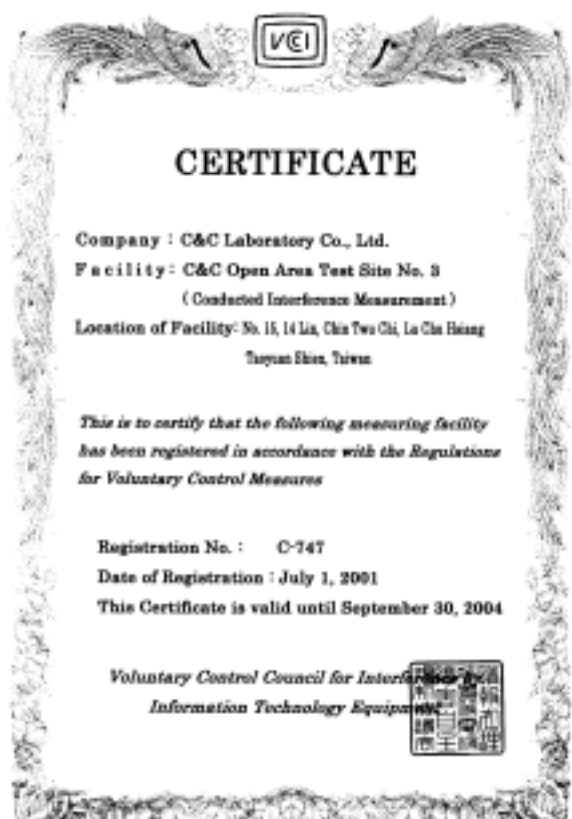
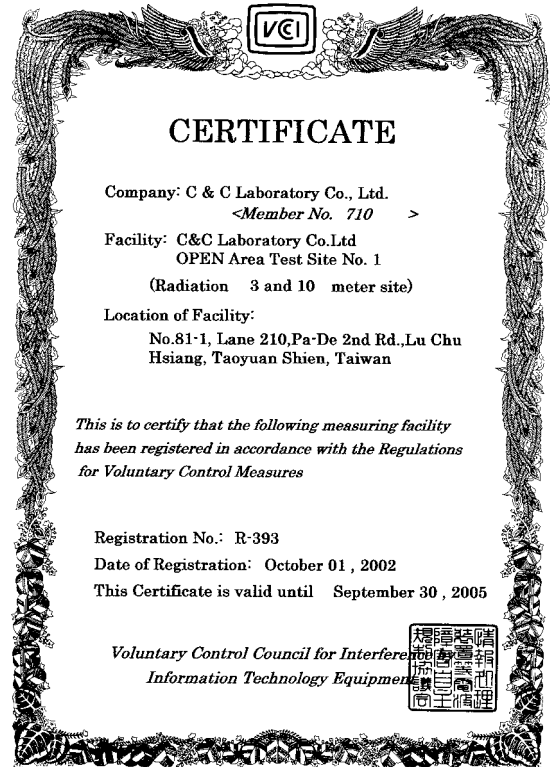
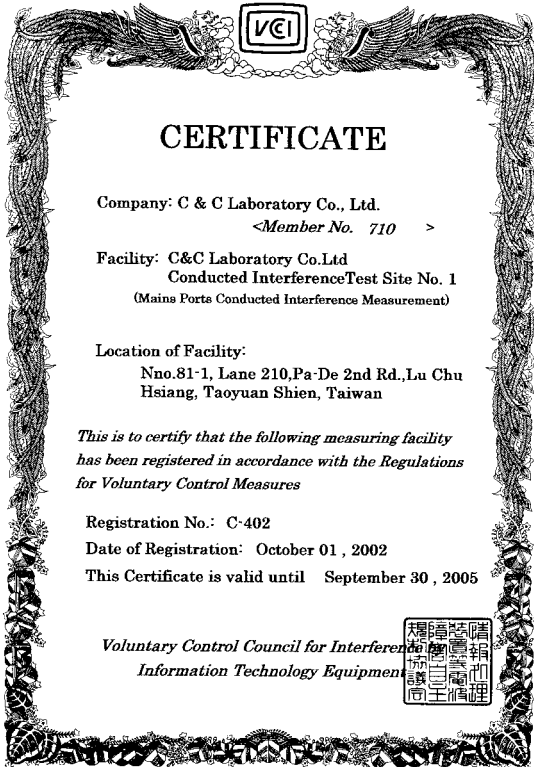
On 26 April 2001

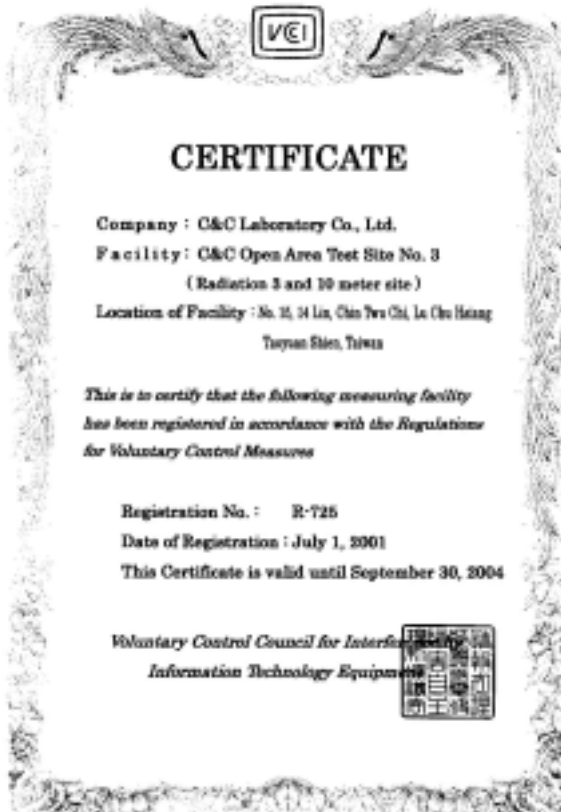
For Nemko AS:

Kjell Bergh

Kjell Bergh, Nemko Group EMC Co-ordinator

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E-mail: info@nemko.no







Organization : C & C Laboratory Co., Ltd.
 Laboratory : C & C EMC Laboratory
 Registration No. : 0563
 Laboratory Head : WANG, Charles
 Testing Field : Electrical Testing
 Date of Registration: 1998.11.15
 Date of Extension : 2001.11.15



Registration Items	Test Items	Test Methods	Ranges	Best Test capability recognized	Remarks
05028 Low power R.F. equipment	Low power radiators/receivers Low power R. F. equipment	IEC Low Power Radiators Technical Specification (2008.30) BSI BS 308 328-1 Pt. 3.1 (2001-09) BSI BS 308 328-2 Pt. 3.2 (2001-09) BSI BS 308 328-1 Pt. 1 (2001-09) BSI BS 308 328-2 Pt. 3.1 (2001-09) BSI BS 308 328-3 Pt. 1.1 (2000-09) 47 CFR Part 15 Subpart C (2000-10)	9 kHz-50 GHz		
038102 Harmonic current emissions	ITE and peripheral products	IEC 6100-3-2(1995) A1(2001) EN 61000-3-2(1995) A1(1998), A2(1998), A14(2000)	EMI Voltage: 0-230VAC (Single Phase)50/60 Hz EMI current: 0-35 A Harmonic number: 1-40 order		
030003 Voltage Fluctuations and Flicker	ITE and peripheral Products	IEC 1000-3-3 (1994) EN 1000-3-3 (1995)	EMI Voltage: 0-270 VAC (Single Phase)50/60 Hz EMI Current: 0-16 A Standard impedance: Za = 0.4 Ω		



Registration Items	Test Items	Test Methods	Ranges	Best Test capability recognized	Remarks
010413 Radio and television broadcast receivers and associated equipment	Broadcast receivers and associated equipment	EN 55013:1994A12:1994A13:1996 CISPR 13:1975A1:1983 CIS 13439 (1987.5)	EMI Voltage:180-230 VAC (Single Phase)50/60 Hz EMI Current:0-35 A 9 kHz-1.75 GHz Conduction Rejection: 0 MHz-30 MHz Voltage Terminal: 20 MHz-1.75 GHz Radiation Emission: 30 MHz-1500 GHz Disturbance Power: 30-300 MHz		
020014 Electrical appliances and systems	Household appliances/Electric tools and similar apparatus	EN 55014-1:1995A1:1995A2:1999 CISPR 14:1995A1:1995A2:1998 CIS 13383-1 (1998.6)	EMI Voltage:0-270 VAC (Single) 50/60 Hz EMI Current:0-200 A Conduction Rejection: 9 kHz-30 MHz Disturbance Power: 50-300 MHz		
030015 Fluorescent lamps and luminaires	Fluorescent Lamps and Luminaires	CISPR 15 (1992) EN 55015 (1999) CIS 14115 (1998)	EMI Voltage:0-270 VAC (Single/3 Phase) Conduction emission frequency range:9 kHz-30 MHz Magnetic interference frequency range:9 kHz-30 MHz (Magnetic loop antenna) Insertion loss frequency range:150-1005 kHz Loop EM interference frequency		





Registration Items	Test Items	Test Methods	Ranges	Best Test capability recognized	Remarks
E30022 Systems and apparatus of the telecommunication and information technology	ITE and peripheral products	CISPR 22 (1997) EN 55022 (1998) DIN 13438 (1997) AS/NZS 3548 (1998) NCC1 (2001) 47 CFR Part 15 Subpart E (2000, 2001)	range: 30 MHz-26.5 GHz RUT Voltage:0-270 VAC (Single/3 Phase)50/60 Hz RUT Current:0-200 A Conduction interference: 150 MHz-30 MHz Radiation interference: 30 MHz-26.5 GHz		
E18282 Electrostatic discharge tests	ITE and peripheral products	IEC 61000-4-2 (2001) EN 61000-4-2 (1995) CNS 13022-1 (1992)	RUT Voltage:100-270 VAC (Single/3 Phase)50/60 Hz RUT Current:0-200 A Air discharge: 0.2-25 kV(+/-) Contact discharge: 0.2-25 kV(+/-)		
E10000 Radiated susceptibility tests	ITE and peripheral products	IEC 801-3 (1984) IEC 1000-4-3 (1995) EN 61000-4-3 (1995) EN 30204 (1995)	RUT Voltage:0-270 VAC (Single Phase)50/60 Hz RUT Current:0-30 A Frequency range: 9MHz-1.0 GHz (Field intensity:10 V/m, AM Modulation)		
E10004 Electrical fast transient/burst tests	ITE and peripheral products	IEC 801-4 (1985) IEC 1000-4-4 (1995) EN 61000-4-4 (1995) CNS 13022-2 (1992)	RUT Voltage:0-270 VAC (Single/3 phase)50/60 Hz RUT Current:0-200 A Equipment range:0.2-4.5 kV		



