VCCI CLASS B COMPLIANCE REPORT

for

Electromagnetic Emissions

of

LCD Monitor

Trade Name	**:**	Compal; acer
Model Number	**:**	CM870
Part Number	**:**	CM570; CM670; AM670; AL722
Serial Number	**:**	N/A
Report Number	**:**	020409-V
Date	**:**	May 13, 2002

Prepared for **:**

Compal Electronics Inc.
No. 581, Jui kuang Rd., Neihu,
Taipei, 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.
TEL: (02)8642-2071~3
FAX: (02)8642-2256

TABLE OF CONTENTS

VERIFICATION OF COMPLIANCE

Equipment Under Test:	LCD Monitor
Trade Name:	Compal
Model Number:	CM870
Part Number:	CM570; CM670; AM670; AL722
Serial Number:	N/A
Applicant:	**Compal Electronics Inc.** No. 581, Jui Kuang Rd., Neihu, Taipei, Taiwan, R.O.C.
Manufacturer:	**Compal Electronics (China) Co., Ltd.** No. 988, Tung Fen East Rd., Economic & Technical Development Zone Kunshan, Jiangsun, P.R. China
Type of Test:	VCCI Class B
Measurement Procedure:	V-2/01.04 & V-3/2000.04
File Number:	020409-V
Date of test:	May 9 ~ 10, 2002
Deviation:	None
Condition of Test Sample:	Normal

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-2/01.04 & V-3/2000.04. 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.

Kurt Chen

Kurt Chen / Q.A. Manager

SYSTEM DESCRIPTION

EUT Test Program:

1. EMI test program was loaded and executed in Windows 98 mode.
2. Data was sent to EUT filling the screen with upper case of "H" patterns.
3. Test program sequentially exercised printer and modem, then sent "H" patterns to them individually.
4. PC plays music on CD-ROM and sends to EUT via an audio cable.
5. Repeat 2 to 4. Test program is self-repeating throughout the test.

PRODUCT INFORMATION

Housing Type:	Plastic
EUT Power Rating:	DCV from Power Adapter
AC power during Test:	100VAC/60Hz to Power Adapter
Power Adapter Manufacturer:	LI SHIN
Power Adapter Model Number:	LSE9901B1260
Power Adapter Power Rating:	I/P: 100-240VAC, 50/60Hz, 1.5A O/P: 12VDC, 5A
AC Power Cord Type:	Unshielded, 1.8m (Detachable) to Power Adapter
DC Power Cable Type:	Unshielded, 1.8m (Non-detachable) at Power Adapter with a core
OSC/Clock Frequencies:	11.0592MHz/14.318MHz
17.4" LCD Panel Manufacturer:	Fujitsu **Model:** FLC445XC8V AU L170E3-1-M170EN04 HYUNDAI HT17E11
VGA Cable Type:	Shielded, 1.8m with two cores (Detachable)

I/O Port of EUT:

I/O Port Type	Q'TY	Tested with
1. Video Port	1	1
2. Line in Port	1	1
3. Earphone Port	1	1

SUPPORT EQUIPMENT

No.	Equipment	Model #	Serial #	FCC ID	Trade Name	Data Cable	Power Cord
1.	PC	Presario 5180	1L8ABX422174	FCC DoC	Compaq	Audio Cable: Unshielded, 1.8m	Unshielded, 1.8m
2.	Modem	2400	94-364-176-277	DK467GSM24	Computer Peripherals	Shielded, 1.8m	Unshielded, 1.8m
3.	Printer	2225C	3050S82775	DSI6XU2225	HP	Shielded, 1.8m	Unshielded, 1.8m
4.	PS/2 Keyboard	SK-2800C	B1C790BCPJCN6L	GYUR79SK	Compaq	Shielded, 1.8m	N/A
5.	PS/2 Mouse	M-CAA43	LZA11750827	FCC DoC	Logitech	Shielded, 1.8m	N/A
6.	Earphone	GT-2004V	A5-1	N/A	GITON	Shielded, 1.8m	N/A

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

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

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 V-2/01.04 & V-3/2000.04 (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.

2) Support equipment, if needed, was placed as per V-2/01.04 & V-3/2000.04.

3) All I/O cables were positioned to simulate typical actual usage as per V-2/01.04 & V-3/2000.04.

4) The EUT received AC power through a Line Impedance Stabilization Network (LISN) which supplied power source 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 150kHz to 30MHz 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) was scanned during the preliminary test:

Mode(s) :

1. 1280 × 1024 Resolution (75Hz) + AU LCD Monitor
2. 1024 × 768 Resolution (75Hz) + AU LCD Monitor
3. 800 × 600 Resolution (75Hz) + AU LCD Monitor
4. 1280 × 1024 Resolution (75Hz) + HYUNDAI LCD Monitor
5. 1280 × 1024 Resolution (75Hz) + Fujitsu LCD Monitor

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

Mode: 1

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. If EUT emission level was less –2dB to the A.V. limit in Q.P. mode, then the emission signal was re-checked using an Average detector.

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

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 2 dB margin, so no further recheck.

LINE CONDUCTED EMISSION LIMIT

Frequency	Maximum RF Line Voltage	
	Q.P.	AVERAGE
150kHz-500kHz	66-56dBuV	56-46dBuV
500kHz-5MHz	56dBuV	46dBuV
5MHz-30MHz	60dBuV	50dBuV

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 V-2/01.04 & V-3/2000.04 (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.

2) Support equipment, if needed, was placed as per V-2/01.04 & V-3/2000.04.

3) All I/O cables were positioned to simulate typical actual usage as per V-2/01.04 & V-3/2000.04.

