UltraTech
Group of Labs

Ultratech's Accreditations:

ANSI American National Standards Institute
0685

FC
31040/SIT

VCCI
C-1376

Canada
46390-2049

NVLAP
200093-0

BSMI
SL2-IN-E-1119R

3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

Tel.: (905) 829-1570
Fax.: (905) 829-8050

Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com

May 3, 2007

Sangoma Technologies
50 McIntosh Dr. #120
Markham, Ontario
Canada, L3R 9T3

Attn.: **Mr. Igor Agranovski**

Subject: **Verification Testing under CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003, Class A - Information Technology Equipment.**

Product: **A102d, A108d, A400d**
Model No.: **A102d, A108d, A400d**

Dear Mr. Agranovski,

The product sample, as provided by you, has been tested and found to comply with **CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003, Class A - Information Technology Equipment.**

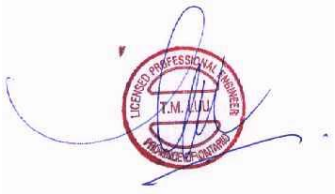
Note: Class A ITE is category of all other ITE which satisfies the Class A ITE limits but not the Class B ITE limits. Such equipment should not be restricted in its sales but the following warning shall be included in the instructions for use.

WARNING:
This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Please refer to page 13 of the engineering report file # SNG-030-CISPR22A for details of the required modification for compliance.

Enclosed you will find copies of the engineering report. If you have any queries, please do not hesitate to contact us.

Yours truly,



Tri Minh Luu, P. Eng.,
V.P., Engineering

Encl

VERIFICATION CERTIFICATE

NOT TRANSFERABLE

This Verification Certificate is hereby issued to the named GRANTEE and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below:

GRANTEE:	
Address:	50 McIntosh Dr. #120 Markham, Ontario Canada, L3R 9T3
Contact Person:	Mr. Igor Agranovski Phone #: 905-474-1990 (ext.: 111) Fax #: 905-474-9223 Email Address: igor@sangoma.com
Equipment Type:	Class A - Information Technology Equipment
Product Name:	A102d, A108d, A400d
Model No.:	A102d, A108d, A400d
The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	European CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003

- **Note(s):** *See attached report, UltraTech's File No.: SNG-030-CISPR22A, dated for details and conditions of Verification Compliance.*

Approved by: Tri M. Luu, P.Eng.
V.P. – Engineering

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

ANSI	FC	VCI	Canada	NVLAP	BSMI
0685	31040/SIT	C-1376	46390-2049	200093-0	SL2-IN-E-1119R

ENGINEERING TEST REPORT

A102d, A108d, A400d
Model No.: A102d, A108d, A400d

Applicant: **Sangoma Technologies**
50 McIntosh Dr. #120
Markham, Ontario
Canada, L3R 9T3

Tested in Accordance With

INTERNATIONAL ELECTROTECHNICAL COMMISSION
(International Special Committee on Radio Interference)
CISPR 22:2003 +A1:2004
EN55022:1998 +A1:2000 +A2:2003, CLASS A
Information Technology Equipment - Radio Disturbance Characteristics

UltraTech's File No.: SNG-030-CISPR22A

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: May 3, 2007	
Report Prepared by: Lien M. Trinh Issued Date: May 3, 2007	Tested by: Phuong Ngo & Satish Patel, EMI/EMC Technicians Test Dates: March 27, 29, 2007

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

TABLE OF CONTENTS

EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003
Title	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
Purpose of Test:	To gain Verification Compliance with CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003 - Class A.
Test Procedures	Both conducted and Electromagnetic Radiation Disturbance measurements were conducted in accordance with the European Standards CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003 - Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement.
Class A Classification:	Class A ITE is category of all other ITE which satisfies the Class A ITE limits but not the Class B ITE limits. Such equipment should not be restricted in its sales but the following warning shall be included in the instructions for use. **WARNING:** **This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

The CISPR standard defines the acceptable levels of Conducted Disturbance at Mains Ports and Radiated Disturbance emanated from electronic products. Countries are known to require CISPR compliance are ***Australia, Austria, Belgium, Ireland, France, Italy, Spain, Germany, Netherlands, Portugal, Denmark, Luxembourg, Switzerland, Finland, Norway, Sweden, Iceland, Greenland, New Zealand, Japan, United Kingdom, The United States, Canada and etc…***

1.2. RELATED SUBMITTAL(S)/GRANT(S)

None

1.3. NORMATIVE REFERENCES

Publication	Year	Title
CISPR 22 EN 55022 +A1 +A2	2003-04-10 1998 2000 2003	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
ANSI C63.4	2004	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9KHz to 40GHz
CISPR 16-1-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-2-1	2004	Specification for radio disturbance and immunity measuring apparatus and methods. Part 2-1: Conducted disturbance measurement

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT:	
Name:	Sangoma Technologies
Address:	50 McIntosh Dr. #120 Markham, Ontario Canada, L3R 9T3
Contact Person:	Mr. Igor Agranovski Phone #: 905-474-1990 (ext.: 111) Fax #: 905-474-9223 Email Address: igor@sangoma.com

MANUFACTURER:	
Name:	Sangoma Technologies
Address:	50 McIntosh Dr. #120 Markham, Ontario Canada, L3R 9T3
Contact Person:	Mr. Igor Agranovski Phone #: 905-474-1990 (ext.: 111) Fax #: 905-474-9223 Email Address: igor@sangoma.com

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

Brand Name	AFT SERIES
Product Name	A102d
Model Name or Number	A102d
Serial Number	A102d production sample
Type of Equipment	Unintentional Radiators
Oscillators' Frequencies	8.192MHz, 12.352MHz, 33.3MHz
Power input source:	Powered by host PC