Registration Items	Test Items	Test Methods	Ranges	Best Test capability recognized	Remarks
E30025 Surge/lightning tests	ITE and peripheral products	IEC 1000-4-5 (1995) EN 50142 (1994) CNS 13022-3 (1992) EN 61000-4-5 (1995)	RUT Volt.:0-270 VAC (Single phase)50/60 Hz DC 100V RUT Current:0-15 A (AC/DC) Equipment range:0.2-4.2 kV Test Ports:Power line, Signal line		
E30026 Conducted susceptibility tests	ITE and peripheral products	IEC 1000-4-6 (1995) EN 61000-4-6 (1995) EN 50141 (1993)	RUT Voltage:0-270 VAC (Single/3 phase)50/60 Hz RUT Current:0-15 A Frequency range: 150 kHz-100 MHz (Amplitude:100 μA, AM Modulation)		
E10208 Power frequency magnetic field immunity test	ITE and peripheral products	IEC 1000-4-8 (1995) EN 61000-4-8 (1995)	RUT Voltage:0-270 VAC (Single/3 Phase)50/60 Hz RUT Current:0-15 A Continuous magnetic field: 0-100 A/m		
E10211 Voltage dips,short interruptions and voltage variations immunity tests (Bell Dclor)	ITE and peripheral products	IEC 1000-4-11 (1994) EN 61000-4-11 (1994)	RUT Voltage:100-270 VAC (Single Phase)50/60 Hz RUT Current:0-15 A Voltage interruption: 0-6 % Voltage Dips:0-100 % Voltage variation: Standard variation sine shape		



TEST EQUIPMENT LIST

Instrumentation:The following list contains equipment used at C & C Laboratory, Co., Ltd. for testing. The equipment conforms to the CISPR 16-1 / ANSI C63.2-1988 Specifications for Electromagnetic Interference and Field Strength Instrumentation from 10kHz to 1.0 GHz or above.
Equipment used during the tests:

Open Area Test Site: # 4

Open Area Test Site # 4					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	ADVANTEST	R3132	91700456	02/22/2002	02/21/2003
EMI Test Receiver	R&S	ESVS10	846285/016	04/18/2002	04/17/2003
Bilog Antenna	CHASE	CBL 6112B	2462	01/12/2002	01/11/2003
Turn Table	Chance most	N/A	N/A	N.C.R	N.C.R
Antenna Tower	Chance most	N/A	N/A	N.C.R	N.C.R
Controller	Chance most	N/A	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M51067	N.C.R	N.C.R
Site NSA	C&C Lab.	N/A	N/A	08/17/2002	08/16/2003

Above 1 GHz: 3 meter chamber

3 meter Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	ADVANTEST	R3271A	85060321	10/16/2002	10/15/2003
Pre-Amplifier	HP	8449B	3008A00965	10/15/2002	10/14/2003
Horn Antenna	EMCO	3115	9602-4659	04/16/2002	04/15/2003
Coaxial Cable	ANOREW	LDF-2-50	79027	10/14/2002	10/13/2003
Turn Table	HD	HD320	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA 240	N/A	N.C.R	N.C.R
Controller	HD	HD 100	N/A	N.C.R	N.C.R

Conducted Emission Test Site: # 3

Conducted Emission Test Site # 3					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESHS30	828144/003	08/08/2002	08/07/2003
LISN	R&S	ESH2-Z5	843285/010	12/10/2002	12/09/2003
LISN	EMCO	3825/2	9003-1628	07/26/2002	07/25/2003

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument. According to C&C quality policy, the period of calibration tolerance is \pm one month.



Power Harmonic & Voltage Fluctuation/Flicker Measurement (61000-3-2&-3-3)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Harmonic & Flicker Tester	HAEFELY TRENCH	PHF555	080 419-25	10/14/2002	10/13/2003
ESD test (61000-4-2)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
ESD Generator	NoiseKen	ESS-2001	ESS0210582	06/18/2002	06/17/2003
Radiated Electromagnetic Field immunity Measurement (61000-4-3)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
S.G.	R&S	SMY02	100094	08/08/2002	08/07/2003
Power Amplifier	ar	150W1000	300300	N/A	N/A
Power Antenna	EMCO	93141	9712-1083	N/A	N/A
EM PROBE	GW	EMR-30	L-0013	05/23/2002	05/22/2003
Fast Transients/Burst test (61000-4-4)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Fast Transients/Burst Generator	HAEFELY TRENCH	PEFT- JUNIOR	583 333-117	08/22/2002	08/21/2003
Clamp	HAEFELY TRENCH	093 506.1	080 421.13	N/A	N/A
Surge Immunity test (61000-4-5)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Surge Tester	HAEFELY TRENCH	PSUGER 4010	583 334-71	09/03/2002	09/02/2003
CDN	HAEFELY TRENCH	IP6.2	148342	N/A	N/A
CDN	HAEFELY TRENCH	DEC1A	148050	N/A	N/A
CS test (61000-4-6)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
S.G.	R&S	SMY02	100094	08/08/2002	08/07/2003
Power Amplifier	ar	500A100A	300299	N/A	N/A
CDN	Lüthi	801-M3	1879	03/05/2002	03/04/2003
CDN	MEB	M2	A3002010	04/24/2002	04/23/2003
CDN	SCHAFFNER	T200	16892	10/17/2002	10/16/2003
CDN	SCHAFFNER	T400	16906	10/17/2002	10/16/2003
Voltage Dips/Short Interruption and Voltage Variation Immunity test (61000-4-11)					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Dips/Interruption and Variations Simulator	HAEFELY TRENCH	PLINE 1610	080 344-05	04/08/2002	04/07/2003

The calibrations of the measuring instruments, including any accessories that may effect such calibration, are checked frequently to assure their accuracy. Adjustments are made and correction factors applied in accordance with instructions contained in the manual for the measuring instrument.

BLOCK DIAGRAM OF EUT CONFIGURATION

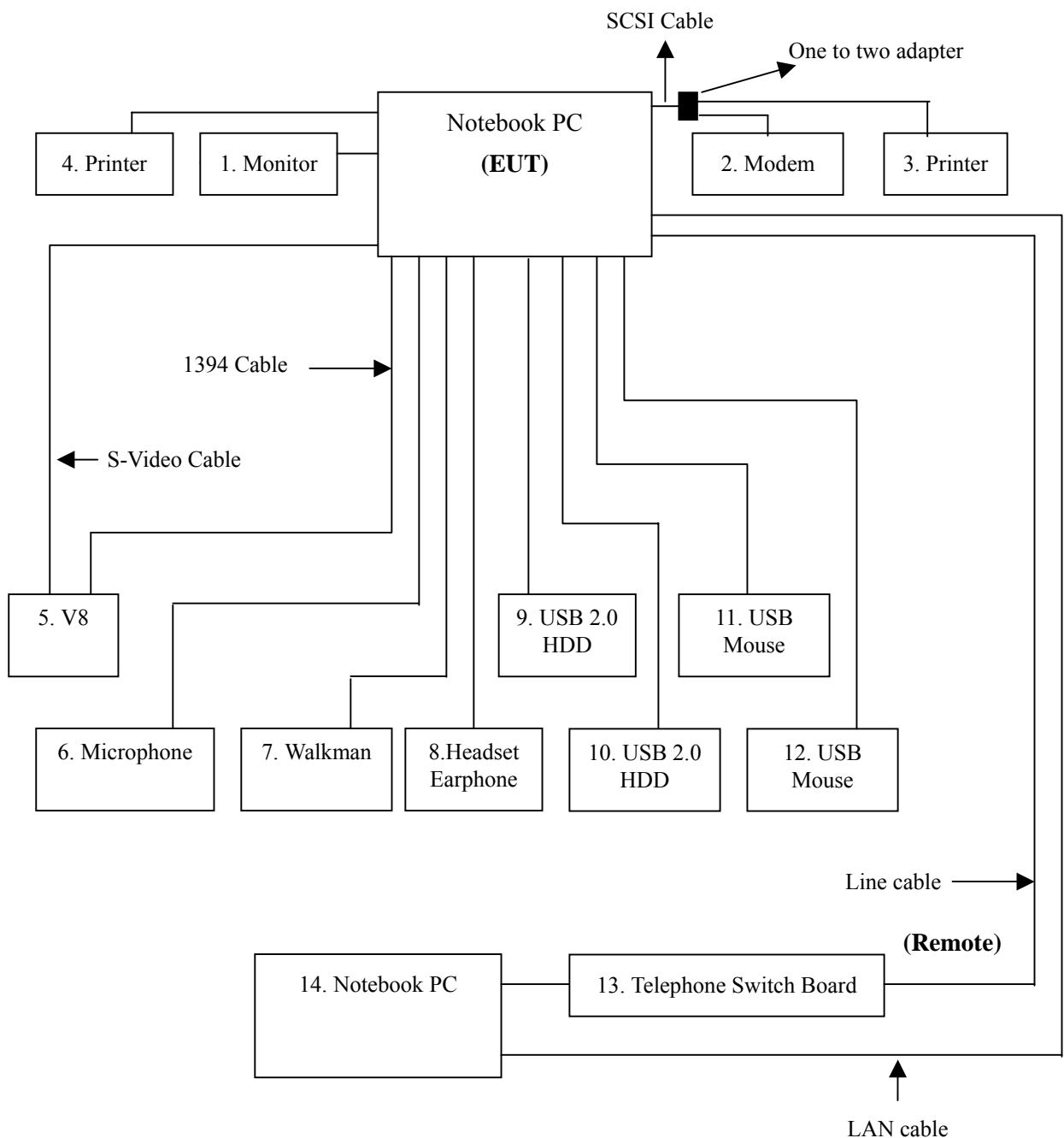
System Diagram of Connections between EUT and Simulators

EUT: Notebook PC

Trade Name: Quanta

Model Number: ZG1S

Power Cord: Unshielded, 1.8m to Power Adapter





SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	Monitor	Monitor	CPD-G200	2716043	FCC DoC	Shielded, 1.8m with a core	Unshielded, 1.8m
2.	Modem	2400	94-364-176268	BF9D93108US	Hayes	Shielded, 1.8m	Unshielded, 1.8m
3.	Printer	EPSON STYLUS C20SX	DW4E126664	FCC DoC	EPSON	Shielded, 1.8m	Unshielded, 1.8m
4.	Printer	EPSON STYLUS C20SX	DW4E130521	FCC DoC	EPSON	Shielded, 1.8m	Unshielded, 1.8m
5.	V8	CCD-TRV310	N/A	FCC DoC	SONY	1394 Cable: Unshielded, 1.8m S-Video Cable: Unshielded, 1.8m	N/A
6.	Microphone	DM-510	I3-0	N/A	KOKA	Unshielded, 2.2m	N/A
7.	Walkman	RQ-L10	HB004471	FCC DoC	Panasonic	Unshielded, 1.8m	N/A
8.	Headset Earphone	GT-2004V	N/A	N/A	GITON	Unshielded, 1.2m	N/A
9.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Unshielded, 1.8m	N/A
10.	USB 2.0 External HDD	FSP024-1ADA21	N/A	FCC DoC	TSE	Unshielded, 1.8m	N/A
11.	USB Mouse	M-BB48	LZE01450904	FCC DoC	Logitech	Unshielded, 1.8m	N/A
12.	USB Mouse	M-BB48	LZE01361333	FCC DoC	Logitech	Unshielded, 1.8m	N/A
13.	Telephone Switch Board (Remote)	UP 206	100825	N/A	PRO-COMM	Line Cable: Unshielded, 10m	Unshielded, 1.8m
14.	Notebook PC (Remote)	M285	NU2503589	DoC	LEO	LAN Cable: Unshielded, 10m Line Cable: Unshielded, 1.8m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals.

Grounding: Grounding was in accordance with the manufacturer's requirements and conditions for the intended use.