4) The EUT received AC power source 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 at some given distance away from the EUT as stated in V-2/01.04 & V-3/2000.04. 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 1000MHz. 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 mode(s) was scanned during the preliminary test:

Mode(s) :

1. **1280 × 1024 Resolution (75Hz) + AU LCD Monitor**
2. **1024 × 768 Resolution (75Hz) + AU LCD Monitor**
3. **800 × 600 Resolution (75Hz) + AU LCD Monitor**
4. **1280 × 1024 Resolution (75Hz) + HYUNDAI LCD Monitor**
5. **1280 × 1024 Resolution (75Hz) + Fujitsu LCD Monitor**

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

Mode: 1

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 RADIATED EMISSION TEST)

1) EUT and support equipment were set up on the turntable as per step 8 of the preliminary test.

2) The Analyzer / Receiver scanned from 30MHz to 1000MHz. 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, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

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)	= Correction factors of antenna factor and cable loss
Emiss. Level	= Raw reading converted to dBuV and CF added
Limit dBuV/m	= Limit stated in standard
Margin dB	= Reading in reference to limit

RADIATED EMISSION LIMIT

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBu V/m/ Q.P.)
30-230	10	30
230-1000	10	37

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

SUMMARY DATA

(LINE CONDUCTED TEST)

Model Number: CM870 **Location:** Site # 3

Tested by: Tommy Lin

Test Mode: Mode 1

Test Results: Passed

Temperature: 25? **Humidity:** 55? 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
0.169	41.80	---	65.01	55.01	-23.2	---	L1
2.202	23.80	---	56.00	46.00	-32.2	---	L1
3.881	34.70	---	56.00	46.00	-21.3	---	L1
3.989	35.40	---	56.00	46.00	-20.6	---	L1
12.602	25.60	---	60.00	50.00	-34.4	---	L1
23.492	26.20	---	60.00	50.00	-33.8	---	L1
0.170	42.00	---	65.00	55.00	-23.0	---	L2
2.263	25.20	---	56.00	46.00	-30.8	---	L2
3.722	34.80	---	56.00	46.00	-21.2	---	L2
4.048	34.30	---	56.00	46.00	-21.7	---	L2
12.779	29.50	---	60.00	50.00	-30.5	---	L2
24.478	29.10	---	60.00	50.00	-30.9	---	L2

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

****NOTE: "---" denotes the emission level complied with the Average limit, with at least 2dB margin, so no further recheck.**

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: CM870 **Location:** Site # 1

Tested by: Tommy Lin **Polar:** Vertical – 10m

Test Mode: Mode 1

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 28? **Humidity:** 69? RH

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

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dBuV)	Emiss. Level (dBuV/m)	Limits ( )	Margin (dB)
33.06	8.3	18.9	27.2	30.0	-2.8
47.67	11.5	12.6	24.1	30.0	-5.9
135.25	14.0	12.2	26.2	30.0	-3.8
210.88	13.7	10.6	24.3	30.0	-5.7
629.27	10.9	23.0	33.9	37.0	-3.1
840.06	5.0	28.5	33.5	37.0	-3.5

SUMMARY DATA

(RADIATED EMISSION TEST)

Model Number: CM870 **Location:** Site # 1

Tested by: Tommy Lin **Polar:** Horizontal – 10m

Test Mode: Mode 1

Detector Function: Quasi-Peak **Test Results:** Passed

Temperature: 28? **Humidity:** 69? RH

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

Freq. (MHz)	Raw Data (dBuV/m)	Corr. Factor (dBuV)	Emiss. Level (dBuV/m)	Limits)	Margin (dB)
139.72	12.8	12.3	25.1	30.0	-4.9
210.27	12.5	10.6	23.1	30.0	-6.9
280.12	14.9	16.1	31.0	37.0	-6.0
349.52	15.2	17.7	32.9	37.0	-4.1
629.63	10.5	23.0	33.5	37.0	-3.5
768.20	8.3	26.2	34.5	37.0	-2.5

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: 1992 and CISPR 22/EN 55022 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.

President
For the Accreditation Council
Certificate Number 824.01
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., LTD[1]
No. 81-1, Lane 210, Pa-De 2nd Rd.,
Lu Chu Hsiang, Taoyuan, TAIWAN, R.O.C.
Kurt Chen Phone: 002 886 3 324 0332
Fax: 002 886 3 324 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 Technology:	Test Method(s):
Emissions	
Radiated & Conducted	CFR 47, FCC Part 15/18 using ANSI 63.4/1992&2000; AS/NZS 3548; VCCI V3 (2001); CNS 13438; CNS 13439; CNS 13783; CNS 13803; CNS 14115 CISPR 11; EN 55011; CISPR 14-1; EN 55014-1; CISPR 15; EN 55015; CISPR 22; EN 55022; EN 50081-1/ EN 61000-6-3: 2001; EN 50082-1/ EN 61000-6-4: 2001
Immunity	
Electrostatic Discharge (ESD)	IEC/EN 61000-4-2; IEC 801-2
Radiated Immunity	IEC/EN 61000-4-3; IEC 801-3
Electrical Fast Transient/Burst	IEC/EN 61000-4-4; IEC 801-4
Surge Immunity	IEC/EN 61000-4-5
Conducted Immunity	IEC/EN 61000-4-6
Power Frequency Magnetic Field Immunity	IEC/EN 61000-4-8
Voltage Dips, Short Interruptions, and Line Voltage Variations	IEC/EN 61000-4-11
Harmonics/Flicker	IEC/EN 61000-3-2; IEC/EN 61000-3-3

[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) 01/30/02 Page 1 of 2

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974

Product Immunity / Generic Immunity

ITE Product	CISPR 24; EN 55024
Home Appliance	CISPR 14-2; EN 55014-2
Residential, commercial and light Industry	EN 50081-2/ EN 61000-6-1: 2001
Industry	EN 50082-2/ 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

(A2LA Cert. No. 0824.01) 01/30/02 Page 2 of 2

FEDERAL COMMUNICATIONS COMMISSION
Equipment Authorization Division
7435 Oakland Mills Road
Columbia, MD 21046

February 01, 1999

Registration Number: 93105

C & C Laboratory Co., Ltd.
1st Fl., No. 344, Fu Ching Street
Taipei
Taiwan, R.O.C.

