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February 21, 2006

**SANGOMA TECHNOLOGIES INC.**  
50 MCINTOSH Drive, STE. 120  
Markham, Ontario  
Canada, L3R 9T3

**Attn.: Mr. Igor Agranovski**

**Subject: Verification Testing under CISPR 22:2003 +A1:2004 & +A2:2006 /  
EN 55022:2003, Class A - Information Technology Equipment.**

**Product: A104D, A200**  
**Modesl No.: A104D, A200**

Dear Mr. Agranovski,

The product sample, as provided by you, has been tested and found to comply with **CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003, 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.**

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:** SANGOMA TECHNOLOGIES INC.  
Address: 50 MCINTOSH Drive, STE. 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:** A104D, A200  
**Models No.:** A104D, A200  
**Year of manufacture:** 2006

**The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:** European CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003

- Note(s):** See attached report, UltraTech's File No.: SNG-024-CISPR11A, dated February 21, 2006 for details and conditions of Verification Compliance.



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

## UltraTech

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31040/SIT



C-1376



46390-2049



200093-0



SL2-IN-E-1119R



00-034



# ENGINEERING TEST REPORT



**A104D, A200**  
**Model No.: A104D, A200**

*Applicant:* **SANGOMA TECHNOLOGIES INC.**  
50 MCINTOSH Drive, STE. 120  
Markham, Ontario  
Canada, L3R 9T3

*Tested in Accordance With*

**INTERNATIONAL ELECTROTECHNICAL COMMISSION**  
**(International Special Committee on Radio Interference)**  
**CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003,**  
**CLASS A**

**Information Technology Equipment - Radio Disturbance Characteristics**

**UltraTech's File No.: SNG-024-CISPR22A**

This Test report is Issued under the Authority of  
Tri M. Luu, Professional Engineer,  
Vice President of Engineering  
UltraTech Group of Labs

Date: February 21, 2006



Report Prepared by: Lien M. Trinh

Tested by: William Truong, EMC Technician

Issued Date: February 21, 2006

Test Dates: January 19, 2006

- *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

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31040/SIT



C-1376



46390-2049



200093-0



SL2-IN-E-1119R



00-034



## TABLE OF CONTENTS

<b>EXHIBIT 1. INTRODUCTION .....</b>	<b>3</b>
1.1. SCOPE .....	3
1.2. RELATED SUBMITTAL(S)/GRANT(S) .....	3
1.3. NORMATIVE REFERENCES .....	3
<b>EXHIBIT 2. PERFORMANCE ASSESSMENT .....</b>	<b>4</b>
2.1. CLIENT INFORMATION .....	4
2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION .....	4
2.3. LIST OF COMPONENTS/PARTS OF THE EUT .....	5
2.4. LIST OF EUT'S PORTS .....	5
2.5. ANCILLARY EQUIPMENT .....	5
<b>EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS .....</b>	<b>7</b>
3.1. CLIMATE TEST CONDITIONS .....	7
3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS .....	7
3.3. BLOCK DIAGRAM OF TEST SETUP FOR AC POWERLINE CONDUCTED EMISSION & RADIATED EMISSION MEASUREMENTS .....	8
3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSION MEASUREMENTS .....	9
3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS .....	11
<b>EXHIBIT 4. SUMMARY OF TEST RESULTS .....</b>	<b>13</b>
4.1. LOCATION OF TESTS .....	13
4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS .....	13
4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE .....	13
4.4. DEVIATION OF THE STANDARD TEST PROCEDURES .....	13
<b>EXHIBIT 5. MEASUREMENTS, EXAMINATIONS &amp; TEST DATA FOR EMC EMISSIONS .....</b>	<b>14</b>
5.1. TEST PROCEDURES .....	14
5.2. MEASUREMENT UNCERTAINTIES .....	14
5.3. MEASUREMENT EQUIPMENT USED: .....	14
5.4. AC MAINS TERMINAL DISTURBANCE VOLTAGE IN FREQUENCY BAND 150 KHZ TO 30 MHZ @ CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 [5.1, TABLE 2] .....	15
5.4.1. <i>Limits</i> .....	15
5.4.2. <i>Method of Measurements</i> .....	15
5.4.3. <i>Test Equipment List</i> .....	15
5.4.4. <i>Test Data</i> .....	16
5.5. ELECTROMAGNETIC RADIATION DISTURBANCE FOM 30 TO 1000 MHZ @ CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 [6, TABLE 6] .....	19
5.5.1. <i>Limits</i> .....	19
5.5.2. <i>Method of Measurements</i> .....	19
5.5.3. <i>Test Equipment List</i> .....	19
5.5.4. <i>Test Data</i> .....	20
<b>EXHIBIT 6. MEASUREMENT UNCERTAINTY .....</b>	<b>23</b>
6.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY .....	23
6.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY .....	24
<b>EXHIBIT 7. LABELLING REQUIREMENTS .....</b>	<b>25</b>