2.3. EQUIPMENT UNDER TEST (EUT) INFORMATION

Brand Name	AFT SERIES
Product Name	A108d
Model Name or Number	A108d
Serial Number	A108d production sample
Type of Equipment	Unintentional Radiators
Oscillators' Frequencies	8.192MHz, 12.352MHz, 33.3MHz
Power input source:	Powered by host PC

2.4. EQUIPMENT UNDER TEST (EUT) INFORMATION

Brand Name	AFT SERIES
Product Name	A400d
Model Name or Number	A400d
Serial Number	A400d production sample
Type of Equipment	Unintentional Radiators
Oscillators' Frequencies	8.192MHz, 33.3MHz
Power input source:	Powered by host PC

2.5. LIST OF COMPONENTS/PARTS OF THE EUT

Index Number	Parts Description	Parts Number/ Model Number	Serial Number	FCC/CE Compliance (FCC & CE)
1	A102d PCI Card + Echo canceller DSP			FCC Logo & CE
2	A108d PCI Card + Echo canceller DSP			FCC Logo & CE
3	A400d + Echo canceller DSP			FCC Logo & CE

2.6. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	T1/E1 Ports on A102d	2	RJ45	Non-shielded
2	T1/T2 Ports on A108d	8	RJ45	Non-shielded
3	Analog FXO/FXS Ports on A400d	12	DB25	Non-shielded

2.7. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Brand name:	HP Computer
Part Number:	PZ013UT#ABA
Serial Number:	UA63108CS
Cable Type:	Shielded
Connected to EUT's Port:	A120d, A108d, A400d

Ancillary Equipment # 2	
Brand name:	IBM Monitor
Model Name or Number:	6332-01N
Serial Number:	55-ZB977
Cable Type:	Shielded
Connected to EUT's Port:	HD15

Ancillary Equipment # 3	
Brand name:	Dell Keyboard
Serial Number:	CN-0W7658-37172-582-0MLL
Cable Type:	Shielded
Connected to EUT's Port:	PS2

Ancillary Equipment # 4	
Brand name:	Dell Mouse
Model Name or Number:	M-UVDEL-1
Serial Number:	0T0943
Cable Type:	Shielded
Connected to EUT's Port:	PS2

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

The climate conditions of the test environment are as follows:

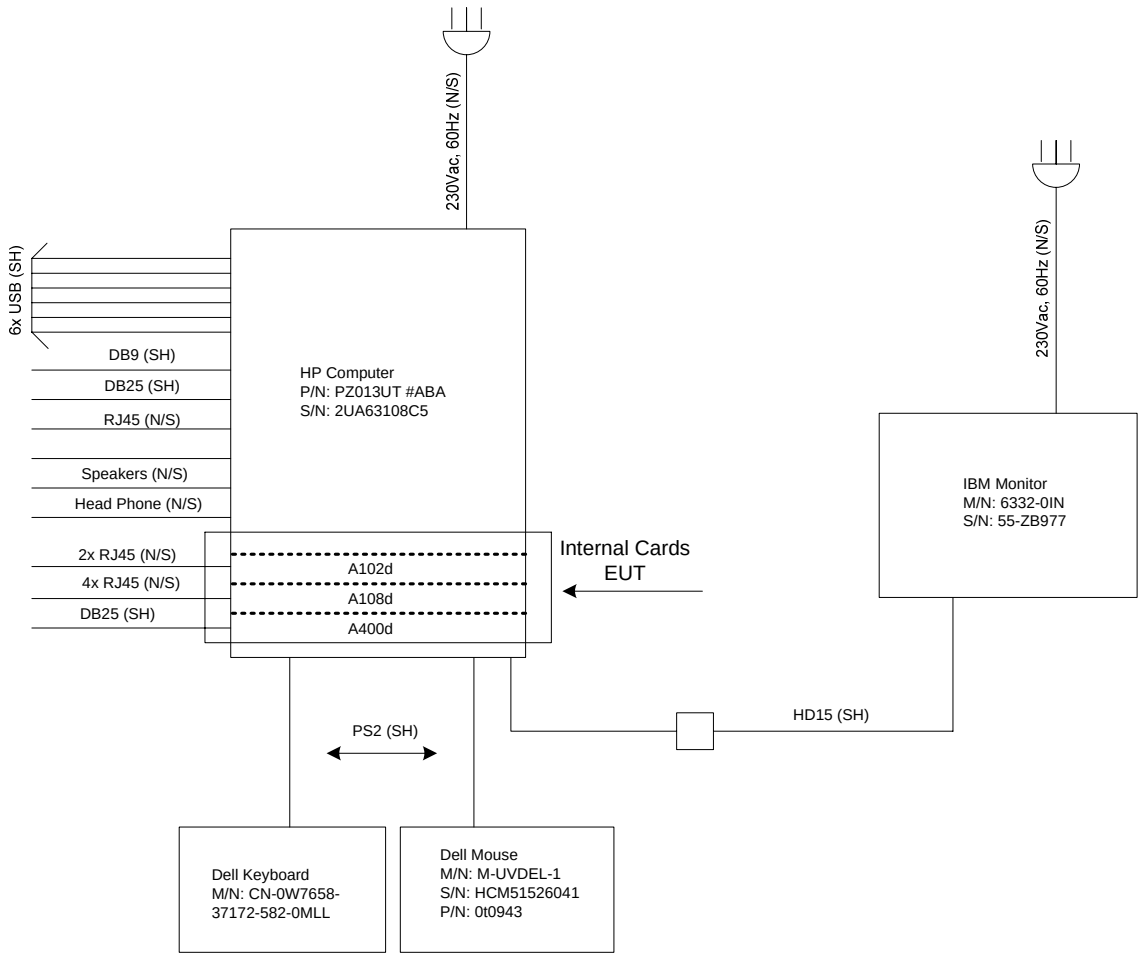
Temperature:	21°C
Humidity:	25%
Pressure:	102 kPa
Power input source:	230Vac, 60Hz