Attention: Charles Wang

Re: Measurement facility located at Taoyuan, Site No. 4
3 & 10 meters
Date of Listing: February 01, 1999

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,

Thomas W Phillips
Electronics Engineer

FEDERAL COMMUNICATIONS COMMISSION
Laboratory Division
7435 Oakland Mills Road
Columbia, MD 21046

February 27, 2001

Registration Number: 90471

C & C Laboratory Co., Ltd.
9F-1, 1st Fl., No. 183, Sec. 1
Tatung Rd., Hsi Chih
Taipei
Taiwan, R.O.C.
Attention: Kurt Chen

Re: Measurement facility located at Taoyuan
Sites No. 1 & 3 (3 & 10 meters)
Date of Listing: February 27, 2001

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing, the data on file must be certified as current.

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Sincerely,

Thomas W Phillips
Electronics Engineer

COMMERCE
MINISTRY OF COMMERCE
Te Manatu Tauhokohoko

ENG 3/9
AJD

22 January 1998

C & C Laboratory Co Ltd
1st Fl
No. 344
Fu Ching Street
Taipei
TAIWAN ROC

Attention: Mr Tony Houng

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 radiocommunications regulations. Test reports from your laboratory will be accepted under the new framework. Please find enclosed a copy of the Ministry's discussion paper, DP10, 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, Ministry of Commerce Building, 33 Bowen Street, Wellington, New Zealand.
PO Box [illegible] Wellington. [illegible], Fax [illegible]

COMMERCE
MINISTRY OF COMMERCE
Te Manatu Tauhokohoko

ENG 3/9
AJD

22 January 1998

C & C Laboratory Co Ltd
1st Fl
No. 344
Fu Ching Street
Taipei
TAIWAN ROC

Attention: Mr Tony Houng

Dear Sir

LABORATORY APPROVAL

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Yours faithfully

Andrew Dyke
Senior Technical Officer(Regulatory)

Operations and Risk Management Branch, Ministry of Commerce Building, 33 Bowen Street, Wellington, New Zealand.
PO Box [illegible] Wellington. [illegible], Fax [illegible]

Nemko 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, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: **All CENELEC and ETSI standards [ENs and ETSs 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 [R&TTE] Directive [i.e. 1999/5/EC].***

NOTE: This authorisation also covers EMC-related testing and documentation that is within the scope of Article 10.5 of the *EMC Directive [i.e. 89/336/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 fulfils 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 Directives 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 the Authorisation, the information given in the enclosed ELA-INFOs (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.**

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko 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

ETS 300 328:1996 + A1:97 EN 300 328-2:2000	EN 301 343-1:1997 EN 301 489-07:2000	EN 301 489-08:2000
EN 300 422-2:2000	ETS 300 445-1:1996 + A1:97 EN 301 489-09:2000	EN 300 454-2:2000
ETS 300 683:1997 EN 301 489-03:2000	ETS 300 826:1997 EN 301 489-17:2000	EN 300 377-2:2000
EN 301 423:1999	EN 301 445-2:2000	EN 300 429:1998
EN 301 489-01:2000		

Basic standards

EN 61000-4-2:1995 + A1: 98 IEC 61000-4-2:1995 + A1:98 (EN 50082-1:1992 CLC 801.2:1991 IEC 801.2:1984)	EN 61000-4-3:1996 + A1:98 IEC 61000-4-3:1995 + A1:98 (IEC 801.3:1984 ENV 50140:1993 + ENV 50204:1995)	EN 61000-4-4:1995 IEC 61000-4-4:1995 (IEC 801.4:1988)
EN 61000-4-5:1995 IEC 61000-4-5:1995 (ENV 50141:1993)	EN 61000-4-6:1996 IEC 61000-4-6:1996 (ENV 50141:1993)	EN 61000-4-8:1993 IEC 61000-4-8:1993
EN 61000-4-11:1994 IEC 61000-4-11:1994		

Oslo 26 April 2001 Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko 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, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 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 fulfils 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 [89/336/EEC as amended by 92/31/EEC and 98/13/EC].

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-INFOs (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**.

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh, Nemko Group EMC Co-ordinator

Nemko 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, Chin Twu Chi, Lu Chu Hsiang,
Taoyuan 338, Taiwan R.O.C.

Scope of Authorisation: **EN 60601-1-2 and IEC 60601-1-2, the Collateral 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 fulfils 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], 90/385/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.

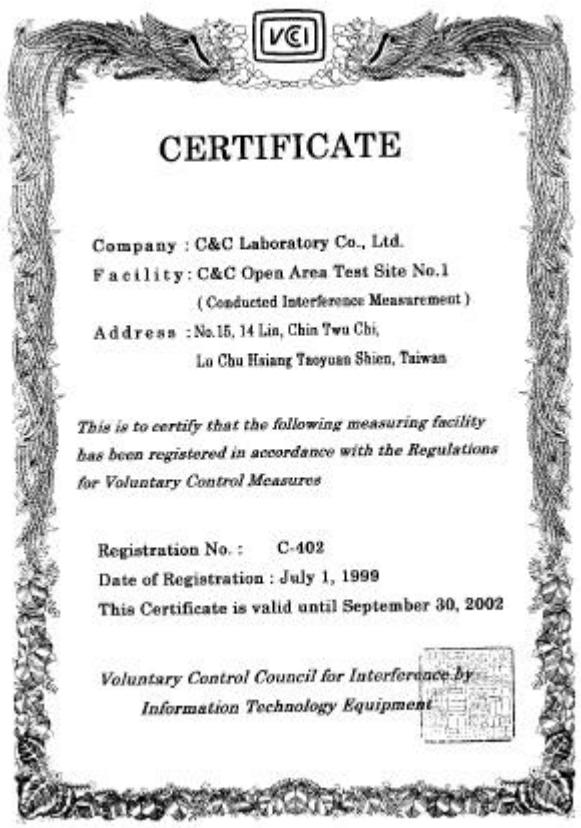
In order to maintain the Authorisation, the information given in the enclosed ELA-INFOs (if any) must be carefully followed. Nemko is to be promptly notified about any changes in the situation at your EMC Laboratory which may affect the basis for this Authorisation. The Authorisation may at any time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