SYSTEM DESCRIPTION

EUT Test Program:

1. The module device driver was exercised to play music.
2. A communication software was loaded and executed to communicate with remote side.
3. The EMI (File name: EMCTEST.EXE) test program was loaded from EUT and executed in Windows XP mode.
4. The Data was sent to LCD Panel of EUT and monitor filling the screens with upper case of “H” patterns.
5. The test program sequentially exercised all related I/O’s of EUT and sent “H” patterns to all applicable output port of EUT.
6. Repeat 2 to 5. Test program is self-repeating throughout the test.



SECTION 1 - EMISSION MEASUREMENT

Conducted Emission Measurement

Radiated Emission Measurement

Power Harmonics Measurement (EN 61000-3-2)

Power Flicker Measurement (EN 61000-3-3)

MEASUREMENT PROCEDURE (PRELIMINARY LINE CONDUCTED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per the standard described in Table A (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

(Table A : The reference standard and testing parameters)

Applied	Regulatory	Reference Standard	Measured band	EUT Powered
<input checked="" type="checkbox"/>	FCC DoC	ANSI C63.4-1992	<input checked="" type="checkbox"/> 150 kHz-30 MHz <input type="checkbox"/> 450 kHz-30 MHz	120 VAC/60 Hz
	FCC ID	ANSI C63.4-1992	<input type="checkbox"/> 150 kHz-30 MHz <input type="checkbox"/> 450 kHz-30 MHz	120 VAC/60 Hz
<input checked="" type="checkbox"/>	C-Tick	AS/NZS 3548: 1995 + A1: 1997 + A2: 1997	150 kHz-30 MHz	240 VAC/50Hz
<input checked="" type="checkbox"/>	VCCI	V-2/02.04 & V-3/02.04	150 kHz-30 MHz	100 VAC; 50/60Hz
<input checked="" type="checkbox"/>	CE Mark	EN 55022: 1994 + A1: 1995 + A2: 1997	150 kHz-30 MHz	230 VAC/50Hz
<input checked="" type="checkbox"/>	BSMI	CNS 13438	150 kHz-30 MHz	110 VAC/60Hz

- 2) Support equipment, if needed, was placed as per the standard described in Table A.
- 3) All I/O cables were positioned to simulate typical actual usage as per the standard described in Table A.
- 4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source as per Table A and was grounded to the ground plane.
- 5) All support equipment received power from a second LISN supplying power of 110VAC/60Hz, if any.
- 6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7) Analyzer / Receiver scanned from the range as per Table A for emissions in each of the test modes.
- 8) During the above scans, the emissions were maximized by cable manipulation.



9) The following test mode(s) were scanned during the preliminary test:

Mode(s) : (Customer defined)

No.	Modem/Bluetooth Combo	Battery	Adapter	Memory	HDD	Optical Device	CPU	LCD	Wireless
1)	Modem Ambit U98M005	Sanyo Li-ion 4400mAh, 8 cell	Delta ADP-75FB (PFC)	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
2)	Modem/Bluetooth Combo Ambit T60M665								
3) Choose worst case from test config 1-2 to decide which Modem/Bluetooth Combo would be used for next configuration									
4)	Worst case from 3	Simple Li-ion 4400mAh, 8 cell	Delta ADP-75FB (PFC)	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
5) Choose worst case from test config 3-4 to decide which Battery would be used for next configuration									
6)	Worst case from 3	Worst case from 5	Lite-On PA-1750-02	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
7) Choose worst case from test config 5-6 to decide which Adapter would be used for next configuration									
8)	Worst case from 3	Worst case from 5	Worst case from 7	512MB (256MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
9)				1024MB (512MBx2)					
10) Choose worst case from test config 7-9 to decide which Memory would be used for next configuration									
11)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Hitachi 30GB DK23EA-30	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
12)					Hitachi 40GB DK23EA-40				
13)					Hitachi 60GB DK23EA-60				
14)					Fujitsu 30GB MHS2030AT				
15)					Fujitsu 40GB MHS2040AT				
16)					Fujitsu 60GB MHS2060AT				
17)					Toshiba 20GB MK2018GAP				
18)					Toshiba 30GB MK3021GAS				
19)					Toshiba 40GB MK4021GAS				
20)					Toshiba 60GB MK6021GAS				
21)					Toshiba 60GB MK6022GAX				
22) Choose worst case from test config 10-21 to decide which HDD would be used for next configuration									
23)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	DVD-ROM QSI SDR-083	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
24)						DVD-ROM Panasonic SR-8177			
25)						COMBO Panasonic UJDA740			
26)						COMBO QSI SBW-242			
27) Choose worst case from test config 22-26 to decide which Optical Device would be used for next configuration									
28)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Intel P4 1.4GHz	14" LCD Panel QDI QD141X1LH12	N/A
29)							Intel P4 1.5GHz		
30)							Intel P4 1.6GHz		
31) Choose worst case from test config 27-30 to decide which CPU would be used for next configuration									
32)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Worst case from 31	15" LCD Panel AU B150XG01	N/A
33)								15" LCD Panel AU B150PG01	
34)								15" LCD Panel LG LP150X05	
35)								15" LCD Panel LG LP150E02	
36)								15" LCD Panel Hitachi TX38D81VC1CAB	
37)								15" LCD Panel Hitachi TX38D91VC1FAB	



38)	Choose worst case from test config 31-37 to decide which LCD Panel would be used for next configuration								
39)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Worst case from 31	Worst case from 38	Intel WM3B2100 (802.11b)
40)	Choose worst case from test config 38-39 to decide which wireless would be used for next configuration								
41)	Worst Case: (230VAC) Ambit T60M665 Modem/ Bluetooth Combo + Sanyo Li-Ion 4400mAH Battery + Lite On PA-1750-02 Adapter + 1024MB Memory + Toshiba (60GB) MK6021GAS + Combo QSI SBW-242 + P4 1.6G CPU + LG LP150E02 LCD Panel + Intel WM3B2100 (802.11b) Wireless Card								

10) After the preliminary scan, we found the following test mode producing the highest emission level.

Mode: 41.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.



MEASUREMENT PROCEDURE (FINAL LINE CONDUCTED EMISSION TEST)

- 1) EUT and support equipment was set up on the test bench as per step 10 of the preliminary test.
- 2) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- 3) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. MHz	Q.P. Raw dBuV	Average Raw dBuV	Q.P. Limit dBuV	Average Limit dBuV	Q.P. Margin dB	Average Margin dB	Note
x.xx	43.95	---	56	46	-12.05	-2.05	L 1

Freq.	= Emission frequency in MHz
Raw dBuV	= Uncorrected Analyzer/Receiver reading + Insertion loss of LISN, if it > 0.5 dB
Limit dBuV	= Limit stated in standard
Margin dB	= Reading in reference to limit
Note	= Current carrying line of reading
“---“	= The emission level complied with the Average limits, with at least 2dB margin limits, so no further recheck.

Calculation example:

$$\text{Margin (dB)} = \text{RAW (dBuV)} - \text{Limit (dBuV)}$$

LINE CONDUCTED EMISSION LIMIT

<input checked="" type="checkbox"/> FCC DoC; <input type="checkbox"/> FCC ID; <input checked="" type="checkbox"/> C-Tick; <input checked="" type="checkbox"/> VCCI; <input type="checkbox"/> CE-Mark; <input checked="" type="checkbox"/> BSMI			
CLASS	Measuring Band	Maximum RF Line Voltage	
		Q.P.	AVERAGE
B	150kHz-500kHz	66-56 dBuV	56-46 dBuV
	500kHz-5MHz	56 dBuV	46 dBuV
	5MHz-30MHz	60 dBuV	50 dBuV

Note: The lower limit shall apply at the transition frequency.



MEASUREMENT PROCEDURE (PRELIMINARY RADIATED EMISSION TEST)

- 1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per the standard described in Table B (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

(Table B : The reference standard and testing parameters)

Applied	Regulatory	Reference Standard	Measured band	Measuring distance (m)	EUT Powered
<input checked="" type="checkbox"/>	FCC DoC	ANSI C63.4-1992	<input type="checkbox"/> 30MHz-1000 MHz <input type="checkbox"/> 30MHz-2000 MHz <input checked="" type="checkbox"/> 30MHz-13 GHz	<input checked="" type="checkbox"/> 3 m <input checked="" type="checkbox"/> 10 m	120VAC / 60 Hz
	FCC ID	ANSI C63.4-1992	<input type="checkbox"/> 30MHz-1000 MHz <input type="checkbox"/> 30MHz-2000 MHz <input type="checkbox"/> 30MHz-5000 MHz	<input type="checkbox"/> 3 m <input type="checkbox"/> 10 m	120VAC / 60 Hz
<input checked="" type="checkbox"/>	C-Tick	AS/NZS 3548: 1995 + A1: 1997 + A2: 1997	30MHz-1000 MHz	10 m	240VAC / 50Hz
<input checked="" type="checkbox"/>	VCCI	V-2/02.04 & V-3/02.04	30MHz-1000 MHz	<input type="checkbox"/> 3 m <input checked="" type="checkbox"/> 10 m	100VAC; 50/60Hz
<input checked="" type="checkbox"/>	CE Mark	EN 55022: 1994 + A1: 1995 + A2: 1997	30MHz-1000 MHz	10 m	230VAC / 50Hz
<input checked="" type="checkbox"/>	BSMI	CNS 13438	150 kHz-30 MHz	10 m	110VAC / 60Hz

- 2) Support equipment, if needed, was placed as per the standard described in Table B.
- 3) All I/O cables were positioned to simulate typical actual usage as per the standard described in Table B.
- 4) The EUT received power source as per described in Table B from the outlet socket under the turntable. All support equipment received 110VAC/60Hz power from another socket under the turntable, if any.
- 5) The antenna was placed as per the distance described in Table B away from the EUT as stated in reference standard. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- 6) The Analyzer / Receiver quickly scanned from 30MHz to 13 GHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.