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

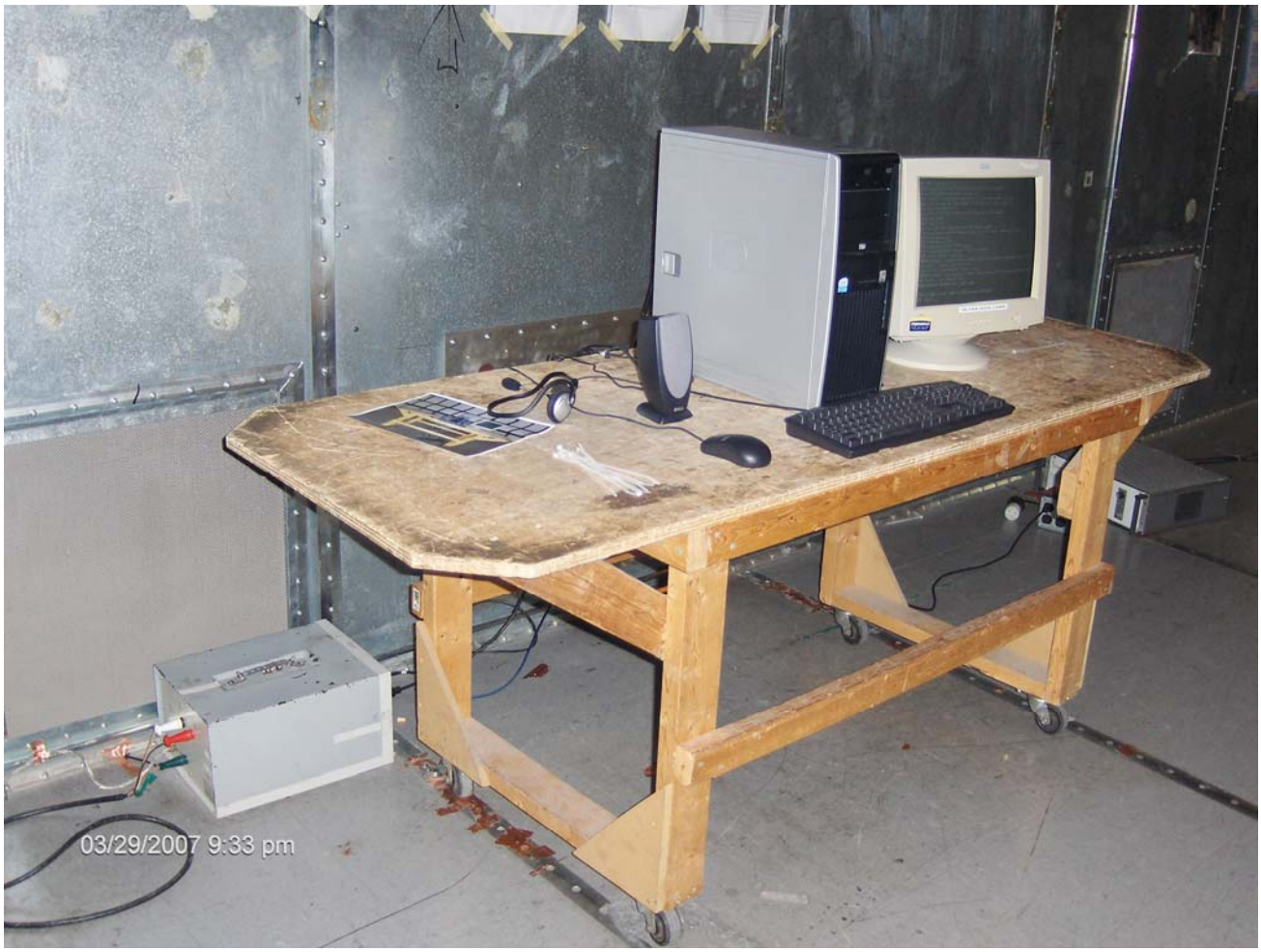
Each of the ports of the A102d and 108d are connected through loop back cables, continuously transmitting/receiving HDLC data.

A400d which drives an analog handset with a 1kHz sine wave, sin wave is continuously monitored by oscilloscope.