The Authorisation is valid through **31. December 2003.**

Oslo 26 April 2001

For Nemko AS:

Kjell Bergh, Nemko Group EMC Co-ordinator



CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No.1
(Conducted Interference Measurement)
Address : No.15, 14 Lin, Chin Twu Chi,
Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-402
Date of Registration : July 1, 1999
This Certificate is valid until September 30, 2002

Voluntary Control Council for Interference by Information Technology Equipment

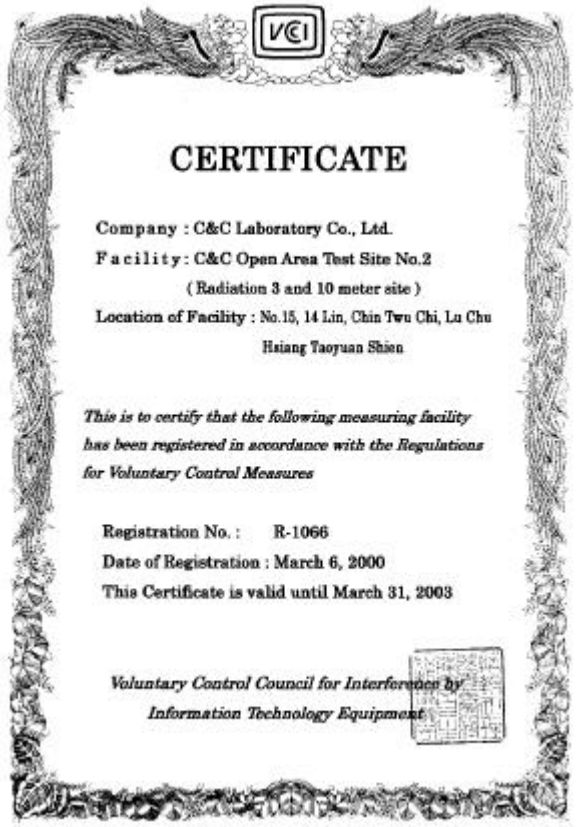
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No.1
(Radiation 3 and 10 meter site)
Address : No.15, 14 Lin, Chin Twu Chi,
Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-393
Date of Registration : July 1, 1999
This Certificate is valid until September 30, 2002

Voluntary Control Council for Interference by Information Technology Equipment



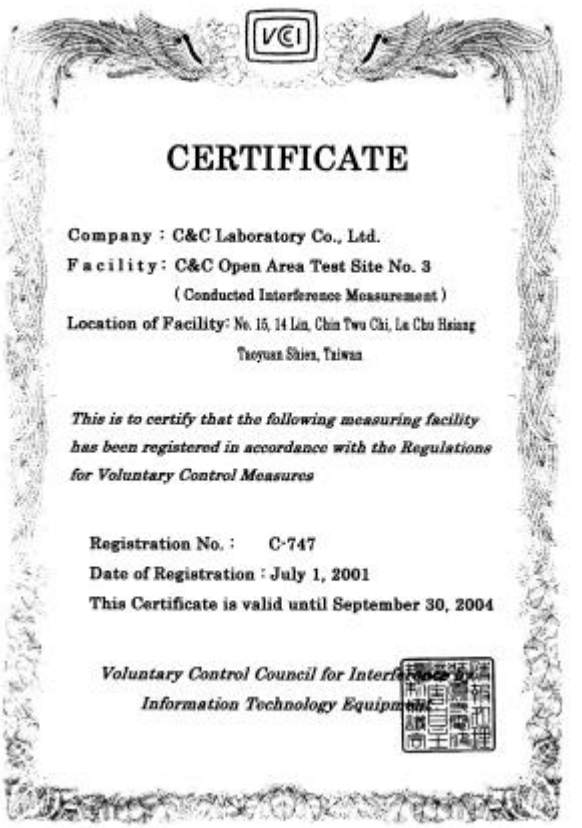
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No.2
(Radiation 3 and 10 meter site)
Location of Facility : No.15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-1066
Date of Registration : March 6, 2000
This Certificate is valid until March 31, 2003

Voluntary Control Council for Interference by Information Technology Equipment



CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No. 3
(Conducted Interference Measurement)
Location of Facility: No. 15, 14 Lin, Chin Twu Chi, Lu Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-747
Date of Registration : July 1, 2001
This Certificate is valid until September 30, 2004

Voluntary Control Council for Interference by Information Technology Equipment

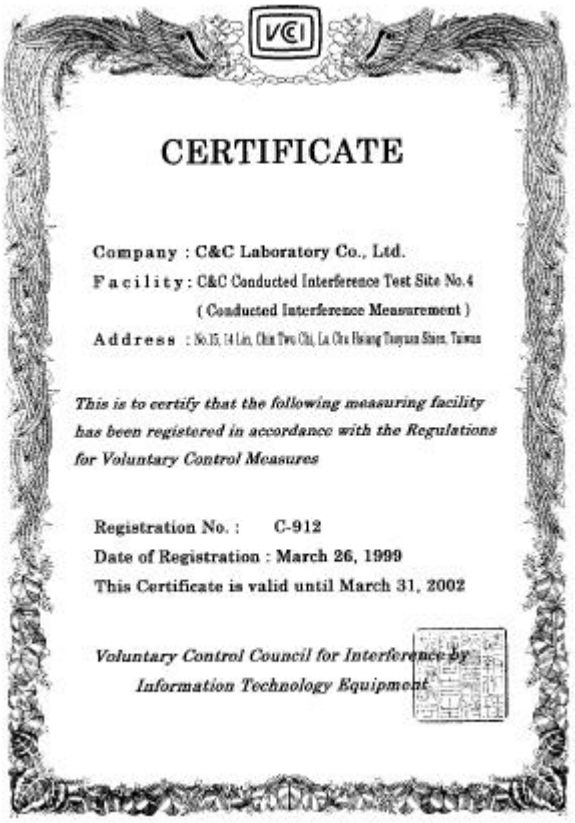
CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No. 3
(Radiation 3 and 10 meter site)
Location of Facility : No. 15, 14 Lin, Chin Twu Chi, La Chu Hsiang
Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-725
Date of Registration : July 1, 2001
This Certificate is valid until September 30, 2004