7) The following test modes were scanned during the preliminary test:

Mode(s) : (Customer defined)

No.	Modem/Bluetooth Combo	Battery	Adapter	Memory	HDD	Optical Device	CPU	LCD	Wireless
1)	Modem Ambit U98M005	Sanyo Li-ion 4400mAh, 8 cell	Delta ADP-75FB (PFC)	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
2)	Modem/Bluetooth Combo Ambit T60M665								
3)	Choose worst case from test config 1-2 to decide which Modem/Bluetooth Combo would be used for next configuration								
4)	Worst case from 3	Simple Li-ion 4400mAh, 8 cell	Delta ADP-75FB (PFC)	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
5)	Choose worst case from test config 3-4 to decide which Battery would be used for next configuration								
6)	Worst case from 3	Worst case from 5	Lite-On PA-1750-02	256MB (128MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
7)	Choose worst case from test config 5-6 to decide which Adapter would be used for next configuration								
8)	Worst case from 3	Worst case from 5	Worst case from 7	512MB (256MBx2)	Hitachi 20GB DK23EA-20	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
9)				1024MB (512MBx2)					
10)	Choose worst case from test config 7-9 to decide which Memory would be used for next configuration								
11)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Hitachi 30GB DK23EA-30	CD-ROM QSI SCR-242 (9SCR242S959)	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
12)					Hitachi 40GB DK23EA-40				
13)					Hitachi 60GB DK23EA-60				
14)					Fujitsu 30GB MHS2030AT				
15)					Fujitsu 40GB MHS2040AT				
16)					Fujitsu 60GB MHS2060AT				
17)					Toshiba 20GB MK2018GAP				
18)					Toshiba 30GB MK3021GAS				
19)					Toshiba 40GB MK4021GAS				
20)					Toshiba 60GB MK6021GAS				
21)					Toshiba 60GB MK6022GAX				
22)	Choose worst case from test config 10-21 to decide which HDD would be used for next configuration								
23)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	DVD-ROM QSI SDR-083	Intel P4 1.3GHz	14" LCD Panel QDI QD141X1LH12	N/A
24)						DVD-ROM Panasonic SR-8177			
25)						COMBO Panasonic UJDA740			
26)						COMBO QSI SBW-242			
27)	Choose worst case from test config 22-26 to decide which Optical Device would be used for next configuration								
28)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Intel P4 1.4GHz	14" LCD Panel QDI QD141X1LH12	N/A
29)							Intel P4 1.5GHz		
30)							Intel P4 1.6GHz		
31)	Choose worst case from test config 27-30 to decide which CPU would be used for next configuration								
32)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Worst case from 31	15" LCD Panel AU B150XG01	N/A
33)								15" LCD Panel AU B150PG01	
34)								15" LCD Panel LG LP150X05	
35)								15" LCD Panel LG LP150E02	
36)								15" LCD Panel Hitachi TX38D81VC1CAB	
37)								15" LCD Panel Hitachi TX38D91VC1FAB	



38)	Choose worst case from test config 31-37 to decide which LCD Panel would be used for next configuration								
39)	Worst case from 3	Worst case from 5	Worst case from 7	Worst case from 10	Worst case from 22	Worst case from 27	Worst case from 31	Worst case from 38	Intel WM3B2100 (802.11b)
40)	Choose worst case from test config 38-39 to decide which wireless would be used for next configuration								
41)	Worst Case: (230VAC) Ambit T60M665 Modem/ Bluetooth Combo + Sanyo Li-Ion 4400mAH Battery + Lite On PA-1750-02 Adapter + 1024MB Memory + Toshiba (60GB) MK6021GAS + Combo QSI SBW-242 + P4 1.6G CPU + LG LP150E02 LCD Panel + Intel WM3B2100 (802.11b) Wireless Card								

8) After the preliminary scan, we found the following test mode producing the highest emission level.

Mode: 41.

Then, the EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for reference of final testing.



MEASUREMENT PROCEDURE (FINAL RAIDATED EMISSION TEST)

- 1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test and final test was done at following test site.

(Table C : The final measurement parameters)

Measured band	Measuring distance (m)	EUT Powered
30MHz-1000 MHz	10 m OATS	230Vac / 50 Hz
1.0 – 10 GHz	3 m Chamber	120Vac / 60 Hz

- 2) The Analyzer / Receiver scanned in the band as described in Table B. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- 3) Recorded at least the six highest emissions. Emission frequency, amplitude, were recorded into a computer (The antenna position, polarization and turntable position were kept in raw data file) in which correction factors were used to calculate the emission level and compare reading to the applicable limit.
- 4) The test data of the worst case condition(s) was reported on the Summary Data page.

Data Sample:

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
xx.xx	14.0	11.2	26.2	30	-3.8

- | | |
|-------------------|--|
| Freq. | = Emission frequency in MHz |
| Raw Data (dBuV/m) | = Uncorrected Analyzer / Receiver reading |
| Corr. Factor (dB) | = Antenna factor + Cable loss – Amplifier gain |
| Emiss. Level | = Raw reading converted to dBuV/m and CF added |
| Limit dBuV/m | = Limit stated in standard |
| Margin dB | = Reading in reference to limit |
| P | = Peak Reading |
| Q | = Quasi-peak Reading |
| A | = Average Reading |

Calculation example:

$$\text{Margin (dB)} = \text{Emiss. Level (dBuV/m)} - \text{Limits (dBuV/m)}$$

$$\text{Emission Level (dBuV/m)} = \text{Raw Data (dBuV/m)} + \text{Corr Factor (dB)}$$



RADIATED EMISSION LIMIT

<input checked="" type="checkbox"/> FCC DoC; <input type="checkbox"/> FCC ID; <input checked="" type="checkbox"/> C-Tick; <input checked="" type="checkbox"/> VCCI; <input checked="" type="checkbox"/> CE-Mark; <input checked="" type="checkbox"/> BSMI					
CLASS	Measuring Band (MHz)	Distance (m)	Maximum Field Strength Limit (dBuV/m)		
			Q.P.	AVERAGE	PEAK
B	30-230	10	30	/	/
	230-1000	10	37	/	/
<input checked="" type="checkbox"/> FCC DoC; <input type="checkbox"/> FCC ID					
B	Above 1000	3	/	53.9	73.9

Note: The lower limit shall apply at the transition frequency.



DATA SUMMARY

- FCC DoC**
- FCC ID**
- VCCI**
- C-Tick**
- CE Mark**
- BSMI**

(For radiated emission; just worst case of powering is presented)



SUMMARY DATA
(LINE CONDUCTED TEST)
(CE --- 230VAC/50Hz)

Model Number: ZG1S

Location: Site # 3

Tested by: Sam Chang

Test Mode: Mode 41

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.182	50.90	---	64.30	54.30	-13.40	---	L1
1.418	39.20	---	56.00	46.00	-16.80	---	L1
2.963	35.50	---	56.00	46.00	-20.50	---	L1
4.368	34.00	---	56.00	46.00	-22.00	---	L1
5.517	33.10	---	60.00	50.00	-26.90	---	L1
20.792	33.10	---	60.00	50.00	-26.90	---	L1
0.168	50.00	---	65.00	55.00	-15.00	---	L2
1.142	40.90	---	56.00	46.00	-15.10	---	L2
2.529	34.90	---	56.00	46.00	-21.10	---	L2
4.022	34.10	---	56.00	46.00	-21.90	---	L2
7.217	36.50	---	60.00	50.00	-23.50	---	L2
20.648	36.00	---	60.00	50.00	-24.00	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.**



SUMMARY DATA
(LINE CONDUCTED TEST)
(FCC DoC --- 120VAC/60Hz)

Model Number: ZG1S

Location: Site # 3

Tested by: Sam Chang

Test Mode: Mode 41

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.150	50.60	---	66.00	56.00	-15.40	---	L1
1.072	32.40	---	56.00	46.00	-23.60	---	L1
3.568	29.50	---	56.00	46.00	-26.50	---	L1
4.321	27.30	---	56.00	46.00	-28.70	---	L1
18.992	30.00	---	60.00	50.00	-30.00	---	L1
20.537	31.70	---	60.00	50.00	-28.30	---	L1
<hr/>							
0.153	52.20	---	65.80	55.80	-13.60	---	L2
1.002	36.40	---	56.00	46.00	-19.60	---	L2
3.172	33.10	---	56.00	46.00	-22.90	---	L2
4.503	31.20	---	56.00	46.00	-24.80	---	L2
18.897	30.60	---	60.00	50.00	-29.40	---	L2
20.528	31.90	---	60.00	50.00	-28.10	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was or more than 2dB below the Average limit,
so no re-check anymore.**



SUMMARY DATA
(LINE CONDUCTED TEST)
(C-Tick --- 240VAC/50Hz)

Model Number: ZG1S

Location: Site # 3

Tested by: Sam Chang

Test Mode: Mode 41

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.167	51.40	---	65.10	55.10	-13.70	---	L1
1.042	40.30	---	56.00	46.00	-15.70	---	L1
2.448	37.80	---	56.00	46.00	-18.20	---	L1
4.842	33.90	---	56.00	46.00	-22.10	---	L1
6.117	33.20	---	60.00	50.00	-26.80	---	L1
19.413	32.00	---	60.00	50.00	-28.00	---	L1
<hr/>							
0.172	50.70	---	64.80	54.80	-14.10	---	L2
1.047	40.80	---	56.00	46.00	-15.20	---	L2
3.139	37.10	---	56.00	46.00	-18.90	---	L2
4.122	33.60	---	56.00	46.00	-22.40	---	L2
6.937	34.80	---	60.00	50.00	-25.20	---	L2
10.222	35.90	---	60.00	50.00	-24.10	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was or more than 2dB below the Average limit,
so no re-check anymore.**



SUMMARY DATA
(LINE CONDUCTED TEST)
(VCCI --- 100VAC/60Hz)

Model Number: ZG1S

Location: Site # 3

Tested by: Sam Chang

Test Mode: Mode 41

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.152	51.50	---	65.80	55.80	-14.30	---	L1
1.068	33.10	---	56.00	46.00	-22.90	---	L1
2.792	30.30	---	56.00	46.00	-25.70	---	L1
4.287	29.50	---	56.00	46.00	-26.50	---	L1
19.718	33.00	---	60.00	50.00	-27.00	---	L1
21.302	31.50	---	60.00	50.00	-28.50	---	L1
<hr/>							
0.152	52.40	---	65.80	55.80	-13.40	---	L2
0.947	34.90	---	56.00	46.00	-21.10	---	L2
2.483	32.20	---	56.00	46.00	-23.80	---	L2
3.902	30.70	---	56.00	46.00	-25.30	---	L2
20.487	31.90	---	60.00	50.00	-28.10	---	L2
20.793	31.20	---	60.00	50.00	-28.80	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was or more than 2dB below the Average limit,
so no re-check anymore.**



SUMMARY DATA
(LINE CONDUCTED TEST)
(BSMI -- 110VAC/60Hz)

Model Number: ZG1S

Location: Site # 3

Tested by: Sam Chang

Test Mode: Mode 41

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.152	50.30	---	65.80	55.80	-15.50	---	L1
1.013	35.10	---	56.00	46.00	-20.90	---	L1
2.402	32.70	---	56.00	46.00	-23.30	---	L1
3.908	30.00	---	56.00	46.00	-26.00	---	L1
18.679	31.70	---	60.00	50.00	-28.30	---	L1
19.718	31.80	---	60.00	50.00	-28.20	---	L1
<hr/>							
0.153	51.10	---	65.80	55.80	-14.70	---	L2
0.932	35.60	---	56.00	46.00	-20.40	---	L2
2.387	32.00	---	56.00	46.00	-24.00	---	L2
4.659	30.60	---	56.00	46.00	-25.40	---	L2
13.652	29.70	---	60.00	50.00	-30.30	---	L2
20.487	31.90	---	60.00	50.00	-28.10	---	L2

L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

****NOTE: “---” denotes the emission level was less -2 dB to the Average limit, so no re-check anymore.**



SUMMARY DATA

(RADIATED EMISSION TEST – Powered 230VAC/50Hz)

Model Number: ZG1S

Location: Site # 4

Tested by: Sam Chang

Polar: Vertical -- 10m

Test Mode: Mode 41

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 25°C

Humidity: 55%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
133.00	10.3	14.2	24.5	30.0	-5.5
160.00	12.8	13.5	26.3	30.0	-3.7
233.07	11.3	14.0	25.3	37.0	-11.7
333.45	12.4	18.0	30.4	37.0	-6.6
456.45	12.4	21.6	34.0	37.0	-3.0
601.61	10.6	24.2	34.8	37.0	-2.2



SUMMARY DATA

(RADIATED EMISSION TEST – Powered 230VAC/50Hz)

Model Number: ZG1S

Location: Site # 4

Tested by: Sam Chang

Polar: Horizontal -- 10m

Test Mode: Mode 41

Detector Function: Quasi-Peak

Test Results: Passed

Temperature: 25°C

Humidity: 55%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level (dBuV/m)	Limits	Margin (dB)
233.60	11.1	14.1	25.2	37.0	-11.8
257.72	11.3	17.0	28.3	37.0	-8.7
333.16	11.9	18.0	29.9	37.0	-7.1
464.21	12.9	21.8	34.7	37.0	-2.3
533.27	10.0	24.5	34.5	37.0	-2.5
603.36	10.5	24.2	34.7	37.0	-2.3



SUMMARY DATA (RADIATED EMISSION TEST)

Model Number: ZG1S

Location: 3 meter chamber

Tested by: Sam Chang

Polar: Vertical -- 3m

Test Mode: Mode 41

Detector Function: Pk /A.V.