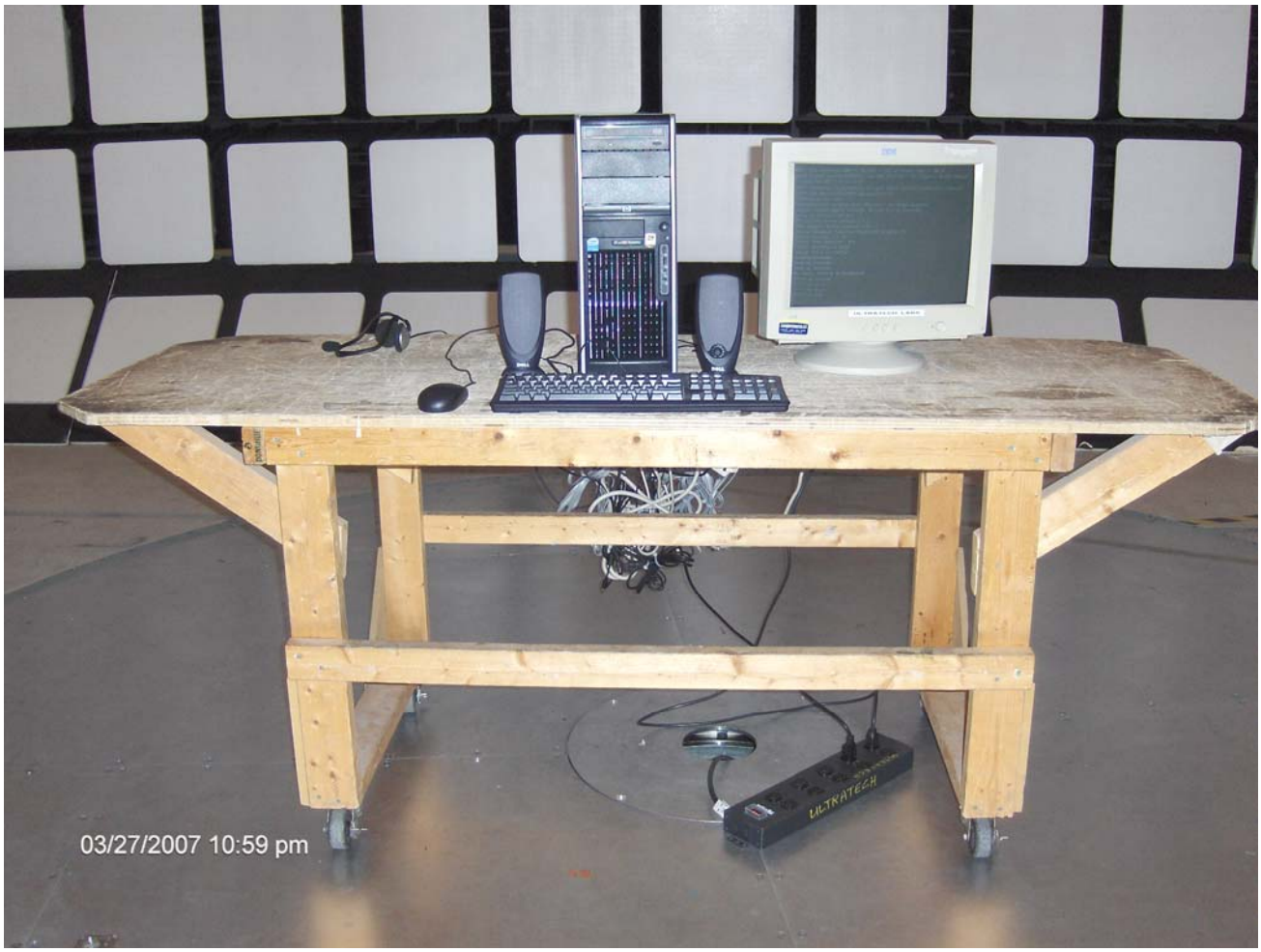
3.3. BLOCK DIAGRAM OF TEST SETUP FOR AC POWERLINE CONDUCTED EMISSION & RADIATED EMISSION MEASUREMENTS