Voluntary Control Council for Interference by Information Technology Equipment



CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Conducted Interference Test Site No.4
(Conducted Interference Measurement)
Address : No.15, 14 Lin, Chin Twu Chi, La Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : C-912
Date of Registration : March 26, 1999
This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by Information Technology Equipment

CERTIFICATE

Company : C&C Laboratory Co., Ltd.
Facility: C&C Open Area Test Site No.4
(Radiation 3 and 10 meter site)
Address : No.15, 14 Lin, Chin Twu Chi, La Chu Hsiang Taoyuan Shien, Taiwan

This is to certify that the following measuring facility has been registered in accordance with the Regulations for Voluntary Control Measures

Registration No. : R-879
Date of Registration : March 26, 1999
This Certificate is valid until March 31, 2002

Voluntary Control Council for Interference by Information Technology Equipment

Technischer Überwachungs-Verein Rheinland

TÜV Rheinland

Certificate

of

Appointment

No. 19964142-9906

The applicant:

C & C Laboratory Co., Ltd.

No. 15, 14 Lin, Chin tzu Chi, Lu Chu Hsiang, Taoyuan, Taiwan, R.O.C.

has been authorized to carry out EMC tests by order and under supervision of TÜV Rheinland according to:

EN 55 011:1991, EN 55 014-1:1993/A1, EN 55 022:1994/A1, EN 55 014-2:1997, EN 61 555-2:1987, EN 61 000-3-2:1995, EN 61 000-3-3:1995, EN 50 081-1:1992, EN 50 082-1:1992, EN 50 082-1:1997, EN 50 081-2:1993, EN 50 082-2:1995, IEC 801-2:1984, IEC 801-2:1991, IEC 801-3:1984, IEC 801-4:1988, IEC 801-5:1994, EN 61 000-4-2:1995, ENV 50 140:1993, ENV 50 141:1993, ENV 50 204:1995, EN 61 000-4-3:1996, EN 61 000-4-4:1995, EN 61 000-4-5:1995, EN 61 000-4-6:1995, EN 61 000-4-8:1993, EN 61 000-4-11:1994

An inspection of the facility was conducted according to the Document "Approval of Test Site" with reference to EN 45 001 by a TÜV Rheinland inspector.

Audit Report No. P 9964142E01, Rev.-

This certificate is valid until the next scheduled inspection or up to 15 month, at the discretion of TÜV Rheinland.

TÜV Rheinland Taiwan Ltd.
Taipei, 24. June 1999

Dipl.-Ing. A. Klacker

Dipl.-Ing. R. Chorton
Auditor

中華民國經濟部標準檢驗局

BUREAU OF STANDARDS, METROLOGY AND INSPECTION
MINISTRY OF ECONOMIC AFFAIRS, REPUBLIC OF CHINA

To: C&C Laboratory Co., Ltd

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

IN REPLY REFER TO
90-3-3000015

This Designation Document confirms that your subject measurement facility has been validated according to the **ISO/IEC Guide 25-1990** and found to be in compliance with the requirements of " BSMI's Operation Guidelines of the Approval and Management of Designated Laboratories."

The description of your facility has, therefore, been placed on file and the name of your organization added to the Bureau's list of facilities whose measurement data and test reports will be accepted as a basis for attesting conformity to CNS13803-1997, CNS13438-1997, CNS13783-1-1998, CNS13439-1997, CNS14115-1998 for Industrial, Scientific and Medical Instrument · Information Technology Equipment · household appliances/tools · broadcast receivers and related equipments and fluorescent lights/luminaries.

It is located at: **http://www.bsmi.gov.tw**

Please reference the file numbers below in the body of all test reports containing measurements made on the corresponding facility.

For your **EMI Testing Lab**, use reference " **SL2-IS-E-0014, SL2-IN-E-0014, SL2-A1-E-0014, SL2-R1-E-0014, SL2-R2-E-0014, SL2-L1-E-0014**"

Note that this filing must be updated for any changes made to the documentation and / or facility and whenever major modifications to your documentation or major construction or repairs to your facility are completed, re-submission of the related information or the site attenuation characteristics will be required within 2 weeks.

The Designation is valid through January 14, 2004.

Taipei, January 5, 2000
For BSMI, MOEA

Neng-Jong Lin

CNLA-ZL98078
Page 1 of 5

中華民國實驗室認證體系認可證書
Chinese National Laboratory Accreditation Certificate ROC

[illegible]

This is to certify that C & C Laboratory Co., Ltd. has been recognized by the Council of Chinese National Laboratory Accreditation as an accredited laboratory. The laboratory has been registered for thirteen specific tests within the field of Electrical Testing. The details of the scope of accreditation are described in the following pages and this certificate is valid until [illegible] 2001.