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level(Pk) (dBuV/m)	Limits (Pk)	Margin (dB)
1039.00	17.0	26.5	43.5	73.9	-30.4
1257.00	16.1	27.2	43.3	73.9	-30.6
1591.00	19.1	28.3	47.4	73.9	-26.5
1746.00	12.8	28.7	41.5	73.9	-32.4
1861.00	17.3	29.1	46.4	73.9	-27.5

*****Note:** In case of peak reading complied with the limit at least -22dB margin, no further measurement with A.V. detector required.



SUMMARY DATA (RADIATED EMISSION TEST)

Model Number: ZG1S

Location: 3 meter chamber

Tested by: Sam Chang

Polar: Horizontal -- 3m

Test Mode: Mode 41

Detector Function: Pk /A.V.

Test Results: Passed

Temperature: 25°C

Humidity: 50%RH

(The chart below shows the highest readings taken from the final data)

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dB)	Emiss. Level(Pk) (dBuV/m)	Limits (Pk)	Margin (dB)
1064.00	12.3	26.6	38.9	73.9	-35.0
1141.00	12.4	26.8	39.2	73.9	-34.7
1257.00	11.5	27.2	38.7	73.9	-35.2
1347.00	9.5	27.5	37.0	73.9	-36.9
1861.00	11.9	29.1	41.0	73.9	-32.9

*****Note:** In case of peak reading complied with the limit at least -22dB margin, no further measurement with A.V. detector required.

EN 61000-3-2 & EN 61000-3-3

(POWER HARMONICS & VOLTAGE FLUCTUATION /FLICKER)

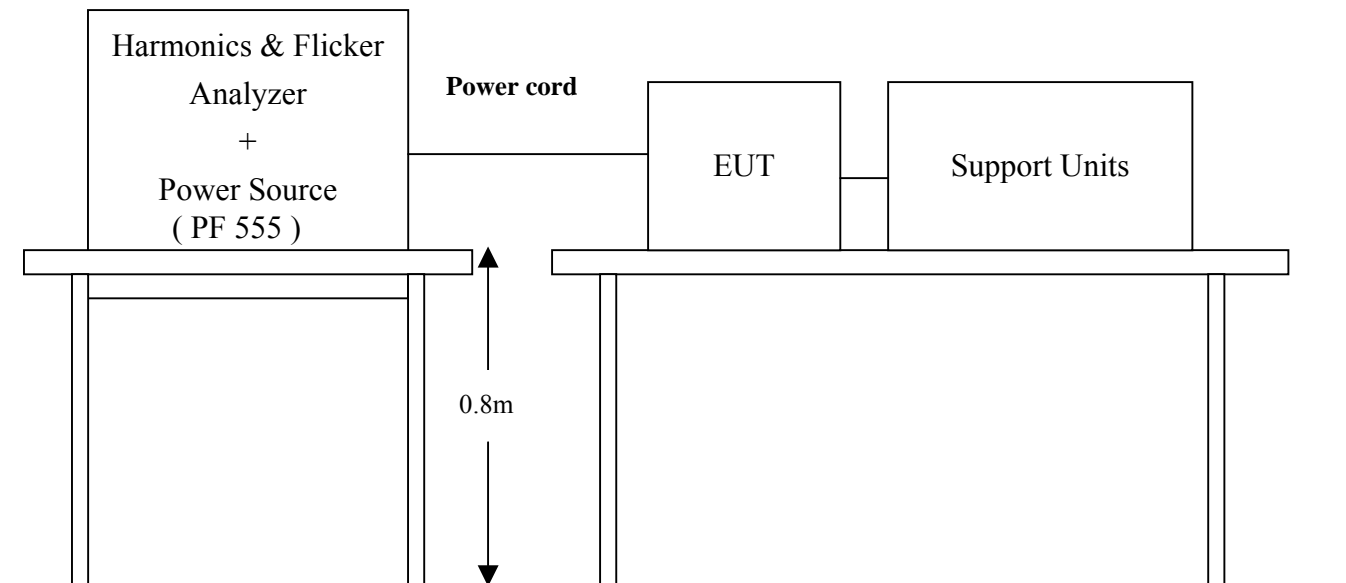
POWER HARMONICS MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-2 (1995 + A1: 1998 + A2: 1998)
Limits : CLASS A; CLASS D
Tester : Sam Chang
Temperature : 25°C
Humidity : 50%

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port : AC mains
Basic Standard : EN 61000-3-3 (1995)
Limits : §5 of EN 61000-3-3
Tester : Sam Chang
Temperature : 25°C
Humidity : 50%

Block Diagram of Test Setup:



Result: Please see the attached test data.



EN 61000-3-2 TEST REPORT 2002/12/24 06:594 PM

Unit: Notebook PC

Model No.: ZG1S

Remarks: Temp:25°C Humidity:50%

Operator: Sam Chang

=====

TEST SETUP

Test Freq.:	50.00 Hz.	Test Voltage:	230.0 vac
Waveform :	SINE	Test Time:	2.5 min.
Classification :	CLASS A	Test Type:	STEADY-STATE

Prog. Zo Enabled: YES Prog. Zo: 0.000

Motor Driven with Phase Angle Control: NO
Impedance selected: DIRECT

Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance: 460.000 uH

MAX WATTS: 43.5W



TEST DATA

Result: PASS

Harmonic Current Results

Hn	AMPS	LO Limit	HI Limit	Result
0	0.000	0.000	0.000	PASS
1	0.185	NaN	NaN	PASS
2	0.001	1.080	1.080	PASS
3	0.039	2.300	2.300	PASS
4	0.000	0.430	0.430	PASS
5	0.016	1.140	1.140	PASS
6	0.000	0.300	0.300	PASS
7	0.008	0.770	0.770	PASS
8	0.000	0.230	0.230	PASS
9	0.004	0.400	0.400	PASS
10	0.000	0.184	0.184	PASS
11	0.004	0.330	0.330	PASS
12	0.000	0.153	0.153	PASS
13	0.004	0.210	0.210	PASS
14	0.000	0.131	0.131	PASS
15	0.003	0.150	0.150	PASS
16	0.000	0.115	0.115	PASS
17	0.002	0.132	0.132	PASS
18	0.000	0.102	0.102	PASS
19	0.002	0.118	0.118	PASS
20	0.000	0.092	0.092	PASS
21	0.002	0.107	0.107	PASS



22	0.000	0.084	0.084	PASS
23	0.002	0.098	0.098	PASS
24	0.000	0.077	0.077	PASS
25	0.001	0.090	0.090	PASS
26	0.000	0.071	0.071	PASS
27	0.002	0.083	0.083	PASS
28	0.000	0.066	0.066	PASS
29	0.002	0.078	0.078	PASS
30	0.000	0.061	0.061	PASS
31	0.001	0.073	0.073	PASS
32	0.000	0.058	0.058	PASS
33	0.001	0.068	0.068	PASS
34	0.000	0.054	0.054	PASS
35	0.001	0.064	0.064	PASS
36	0.000	0.051	0.051	PASS
37	0.001	0.061	0.061	PASS
38	0.000	0.048	0.048	PASS
39	0.001	0.058	0.058	PASS
40	0.000	0.046	0.046	PASS

END OF REPORT



EN 61000-3-3 TEST REPORT 2002/12/24 07:15 PM

Unit: Notebook PC
Model No.: ZG1S (Continue)
Remarks: Temp:25°C Humidity:50%
Operator: Sam Chang

=====

TEST SETUP

Test Freq.: 50.00 Hz. Test Voltage: 230.0 vac
Waveform : SINE
Test Time: 10.0 min. Tshort: 10.0 min.
Prog. Zo Enabled: YES Prog. Zo: 0.000
Voltage Change less than once per Hour: NO
Impedance selected: DIRECT
Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance: 460.000 uH



TEST DATA

Result: PASS

	EUT Data	Limit	Result	Test Enabled
Pst max	0.023	1.00	PASS	true
Plt max	0.023	0.65	PASS	true
dc %	0.00	3.00	PASS	true
dmax %	0.00	4.00	PASS	true
d(t) sec.	0.00	0.20	PASS	true

Power Source Data

Source Pst max	0.021	0.400	PASS	true
% THD	0.03	3.00	PASS	true

END OF REPORT



EN 61000-3-3 TEST REPORT 2002/12/24 07:32 PM

Unit: Notebook PC
Model No.: ZG1S (Manual Switch)
Remarks: Temp:25°C Humidity: 50%
Operator: Sam Chang

=====

TEST SETUP

Test Freq.: 50.00 Hz. Test Voltage: 230.0 vac
Waveform : SINE
Test Time: 10.0 min. Tshort: 10.0 min.
Prog. Zo Enabled: YES Prog. Zo: 0.000
Voltage Change less than once per Hour: NO
Impedance selected: DIRECT
Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance: 460.000 uH



TEST DATA

Result: PASS

	EUT Data	Limit	Result	Test Enabled
Pst max	0.040	1.00	PASS	true
Plt max	0.040	0.65	PASS	true
dc %	0.00	3.00	PASS	true
dmax %	0.00	4.00	PASS	true
d(t) sec.	0.00	0.20	PASS	true

Power Source Data

Source Pst max	0.021	0.400	PASS	true
% THD	0.03	3.00	PASS	true

END OF REPORT

SECTION 2 – IMMUNITY TESTS (EN 55024: 1998)

Electrostatic discharge (ESD) immunity test (IEC 61000-4-2)

Radiated electromagnetic field (RS) immunity test (IEC 61000-4-3)

Fast transient / burst (EFT) immunity test (IEC 61000-4-4)

Surge immunity test (IEC 61000-4-5)

Conducted disturbances inducted by radio-frequency fields, (CS) immunity test (IEC 61000-4-6)

Voltage dips, short interruption and voltage variation immunity test (IEC 61000-4-11)