3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSION MEASUREMENTS


03/29/2007 9:33 pm

3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS



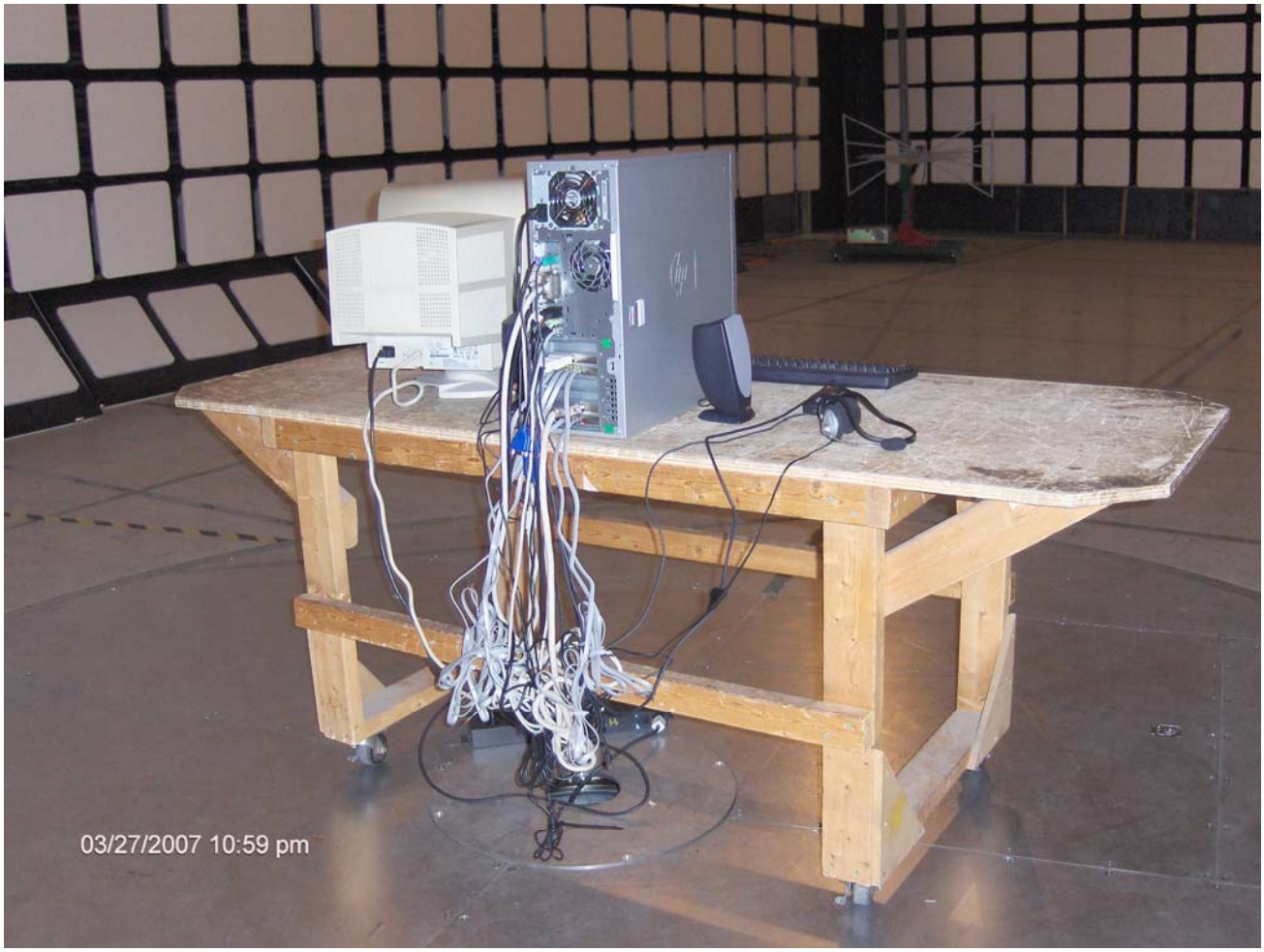

03/27/2007 10:59 pm

EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).

- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 31040/SIT 1300B3) and Industry Canada office (Industry Canada File No.: IC2049-1). Last Date of Site Calibration: June 20, 2006.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

CISPR 22 EN 55022	TEST REQUIREMENTS	MARGIN BELOW (-) / ABOVE (+) THE LIMITS	COMPLIANCE (YES/NO)
5.1, Table 1, Class A	AC Mains Terminal Disturbance Voltage in the frequency band 150 kHz to 30 MHz	- 16.211 dB @ 15.4 MHz	Yes
6, Table 5, Class A	Electromagnetic Radiation Disturbance in the frequency band 30 MHz to 1GHz	- 1.8 dB @ 36.3 MHz	Yes

4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

The DB25 shielded cable is required for compliance with radiated emissions.

4.4. DEVIATION OF THE STANDARD TEST PROCEDURES

None

EXHIBIT 5. MEASUREMENTS, EXAMINATIONS & TEST DATA FOR EMC EMISSIONS

5.1. TEST PROCEDURES

Please refer to Ultratech Test Procedures, File# ULTR-P001-2004, CISPR 22 / EN 55022, CISPR 16-1-2 and CISPR 16-2-3 for Test Procedures.

5.2. MEASUREMENT UNCERTAINTIES

The measurement uncertainties stated were calculated in accordance with requirements of UKAS Document LAB 34 with a confidence level of 95%. Please refer to Exhibit 6 for Measurement Uncertainties.

5.3. MEASUREMENT EQUIPMENT USED:

The measurement equipment used complied with the requirements of the Standards referenced in the Methods & Procedures ANSI C63.4 and CIPSR 16-1-1.

5.4. AC MAINS TERMINAL DISTURBANCE VOLTAGE IN FREQUENCY BAND 150 KHZ TO 30 MHZ @ CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003 [5.1, TABLE 2]

5.4.1. Limits

The equipment shall meet the limits of the following table:

	CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003 CLASS A LIMITS		
Test Frequency Range (MHz)	**Quasi-Peak (dBµV)**	**Average* (dBµV)**	**Measuring Bandwidth**
0.15 to 0.5	79	66	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
0.5 to 30	73	60	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average

5.4.2. Method of Measurements

Refer to Test Procedures ULTR P001-2004, CISPR 22 / EN 55022, ANSI C63-4

5.4.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver System/Spectrum Analyzer	Hewlett Packard	HP 8546A	3520A00248	9KHz-5.6GHz, 50 Ohms
Transient Limiter	Hewlett Packard	11947A	310701998	9 kHz – 200 MHz 10 dB attenuation
L.I.S.N.	EMCO	3825/2	89071531	9 kHz – 200 MHz 50 Ohms / 50 µH
12'x16'x12' RF Shielded Chamber	RF Shielding	…	..	…

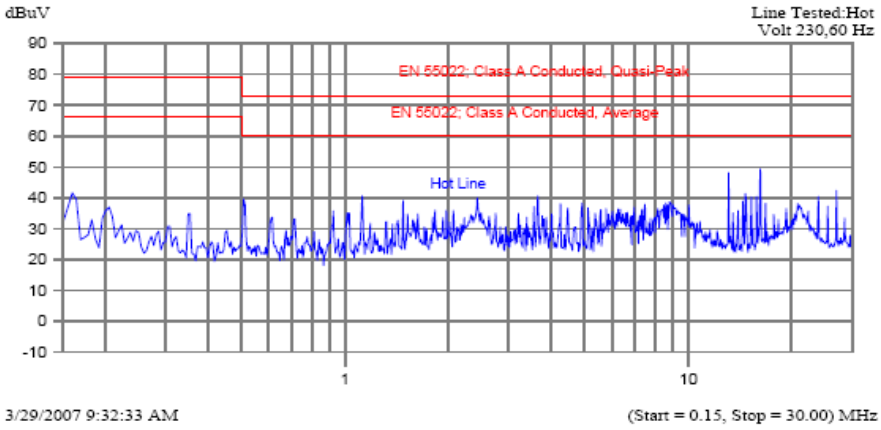
5.4.4. Test Data

EN 55022; Class A Power Line Conducted Emissions

Test Header

Description: Supply Voltage 230Vac, 60 Hz
5 Volt & 12 Volt From Computer
Setup Name: EN 55022; Class A Conducted
Customer Name: Sangoma technologies Inc.
Project Number: SNG-030Q/R
Operator Name: Satish
EUT Name: A102d, A108d, A400d
Date Created: 3/29/2007 8:52:22 AM
Date Modified: 3/29/2007 9:25:09 AM