Neng-Jong Lin
The Chairman of Chinese National Laboratory Accreditation Council

林能[illegible]

This document is invalid unless accompanied by all 5 pages

CNLA-ZL98078 Page 2 of 5

機構名稱：程智科技股份有限公司
實驗室名稱：程智科技電磁相容實驗室
認可編號：0363
實驗室負責人：王[illegible]
測試領域：電性測試
發證日期：1998.11.15
變更日期：2000.11.15

Organization : C & C Laboratory Co., Ltd.
Laboratory : C & C Laboratory Co., Ltd.
Registration : 0363
Laboratory Head : WANG, Charles
Testing Field : Electrical Testing
Date of Registration: 1998.11.15
Date of Revised : 2000.11.15

認可項目 Registration items	測試件 Test items	測試方法 Test Methods	範圍 Ranges	認可之最佳測試能力 Best Test capability recognized	備註 Remarks
EE0080 低功率射頻電機 Low power R.F. equipment	低功率射頻/接收機 Low power radiators/receivers	[illegible] (87.9)	9 kHz~[illegible].5 GHz		
EE0102 諧波電流干擾 Harmonic current emissions	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-3-2(1995) EN 61000-3-2(1995)	測試件電壓：100~270VAC(單相) 測試件電流：0~16 A 諧波量測數：1~40 階		
EE0103 電壓變動與閃爍干擾 Voltage fluctuations and flicker	資訊類及其週邊產品 ITE and peripheral Products	IEC 1000-3-3(1994) EN 61000-3-3(1995)	測試件電壓：100~270VAC(單相) 測試件電流：0~16 A		

CNLA-ZL98078 Page 3 of 5

認可項目 Registration items	測試件 Test items	測試方法 Test Methods	範圍 Ranges	認可之最佳測試能力 Best Test capability recognized	備註 Remarks
EE0113 音響及電視廣播接收機與相關設備 Audio and television broadcast receivers and associated equipment	廣播接收機及其相關產品 Broadcast receivers and associated equipment	EN 55013 : 1990+A12 : 1994+A13 : 1996 CISPR 13 : 1975+A1 : 1983 CNS 13439 (86.5)	9 kHz~1.75 GHz		
EE0114 電器產品及系統 Electrical appliances and systems	家電製品/電動工具及類似設備 Household appliances/Electric tools and similar apparatus	EN 55014-1 : 199[illegible] CISPR 14 : 1993[illegible] CNS 13783-1 (87[illegible])	9 kHz~1 GHz		
EE0122 電信及資訊技術系統及設備 Systems and apparatus of the telecommunication and information technology	資訊類及其週邊產品 ITE and peripheral products	CISPR 22(1993) EN 55022(1995) CNS 13438(1997) AS/NZS 3548(1995) VCCI(1997) FCC Part 15(1996)	傳導干擾：150 kHz~30 MHz 輻射干擾：30 MHz~1.0 GHz 傳導干擾：450 kHz~30 MHz 輻射干擾：30 MHz~2.0 GHz		

CNLA-ZL98078 Page 4 of 5

認可項目 Registration items	測試件 Test items	測試方法 Test Methods	範圍 Ranges	認可之最佳測試能力 Best Test capability recognized	備註 Remarks
EJ0202 靜電放電測試 Electrostatic discharge tests	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-4-2(1995) EN 61000-4-2(1995) CNS 13022-2(1992)	空氣放電：0.2 kV~16.5 kV(+/-) 接觸放電：0.2 kV~9.0 kV(+/-)		
EJ0203 輻射耐受測試 Radiated susceptibility tests	資訊類及其週邊產品 ITE and peripheral products	IEC 801-3(1984) IEC 1000-4-3(1995) EN 61000-4-3(1996) ENV 50204(1995)	頻率範圍：26MHz~1.0 GHz 場強：10 V/m, AM調變 頻率範圍：900 [illegible] [illegible]		
EJ0204 電性快速突波測試 Electrical fast transient/burst tests	資訊類及其週邊產品 ITE and peripheral products	IEC 801-4(1988) IEC 1000-4-4(1995) EN 61000-4-4(1995) CNS 13022-3(1992)	測試件電壓：1[illegible]~270 VAC(單相) 測試件電流：[illegible]~100 A 脈衝電壓：0.22~4.5 kV		
EJ0205 突波/雷擊測試 Surge/lightening tests	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-4-5(1995) ENV 50142(1994) CNS 13023-3(1992)	測試件電壓：100~270 VAC(單相)/DC 100V 測試件電流：16 A(AC/DC) 突波電壓範圍：0~4.2 kV 耦合：電源線		
EJ0206 傳導耐受測試 Conducted susceptibility	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-4-6(1995) EN 61000-4-6(1996)	頻率範圍：150 kHz~230 MHz (強度：10 V, AM調變)		

CNLA-ZL98078 Page 5 of 5

認可項目 Registration items	測試件 Test items	測試方法 Test Methods	範圍 Ranges	認可之最佳測試能力 Best Test capability recognized	備註 Remarks
tests					
EJ0208 電源頻率磁場耐受測試 Power frequency magnetic field immunity test	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-4-8 (1993) EN 61000-4-8 (1993)	磁場強度 1 A/m~100 A/m		
EJ0211 電壓下降、瞬斷和變動耐受測試 Voltage dips, short interruptions and voltage variations immunity tests	資訊類及其週邊產品 ITE and peripheral products	IEC 1000-4-11 (1994) EN 61000-4-11 (1994)	[illegible]		
(以下空白)					

TEST EQUIPMENT LIST (EMISSION)

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 / 2.0 GHz.
Equipment used during the tests:

Open Area Test Site: #1

Open Area Test Site # 1					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Q.P Adaptor	HP	85650A	2811A01399	06/19/2001	06/18/2002
RF Pre-selector	HP	85685A	2947A01064	06/19/2001	06/18/2002
Spectrum Analyzer	HP	8568B	3001A05004	06/19/2001	06/18/2002
S.P.A Display	HP	85662A	3014A18846	06/19/2001	06/18/2002
Precision Dipole	SCHWAZBECK	VHAP	998/999	05/17/2001	05/16/2002
Precision Dipole	SCHWAZBECK	UHAP	981/982	05/17/2001	05/16/2002
Bilog Antenna	CHASE	CBL6112A	2309	02/09/2002	02/08/2003
Turn Table	EMCO	2081-1.21	N/A	N.C.R	N.C.R
Antenna Tower	EMCO	2075-2	9707-2604	N.C.R	N.C.R
Controller	EMCO	2090	N/A	N.C.R	N.C.R
RF Switch	ANRITSU	MP59B	M54367	N.C.R	N.C.R
Site NSA	C&C	N/A	N/A	11/03/2001	11/02/2002
Spectrum Analyzer	ADVANTEST	R3261A	21720279	08/16/2001	08/15/2002