BLOCK DIAGRAM OF EUT CONFIGURATION

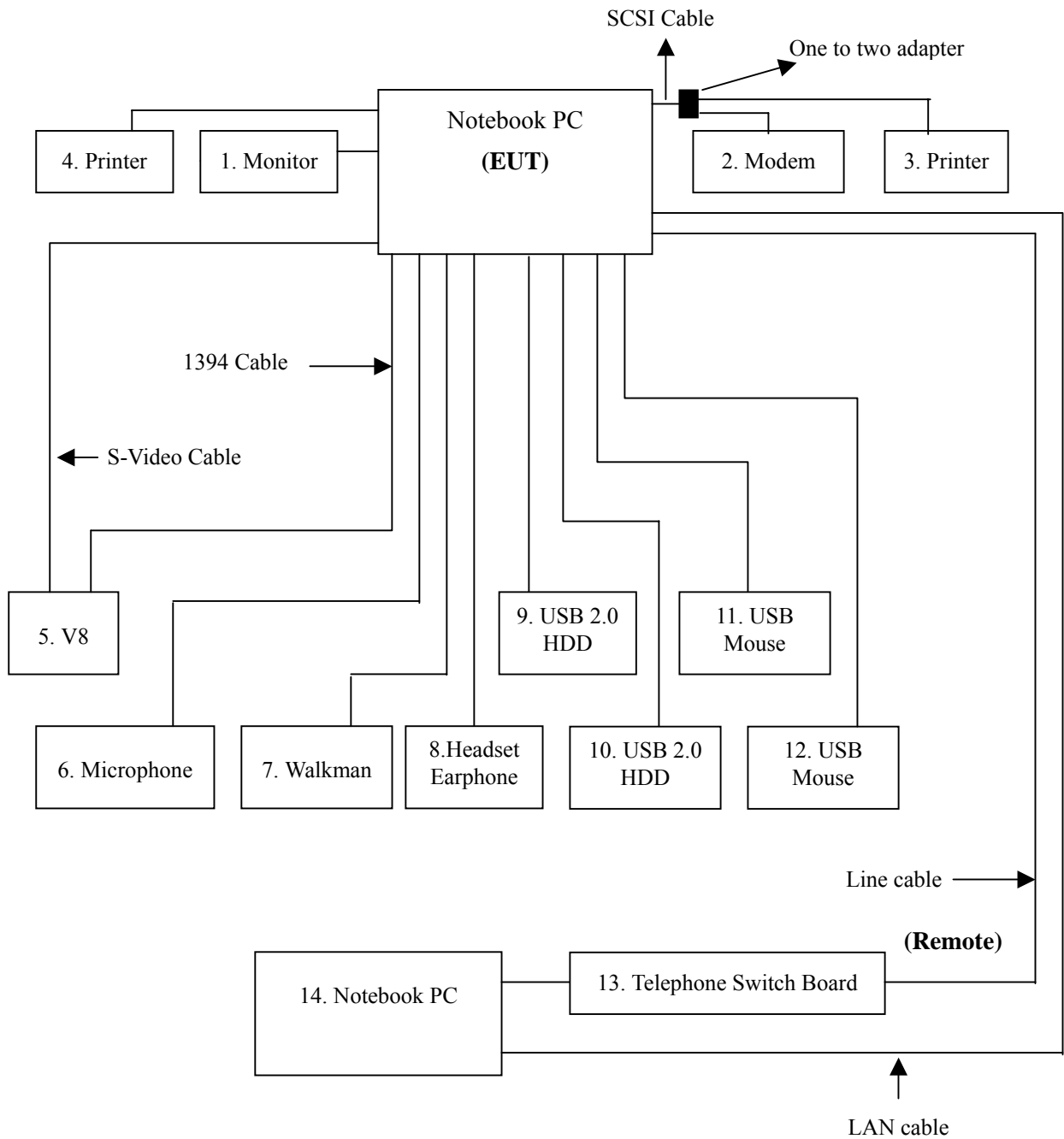
System Diagram of Connections between EUT and Simulators

EUT: Notebook PC

Trade Name: Acer; Quanta

Model Number: ZG1S

Power Cord: Unshielded, 1.8m to Power Adapter



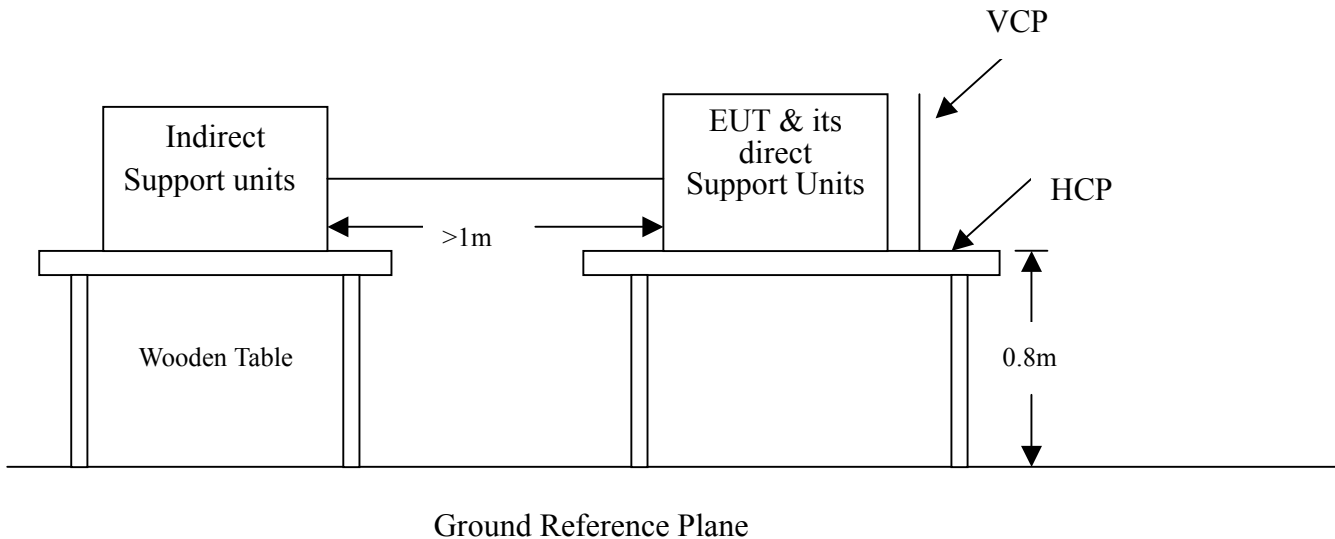
IEC 61000-4-2

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	: Enclosure
Basic Standard	: IEC 61000-4-2
Requirements	: ± 8 kV (Air Discharge) ± 4 kV (Contact Discharge) ± 4 kV (Indirect Discharge)
Performance Criteria	: B (Standard require)
Tester	: Sam Chang
Temperature/Humidity	: 25°C / 50%
Pressure	: 1220 mbar

Block Diagram of Test Setup:

(The 470 k ohm resistors are installed per standard requirement)





Test Procedure:

1. The EUT was located 0.1 m minimum from all side of the HCP.
2. The indirect support units were located 1m minimum away from the EUT, but direct support unit was/ were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.
3. A scroll 'H' test program was loaded and executed in "Windows XP" mode.
4. The EUT sent above message to EUT Panel and monitor and related peripherals through the test.
5. Active the communication function if the EUT with such port(s).
6. As per the requirement of EN 55024; applying direct contact discharge at the sides other than front of EUT at minimum 50 discharges (25 positive and 25 negative) if applicable, can't be applied direct contact discharge side of EUT then the indirect discharge shall be applied. One of the test points shall be subjected to at least 50 indirect discharge (contact) to the front edge of horizontal coupling plane.
7. Other parts of EUT where it is not possible to perform contact discharge then selecting appropriate points of EUT for air discharge, a minimum of 10 single air discharges shall be applied.
8. The application of ESD to the contact of open connectors is not required.
9. The EUT direct connection units also need to be applied ESD at the port of EUT cable connected
10. Putting a mark on EUT to show tested points. The following test condition was followed during the tests.

Note: As per IEC 61000-4-2:2001, with two 470k bleed resistors cable is connected between the EUT and HCP during the test applicable for power ungrounded or battery operating unit only. The electrostatic discharges were applied as follows:

Amount of Discharges	Voltage	Coupling	Result (Pass/Fail)
Mini 25 /Point	±4kV	Contact Discharge	Pass
Mini 25 /Point	±4kV	Indirect Discharge HCP (Front)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Left)	Pass
Mini 25 /Point	±4kV	Indirect Discharge VCP (Back)	N/A
Mini 25 /Point	±4kV	Indirect Discharge VCP (Right)	Pass
Mini 10 /Point	±8kV	Air Discharge	Pass

**** The tested points to EUT, please refer to attached pages.**

(Blue arrow mark for contact discharge, red arrow mark for air discharge.)

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

PASS **FAILED**

Observation: No any function degraded during the tests.

The Tested Points of EUT

(Photo 1 of 4)



(Photo 2 of 4)



(Photo 3 of 4)



(Photo 4 of 4)

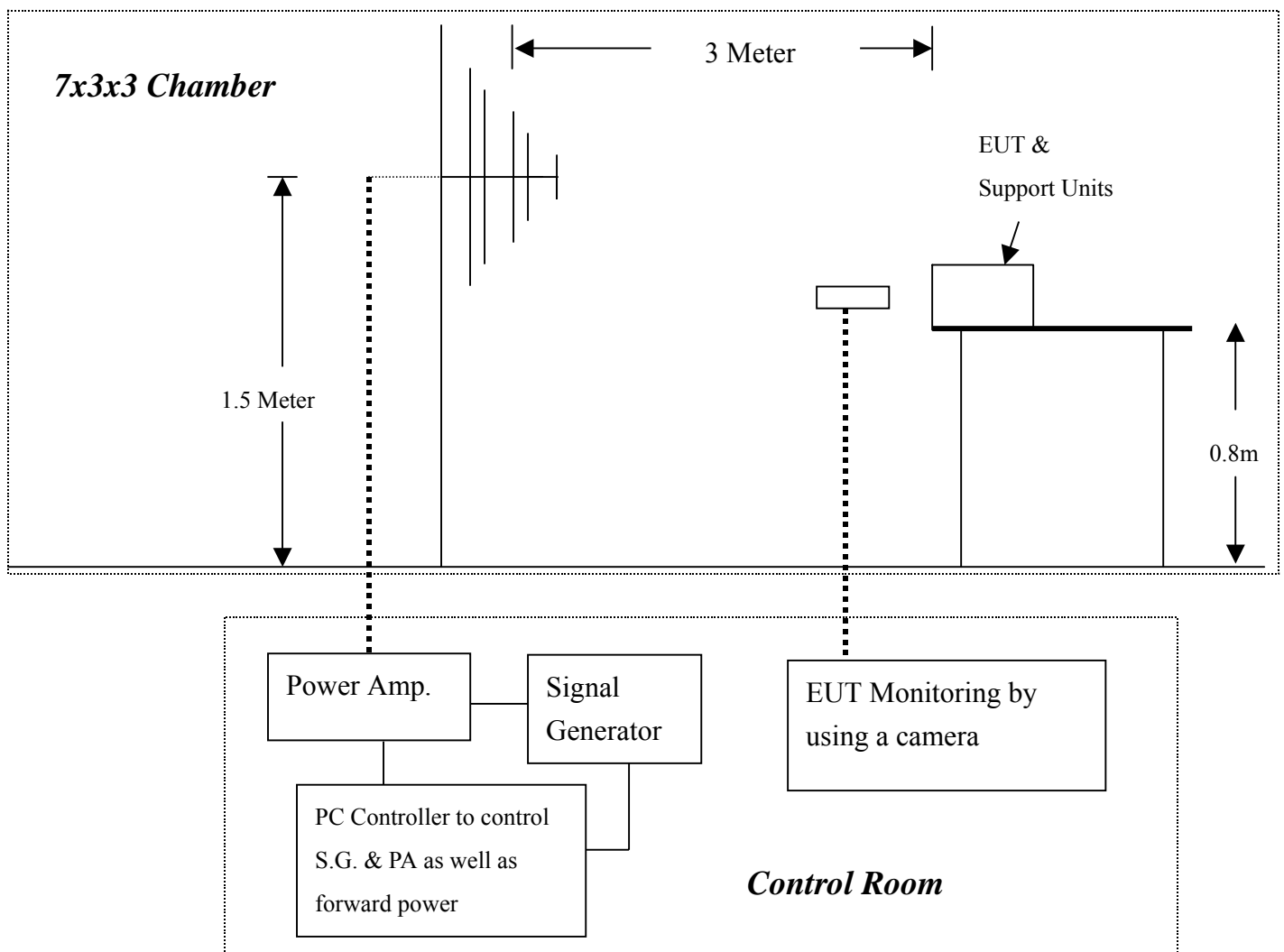


IEC 61000-4-3

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	: Enclosure
Basic Standard	: IEC 61000-4-3
Requirements	: 3 V/m / with 80% AM. 1kHz Modulation.
Performance Criteria	: A (Standard require)
Tester	: Sam Chang
Temperature	: 25°C
Humidity	: 50%
Pressure	: 1020 mbar