Current Graph



Current List

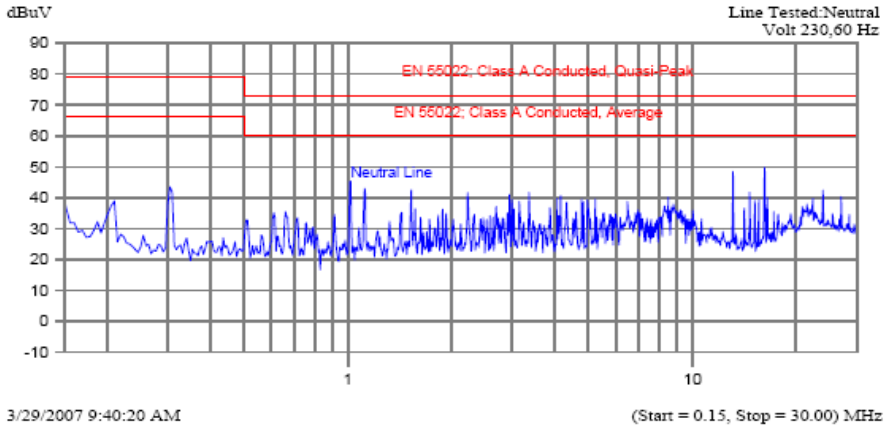
Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name	Comment
0.506	39.5	39.9	-33.1	29.5	-30.5	Hot Line	
1.112	40.6	41.0	-32.0	33.0	-27.0	Hot Line	
13.125	48.1	49.7	-23.3	44.5	-15.5	Hot Line	
16.211	49.3	49.5	-23.5	44.6	-15.4	Hot Line	
27.021	42.4	43.4	-29.6	38.6	-21.4	Hot Line	

EN 55022; Class A Power Line Conducted Emissions

Test Header

Description: Supply Voltage 230Vac, 60 Hz
5 Volt & 12 Volt From Computer
Setup Name: EN 55022; Class A Conducted
Customer Name: Sangoma technologies Inc.
Project Number: SNG-030Q/R
Operator Name: Satish
EUT Name: A102d, A108d, A400d
Date Created: 3/29/2007 8:52:22 AM
Date Modified: 3/29/2007 9:38:21 AM

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name	Comment
0.303	43.4	39.2	-39.8	27.4	-38.6	Neutral Line	
1.012	45.2	42.7	-30.3	34.1	-25.9	Neutral Line	
1.113	42.9	41.3	-31.7	33.4	-26.6	Neutral Line	
13.125	48.4	49.6	-23.4	44.3	-15.7	Neutral Line	
16.211	48.2	49.3	-23.7	44.6	-15.4	Neutral Line	

5.5. ELECTROMAGNETIC RADIATION DISTURBANCE FOM 30 TO 1000 MHZ @ CISPR 22:2003 +A1:2004 / EN55022:1998 +A1:2000 +A2:2003 [6, TABLE 6]

5.5.1. Limits

Test Frequency Range (MHz)	Class A Limits @10 M (dBµV/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 – 230	40.0	Quasi-Peak	RBW = 120 kHz, VBW ≥ 120 kHz
230 – 1000	47.0	Quasi-Peak	RBW = 120 kHz, VBW ≥ 120 kHz

5.5.2. Method of Measurements

Refer to Test Procedures ULTR P001-2004, CISPR 22 / EN 55022, ANSI C63-4
The EUT shall be scanned from 30 MHz to 1000 MHz.

5.5.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver System/Spectrum Analyzer	Hewlett Packard	HP 8546A	3520A00248	9KHz-5.6GHz, 50 Ohms
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
Microwave Amplifier	Hewlett Packard	HP 83017A	311600661	1 GHz to 26.5 GHz
Biconilog Antenna	EMCO	3143	1029	20 MHz to 2 GHz
Horn Antenna	EMCO	3155	9701-5061	1 GHz – 18 GHz

5.5.4. Test Data

The emissions were scanned from 30 MHz to 1GHz at 10 Meters distance and all emissions less than 20 dB below the limits were recorded.

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
30.3	34.5	PEAK	V	40.0	-5.5	PASS
31.8	37.0	QP	V	40.0	-3.0	PASS
31.8	23.1	PEAK	H	40.0	-16.9	PASS
33.3	34.8	PEAK	V	40.0	-5.2	PASS
34.8	35.7	PEAK	V	40.0	-4.3	PASS
34.8	31.4	PEAK	H	40.0	-8.6	PASS
36.3	38.2	QP	V	40.0	**-1.8**	PASS
36.3	20.0	PEAK	H	40.0	-20.0	PASS
38.0	36.6	PEAK	V	40.0	-3.4	PASS
38.0	19.9	PEAK	H	40.0	-20.2	PASS
39.5	29.6	PEAK	V	40.0	-10.4	PASS
41.0	29.9	PEAK	V	40.0	-10.1	PASS
42.5	30.3	PEAK	V	40.0	-9.7	PASS
42.5	22.1	PEAK	H	40.0	-17.9	PASS
48.8	38.0	QP	V	40.0	-2.0	PASS
48.8	20.6	PEAK	H	40.0	-19.4	PASS
50.3	37.3	QP	V	40.0	-2.7	PASS
50.3	20.3	PEAK	H	40.0	-19.7	PASS
51.8	35.6	PEAK	V	40.0	-4.4	PASS
51.8	19.5	PEAK	H	40.0	-20.5	PASS
53.5	35.6	QP	V	40.0	-4.4	PASS
53.5	22.4	PEAK	H	40.0	-17.6	PASS
55.0	34.5	QP	V	40.0	-5.5	PASS
55.0	20.0	PEAK	H	40.0	-20.0	PASS
55.8	34.9	PEAK	V	40.0	-5.1	PASS
56.5	33.9	PEAK	V	40.0	-6.1	PASS
57.3	34.8	PEAK	V	40.0	-5.2	PASS
57.3	19.2	PEAK	H	40.0	-20.8	PASS
58.0	33.3	PEAK	V	40.0	-6.7	PASS
61.3	29.8	PEAK	V	40.0	-10.2	PASS
94.8	27.6	PEAK	V	40.0	-12.4	PASS
94.8	27.2	PEAK	H	40.0	-12.8	PASS
97.5	27.5	PEAK	V	40.0	-12.5	PASS
97.5	24.3	PEAK	H	40.0	-15.7	PASS
116.8	28.1	PEAK	V	40.0	-11.9	PASS
116.8	24.5	PEAK	H	40.0	-15.5	PASS
119.5	28.5	PEAK	V	40.0	-11.5	PASS
119.5	24.2	PEAK	H	40.0	-15.8	PASS
144.7	28.3	PEAK	V	40.0	-11.7	PASS
144.7	19.7	PEAK	H	40.0	-20.3	PASS