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	ESCS30	847793/012	12/19/2001	12/18/2002
LISN	R&S	ESH2-Z5	843285/010	12/10/2001	12/09/2002
LISN	EMCO	3825/2	9003-1628	07/16/2001	07/15/2002

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 TEST SETUP

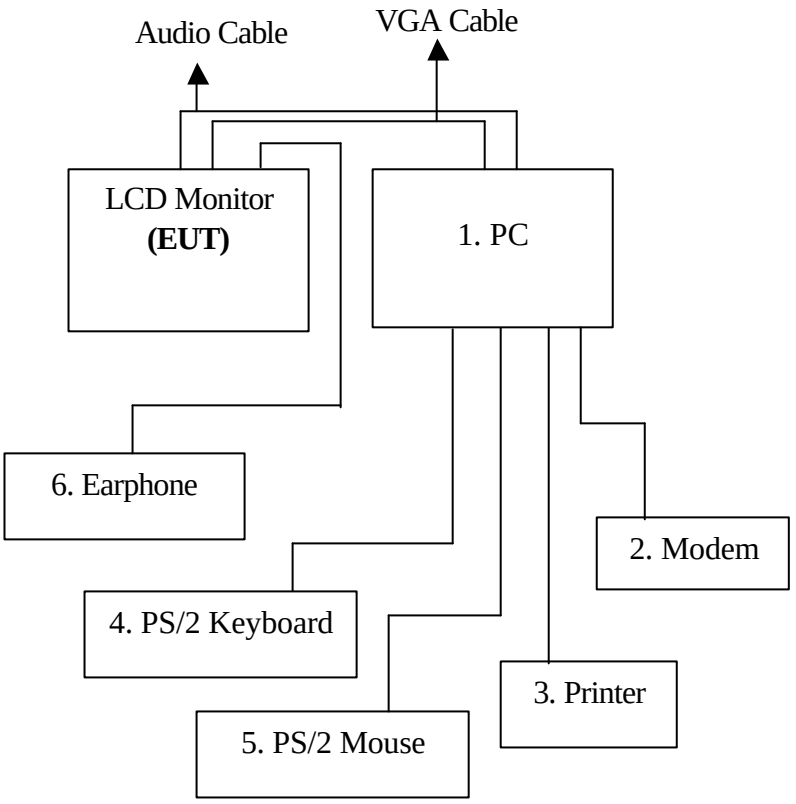
System Diagram of Connections between EUT and Simulators

EUT: LCD Monitor

Trade Name: Compal; acer

Model Number: CM870

AC Power Cord: Unshielded, 1.8m to Power Adapter



APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST

Front View

Back View

RADIATED EMISSION TEST

Front View

Back View

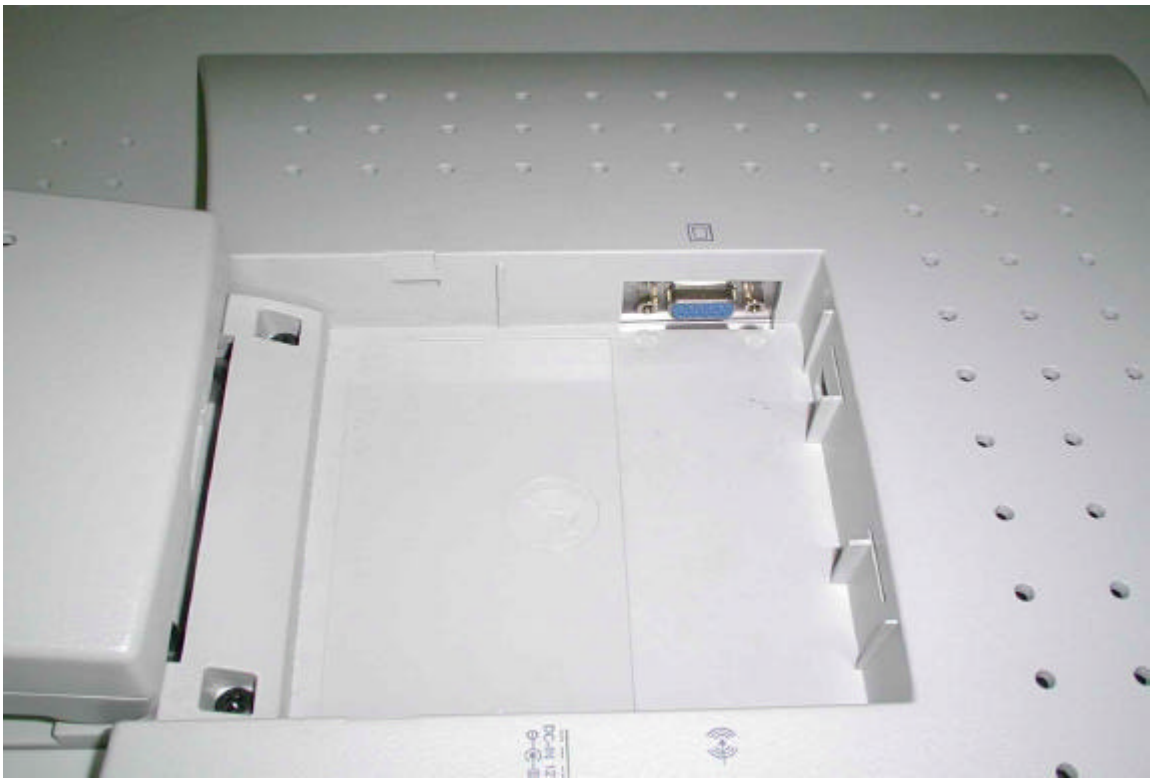
APPENDIX 2

EXTERNAL OF PHOTOGRAPHS (EUT)