Block Diagram of Test Setup:



Test Procedure:

1. The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per IEC 61000-4-3.
2. A scroll ‘H’ messages were displayed on screen of EUT.
3. Adjusting the monitoring camera to monitor the ‘H’ message as clear as possible.
4. Setting the testing parameters of RS test software per IEC 61000-4-3.
5. Performing the pre-test at each side of with double specified level (6V/m) at 4% steps.
6. From the result of pre-test in step 5, choice the worst side of EUT for final test from 80 MHz to 1000 MHz at 1% steps.
7. Recording the test result in following table.
8. It is not necessary to perform test as per annex A of EN 55024 if the EUT doesn’t belong to ITE product.

Test conditions:

IEC 61000-4-3 Preliminary test conditions

Test level : 6V/m
Steps : 4 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	6V	Yes	H	Front	Pass
80-1000	6V	Yes	V	Front	Pass
80-1000	6V	Yes	H	Right	Pass
80-1000	6V	Yes	V	Right	Pass
80-1000	6V	Yes	H	Back	Pass
80-1000	6V	Yes	V	Back	Pass
80-1000	6V	Yes	H	Left	Pass
80-1000	6V	Yes	V	Left	Pass

IEC 61000-4-3 Final test conditions:

Test level : 3V/m
Steps : 1 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Polarity	Position (°)	Result (Pass/Fail)
80-1000	3V	Yes	H	Back	Pass
80-1000	3V	Yes	V	Back	Pass



Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.

- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.

- Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

PASS **FAILED**

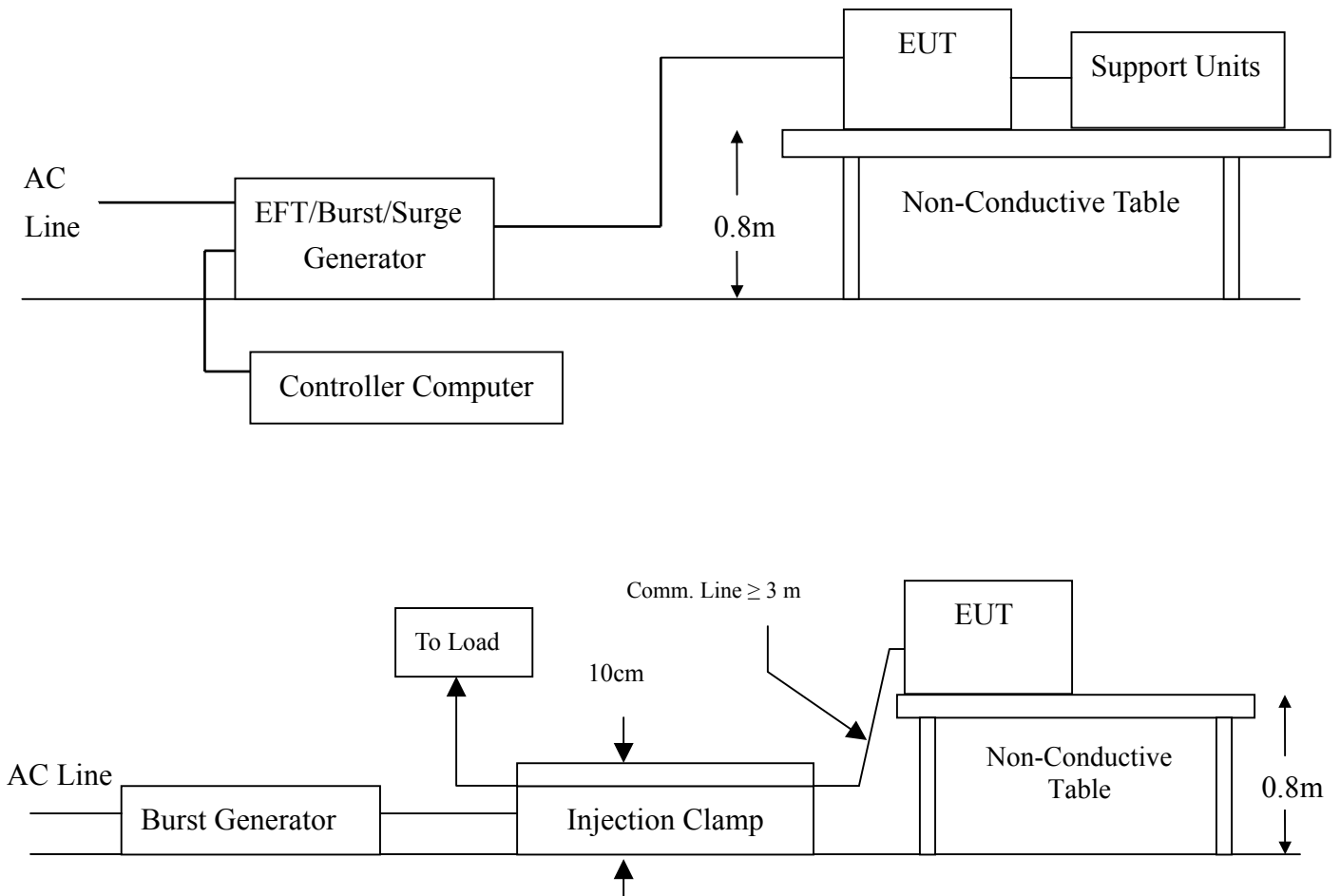
Observation: No any function degraded during the tests.

IEC 61000-4-4

FAST TRANSIENTS/BURST IMMUNITY TEST

Port	: On Power Lines and Telecommunication Ports
Basic Standard	: IEC 61000-4-4
Requirements	: $\pm 1\text{kV}$ for Power Supply Lines $\pm 0.5\text{kV}$ to LAN/ Line Cable
Performance Criteria	: B (Standard require)
Tester	: Sam Chang
Temperature	: 25°C
Humidity	: 50%
Pressure	: 1020 mbar

Block Diagram of Test Setup:





Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground reference plane.
2. A 1.0 meter long power cord was attached to EUT during the test.
3. The length of communication cable between communication port and clamp was keeping within 1 meter.
4. A test program was loaded and executed in “Windows XP” mode.
5. The data was sent to LCD Panel of EUT and monitor filling the screens with upper case of “H” patterns.
6. The test program exercised related support units sequentially.
7. Repeating step 3 to 6 through the test and increase test voltage to the EUT ports from minimum to standard request or client request.
8. Recording the test result as shown in following table.

Test conditions:

Impulse Frequency: 5kHz

Tr/Th: 5/50ns

Burst Duration: 15ms

Burst Period: 3Hz

Inject Line	Voltage kV	Inject Method	Result (Pass/Fail)
L1	± 1	Direct	Pass
N	± 1	Direct	Pass
PE	± 1	Direct	Pass
L1 + N	± 1	Direct	Pass
L1 + PE	± 1	Direct	Pass
N + PE	± 1	Direct	Pass
L1 + N + PE	± 1	Direct	Pass
LAN Cable	± 0.5	Clamp	Pass
Line Cable	± 0.5	Clamp	Pass

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

PASS **FAILED**

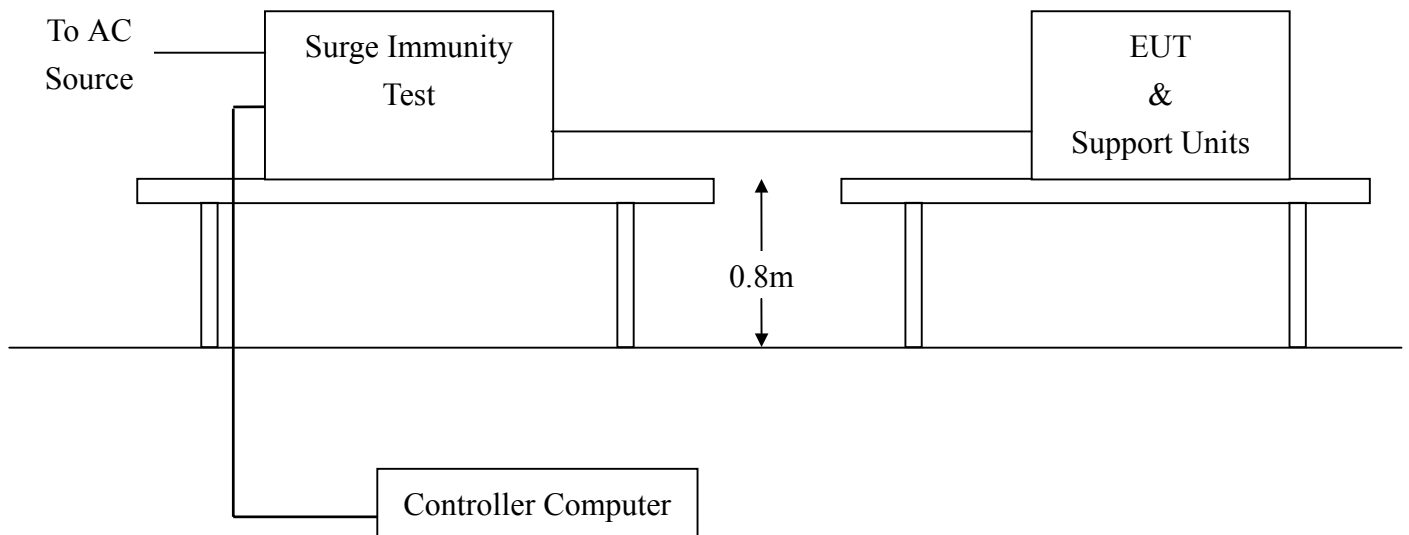
Observation: No any function degraded during the tests.