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
156.0	27.7	PEAK	V	40.0	-12.3	PASS
156.0	21.4	PEAK	H	40.0	-18.6	PASS
159.4	28.0	PEAK	V	40.0	-12.0	PASS
159.4	22.1	PEAK	H	40.0	-17.9	PASS
161.0	29.1	PEAK	V	40.0	-10.9	PASS
161.0	25.6	PEAK	H	40.0	-14.4	PASS
164.1	30.4	PEAK	V	40.0	-9.6	PASS
164.1	26.3	PEAK	H	40.0	-13.7	PASS
165.4	33.1	PEAK	V	40.0	-6.9	PASS
165.4	27.8	PEAK	H	40.0	-12.2	PASS
167.0	31.1	PEAK	V	40.0	-8.9	PASS
167.0	28.0	PEAK	H	40.0	-12.1	PASS
168.6	29.3	PEAK	V	40.0	-10.7	PASS
168.6	27.2	PEAK	H	40.0	-12.8	PASS
198.0	27.5	PEAK	V	40.0	-12.6	PASS
198.0	23.8	PEAK	H	40.0	-16.2	PASS
210.3	27.4	PEAK	V	40.0	-12.6	PASS
210.3	24.1	PEAK	H	40.0	-15.9	PASS
222.7	27.2	PEAK	V	40.0	-12.8	PASS
222.7	28.1	PEAK	H	40.0	-11.9	PASS
534.4	31.2	PEAK	H	47.0	-15.8	PASS
741.7	33.1	PEAK	V	47.0	-13.9	PASS
741.7	32.0	PEAK	H	47.0	-15.1	PASS
750.9	34.0	PEAK	H	47.0	-13.0	PASS
766.1	34.2	PEAK	H	47.0	-12.8	PASS
791.4	34.1	PEAK	H	47.0	-12.9	PASS
800.5	33.4	PEAK	H	47.0	-13.6	PASS

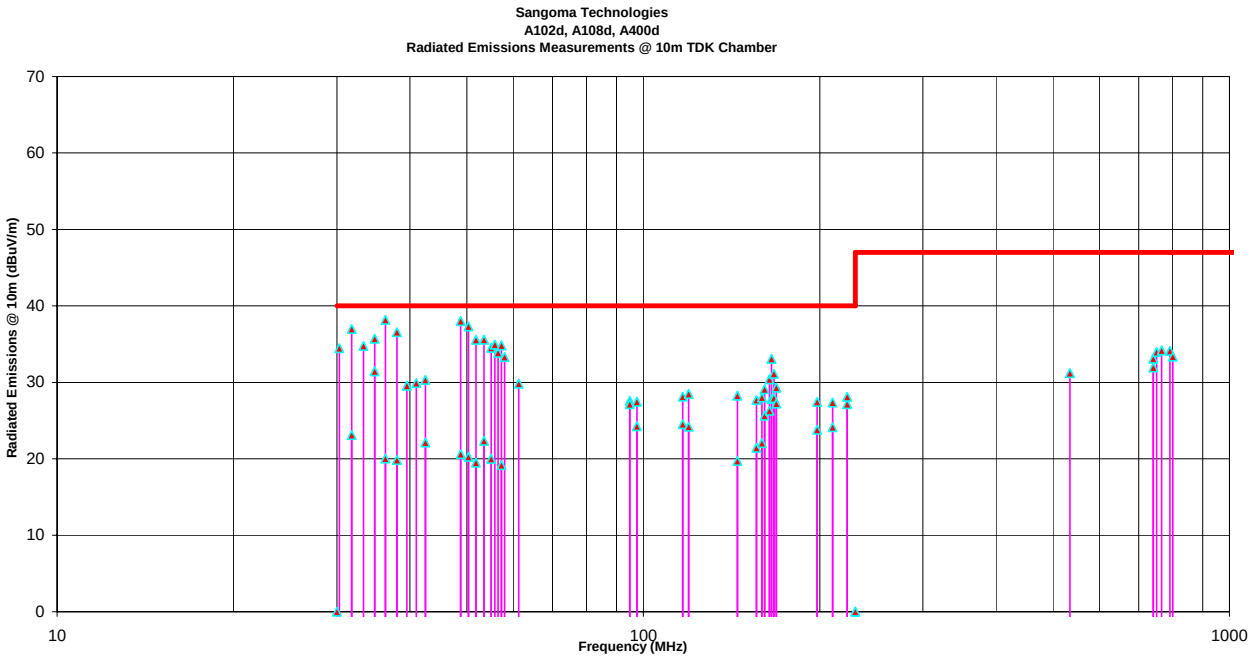


EXHIBIT 6. MEASUREMENT UNCERTAINTY

The measurement uncertainties stated were calculated in accordance with the requirements of NIST Technical Note 1297 and LAB 34