Front View of EUT

Back View of EUT

Left View of EUT

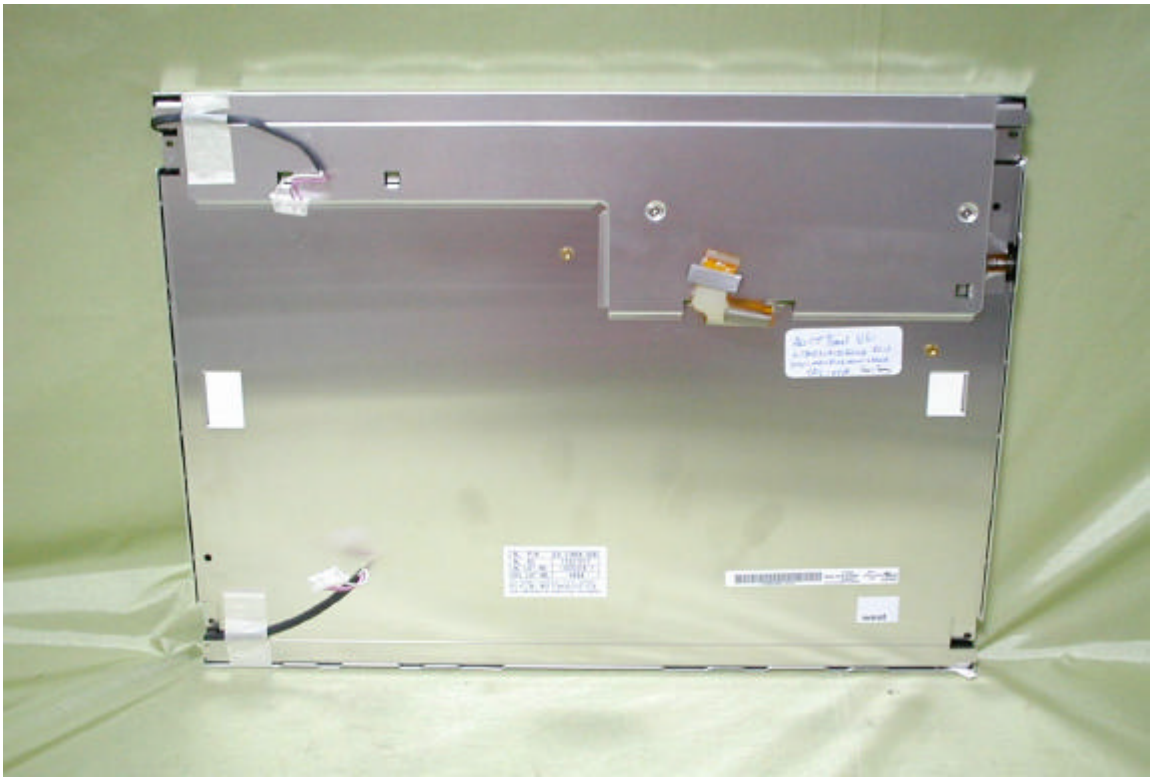


Right View of EUT

Bottom View of EUT

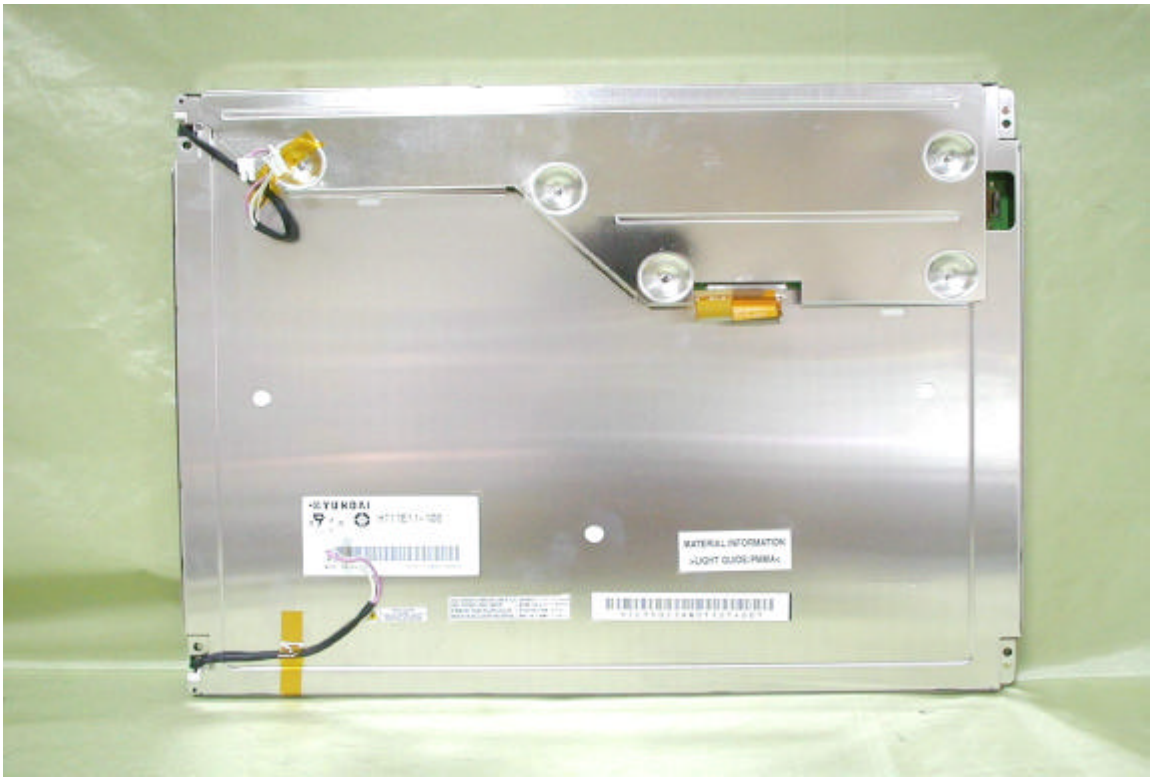
Front View of AU

Back View of AU



Front View of HYUNDAI

Back View of HYUNDAI



Front view of Power Adapter

Back view of Power Adapter