IEC 61000-4-5

SURGE IMMUNITY TEST

Port	: Power Cord; Signal/ Telecommunication cables
Basic Standard	: IEC 61000-4-5
Requirements	: $\pm 1\text{kV}$ (Line to Line of Power Port) : $\pm 2\text{kV}$ (Line to Ground of Power Port) : $\pm 1\text{kV}$ (T, R to Ground for telecommunication port)
Performance Criteria	: B (Standard require)
Tester	: Sam Chang
Temperature	: 25°C
Humidity	: 50%
Pressure	: 1020 mbar

Block Diagram of Test Setup:





Test Procedure:

1. The EUT and support units were located on a wooden table 0.8 m away from ground floor.
2. A test program was loaded and executed in Windows XP mode.
3. The data was sent to LCD Panel of EUT and monitor filling the screens with upper case of “H” patterns.
4. The test program exercised related support units sequentially.
5. Repeating step 3 to 4 through the test and increase test voltage to the EUT ports from minimum to standard request or client request.
6. Recording the test result as shown in following table.

Test conditions:

Voltage Waveform : 1.2/50 us
 Current Waveform: 8/20 us
 Polarity : Positive/Negative
 Phase angle : 0°, 90°, 270°
 Number of Test : 5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Result (Pass/Fail)
L1-L2	1	Positive	Capacitive	Pass
L1-PE	2	Positive	Capacitive	Pass
L2-PE	2	Positive	Capacitive	Pass
L1-L2	1	Negative	Capacitive	Pass
L1-PE	2	Negative	Capacitive	Pass
L2-PE	2	Negative	Capacitive	Pass
T _r R – Ground	1	Positive	Capacitive	Pass
T _r R – Ground	1	Negative	Capacitive	Pass

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAILED
Observation: No any function degraded during the tests.

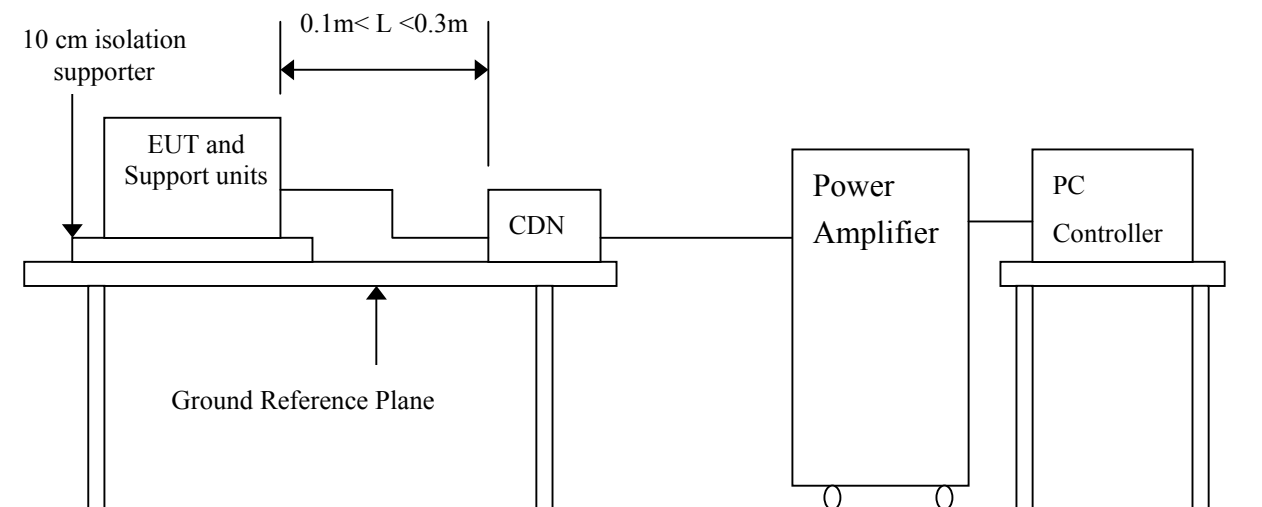
IEC 61000-4-6

CONDUCTED DISTURBANCE /INDUCED BY RADIO-FREQUENCY FIELD

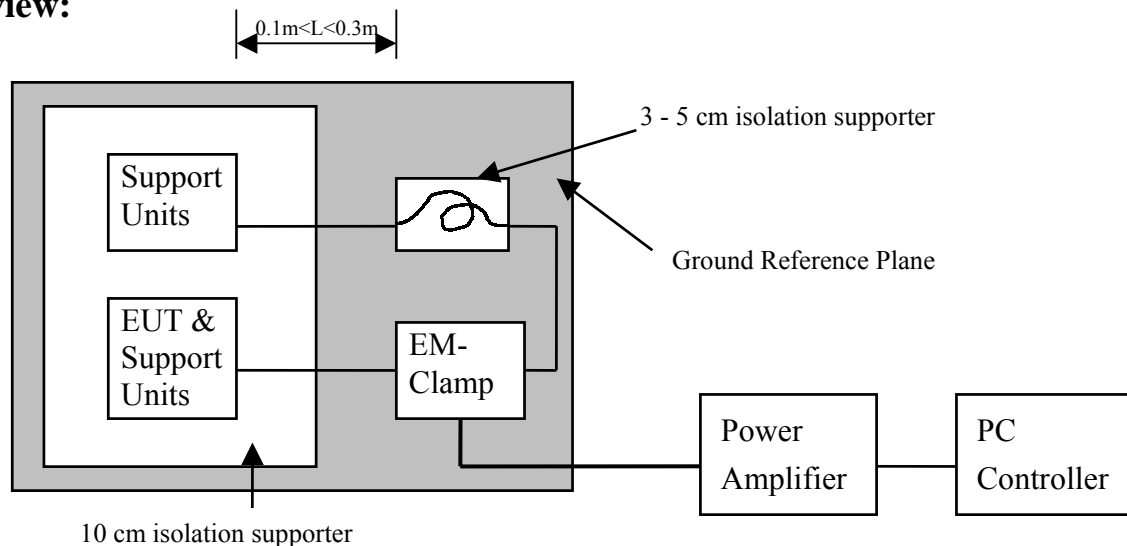
Port	: AC Port; Signal Lines
Base Standard	: IEC 61000-4-6
Requirements	: 3 V with 80% AM. 1kHz Modulation
Injection Method	: CDN-M3 for Power Cord EM-Clamp for Line/ LAN Cable
Performance Criteria	: A (Standard require)
Tester	: Sam Chang
Temperature	: 25°C
Humidity	: 50%
Pressure	: 1020 mbar

Block Diagram of Test Setup:

Side view:



Top view:





Test Procedure:

1. The EUT and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.
2. A ‘H’ messages were displayed on screen of EUT.
3. Adjusting the monitoring camera to monitor the ‘H’ message as clear as possible.
4. Setting the testing parameters of CS test software per IEC 61000-4-6.
5. Recording the test result in following table.

Test conditions:

Frequency Range : 0.15MHz-80MHz
Frequency Step : 1 % of fundamental
Dwell Time : 3 sec

Range (MHz)	Field	Modulation	Result (Pass/Fail)
0.15-80	3V	Yes	Pass

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAILED
Observation: No any function degraded during the tests.



IEC 61000-4-8

POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

Port	: Enclosure
Basic Standard	: IEC 61000-4-8
Requirements	: 1 A/m
Performance Criteria	: A (Standard Required)
Tester	: N/A
Temperature	: N/A
Humidity	: N/A

Note: Not applicable, because no any component can be influenced by power magnetic fields.

IEC 61000-4-11

VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS

VOLTAGE DIPS / SHORT INTERRUPTIONS

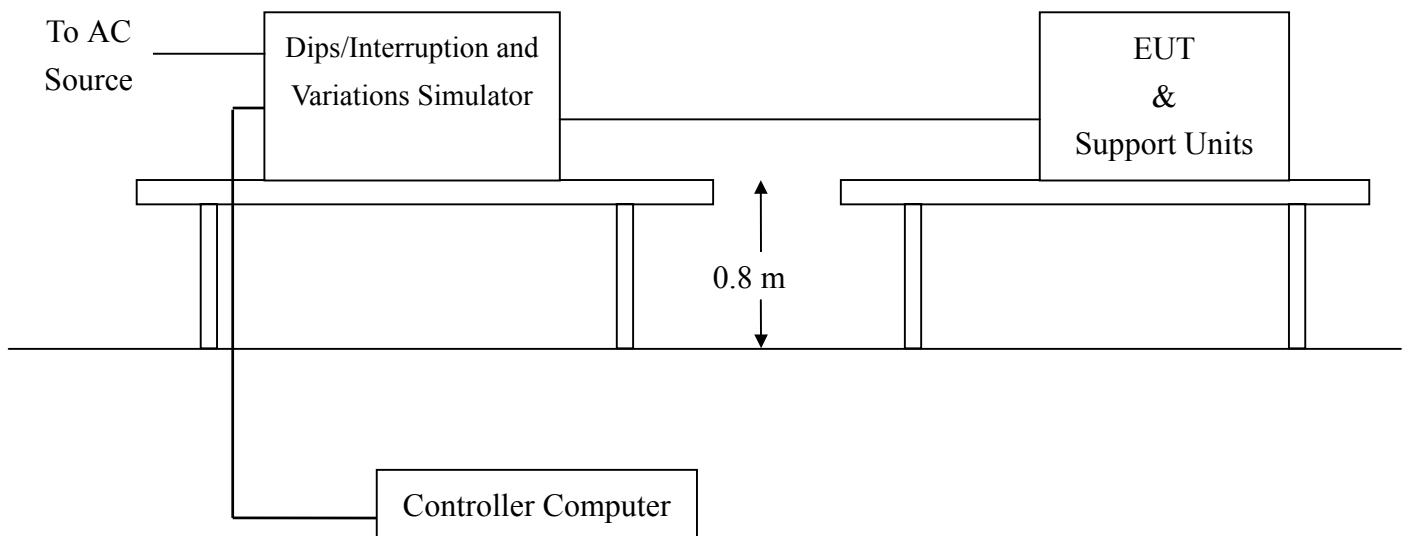
Port : AC mains
Basic Standard : IEC 61000-4-11 (1994)
Requirement : Phase angles 0, 45, 90, 135, 180, 225, 270, 315 degrees.

Voltage Dips	Test Level	Reduction	Duration	Performance
	% U _T	(%)	(periods)	Criteria
	<5	>95	0.5	B
70	30	25	C	

Voltage Interceptions	Test Level	Reduction	Duration	Performance
	% U _T	(%)	(periods)	Criteria
<5	>95	250	C	

Test Interval : Min. 10 sec.
Tester : Sam Chang
Temperature : 25°C
Humidity : 50%
Pressure : 1020 mbar

Block Diagram of Test Setup:





Test Procedure:

1. The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
2. A test program was loaded and executed in “ Windows XP” mode.
3. The data was sent to LCD Panel of EUT and monitor, filling the screens with upper case of “H” patterns.
4. The test program exercised related support units sequentially.
5. Setting the parameter of tests and then Perform the test software of test simulator.
6. Conditions changes to occur at 0 degree crossover point of the voltage waveform.
7. Repeating step 3 to 4 through the test.
8. Recording the test result in test record form.

Test conditions:

The duration with a sequence of three dips/interruptions with interval of 10s minimum (between each test events)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	0.5	Normal	A
70	30	25	Normal	A

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Meet Performance Criteria
0	100	250	EUT shut down but can be recovered by manual, as the events disappear.	C

Normal: No any functions degrade during and after the test.

Performance & Result:

- Criteria A:** The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
- Criteria B:** The apparatus continues to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
- Criteria C:** Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAILED
--