6.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

CONTRIBUTION (Line Conducted)	PROBABILITY DISTRIBUTION	UNCERTAINTY (dB)	
		9-150 kHz	0.15-30 MHz
EMI Receiver specification	Rectangular	±1.5	±1.5
LISN coupling specification	Rectangular	±1.5	±1.5
Cable and Input Transient Limiter calibration	Normal (k=2)	±0.3	±0.5
Mismatch: Receiver VRC Γ_1 = 0.03 LISN VRC Γ_R = 0.8(9 kHz) 0.2 (30 MHz) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	U-Shaped	±0.2	±0.3
System repeatability	Std. deviation	±0.2	±0.05
Repeatability of EUT	--	--	--
Combined standard uncertainty	Normal	±1.25	±1.30
Expanded uncertainty U	Normal (k=2)	±2.50	±2.60

Sample Calculation for Measurement Accuracy in 150 kHz to 30 MHz Band:

$u_c(y) = \sqrt{\sum_{i=1}^{m} u_i^2(y)} = \pm \sqrt{(1.5^2 + 1.5^2)/3 + (0.5/2)^2 + (0.05/2)^2 + 0.35^2} = \pm 1.30$ dB

$U = 2u_c(y) = \pm 2.6$ dB

6.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

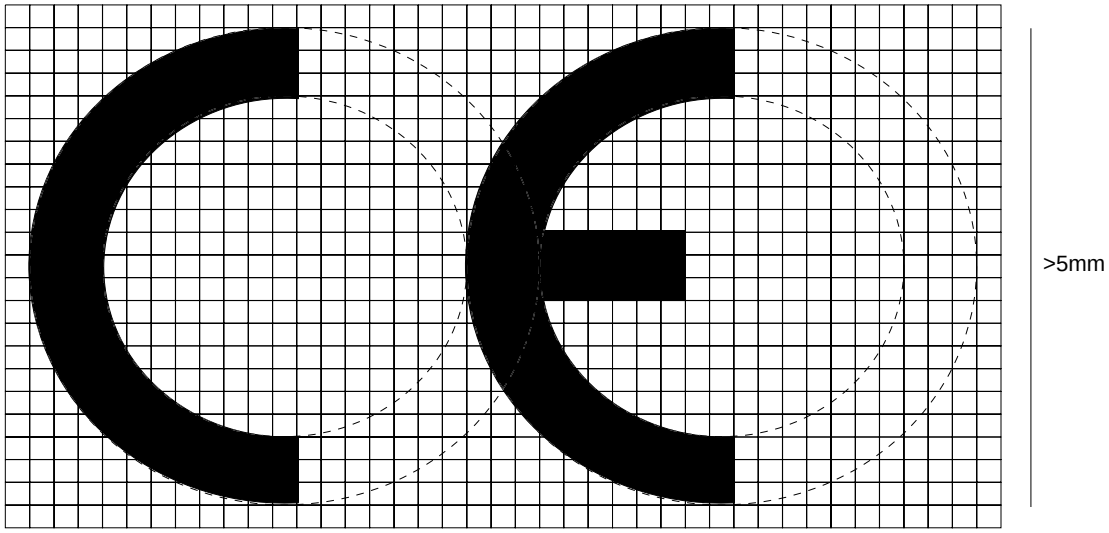
CONTRIBUTION (Electromagnetic Radiation Disturbance)	PROBABILITY DISTRIBUTION	Uncertainty (dB)	
		3 M	10 M
Antenna Factor Calibration	Normal (k=2)	±1.0	±1.0
Cable Loss Calibration	Normal (k=2)	±0.3	±0.5
EMI Receiver specification	Rectangular	±1.5	±1.5
Antenna Directivity	Rectangular	+0.5	+0.5
Antenna factor variation with height	Rectangular	±2.0	±0.5
Antenna phase center variation	Rectangular	0.0	±0.2
Antenna factor frequency interpolation	Rectangular	±0.25	±0.25
Measurement distance variation	Rectangular	±0.6	±0.4
Site imperfections	Rectangular	±2.0	±2.0
Mismatch: Receiver VRC Γ_1 = 0.2 Antenna VRC Γ_R = 0.67(Bi) 0.3 (Lp) Uncertainty limits 20Log(1±$\Gamma_1\Gamma_R$)	U-Shaped	+1.1 -1.25	±0.5
System repeatability	Std. Deviation	±0.5	±0.5
Repeatability of EUT		-	-
Combined standard uncertainty	Normal	+2.19 / -2.21	+1.74 / -1.72
Expanded uncertainty U	Normal (k=2)	+4.38 / -4.42	+3.48 / -3.44

Calculation for maximum uncertainty when 10 M biconical antenna including a factor of k=2 are used:

U = $2u_c(y)$ = 2x(+2.19)= +4.38 dB And U = $2u_c(y)$ = 2x(-2.21)= -4.42 dB

EXHIBIT 7. LABELLING REQUIREMENTS

The CE Mark with respect to the EMC Directive 89/336/EEC



The CE mark shall consist of the initials "CE" taking the following form

- If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
- Where apparatus is the subject of other Directives covering other aspects and which also provide for the CE conformity marking, the latter shall indicate that the appliances are also presumed to conform to those other Directives.
- However, where one or more of these Directives allow the manufacturer, during a transitional period, to choose which arrangements to apply, the CE mark shall indicate conformity only to the Directives applied by the manufacturer. In this case, particulars of the Directive applied, as published in the Official Journal of the European Communities, must be given in the documents, notices or instructions required by the Directives and accompanying such apparatus.

The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5mm.