## EXHIBIT 1. INTRODUCTION

### 1.1. SCOPE

<b>Reference:</b>	CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003
<b>Title</b>	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
<b>Purpose of Test:</b>	To gain Verification Compliance with CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 - Class A.
<b>Test Procedures</b>	Both conducted and Electromagnetic Radiation Disturbance measurements were conducted in accordance with the European Standards CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 - Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement.
<b>Class A Classification:</b>	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.  <b>WARNING:</b> <b>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.</b>

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 CISPR 22 +A1 CSIPR 22 +A2 EN 55022	2003-04-10 2004-10-14 2006-01 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 9 KHz to 40 GHz
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

<b>APPLICANT:</b>	
<b>Name:</b>	SANGOMA TECHNOLOGIES INC.
<b>Address:</b>	50 MCINTOSH Drive, STE. 120 Markham, Ontario Canada, L3R 9T3
<b>Contact Person:</b>	Mr. Igor Agranovski Phone #: 905-474-1990 (ext. 111) Fax #: 905-474-9223 Email Address: igor@sangoma.com

<b>MANUFACTURER:</b>	
<b>Name:</b>	SANGOMA TECHNOLOGIES INC.
<b>Address:</b>	50 MCINTOSH Drive, STE. 120 Markham, Ontario Canada, L3R 9T3
<b>Contact Person:</b>	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

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

<b>Brand Name</b>	SANGOMA TECHNOLOGIES INC.
<b>Product Name</b>	A104D, A200
<b>Model Name or Number</b>	A104D, A200
<b>Part No.:</b>	A104D, A200
<b>Serial Number</b>	10404D0-00000(A 104D), 20000A0-00000(A200)
<b>Type of Equipment</b>	Industrial, Scientific and Medical Equipment
<b>Oscillators' Frequencies</b>	33.333MHz, 8.192MHz, 12.352MHz, 2.048MHz
<b>Power input source:</b>	5V, 12V

### 2.3. LIST OF COMPONENTS/PARTS OF THE EUT

Port Number	Parts Description	Parts Number/ Model Number	Serial Number	FCC/CE Compliance (FCC & CE)
1	FPGA (A104D)	Xilinx Spartan, XC3S1000	-	FCC Logo & CE
2	CPLD (A104D & A200)	Xilinx, XC95144XL	-	FCC Logo & CE
3	Hardware Echo Canceller (A140D & A200)	Octsic OCT6116-128S	-	FCC Logo & CE
4	T1/E1 Framer (A104D)	PMC PM4354-NI	-	FCC Logo & CE
5	Flash Memory (A104D & A200)	ST, M29W800D8	-	FCC Logo & CE
6	FPGA (a200)	Xilinx Spartan, XC3S400	-	FCC Logo & CE

### 2.4. 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/J1 (A104D card)	4	RJ45	Flat, Non-shielded
2	Analog telephone line (A200 card)	4	RJ45	Flat, Non-shielded

### 2.5. 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:	IBM Monitor
Model Name or Number:	6332-02N
Serial Number:	66-A9934
Cable Type:	Shielded
Connected to EUT's Port:	HD15

Ancillary Equipment # 2	
Brand name:	HP Printer
Model Name or Number:	C4549A
Serial Number:	US6331G23P
FCC ID:	B94C2164X
Cable Type:	Shielded
Connected to EUT's Port:	DB25

Ancillary Equipment # 3	
Brand name:	HP Keyboard
Part Number:	5187-0341
Serial Number:	SC0231024158
Cable Type:	Shielded
Connected to EUT's Port:	Keyboard Port

<b>Ancillary Equipment # 4</b>	
Brand name:	Compaq Mouse
Model Name or Number:	MO42KC
Serial Number:	030250666
Cable Type:	Shielded
Connected to EUT's Port:	Mouse Port

<b>Ancillary Equipment # 5</b>	
Brand name:	Polk Audio Speakers
Cable Type:	Non-shielded
Connected to EUT's Port:	1/8" Mini Jack

<b>Ancillary Equipment # 6</b>	
Brand name:	Headset
Cable Type:	Non-shielded
Connected to EUT's Port:	1/8" Mini Jack

<b>Ancillary Equipment # 7</b>	
Brand name:	Microphone
Cable Type:	Non-shielded
Connected to EUT's Port:	1/8" Mini Jack



## 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:	51%
Pressure:	102 kPa
Power input source:	5V, 12V

### 3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

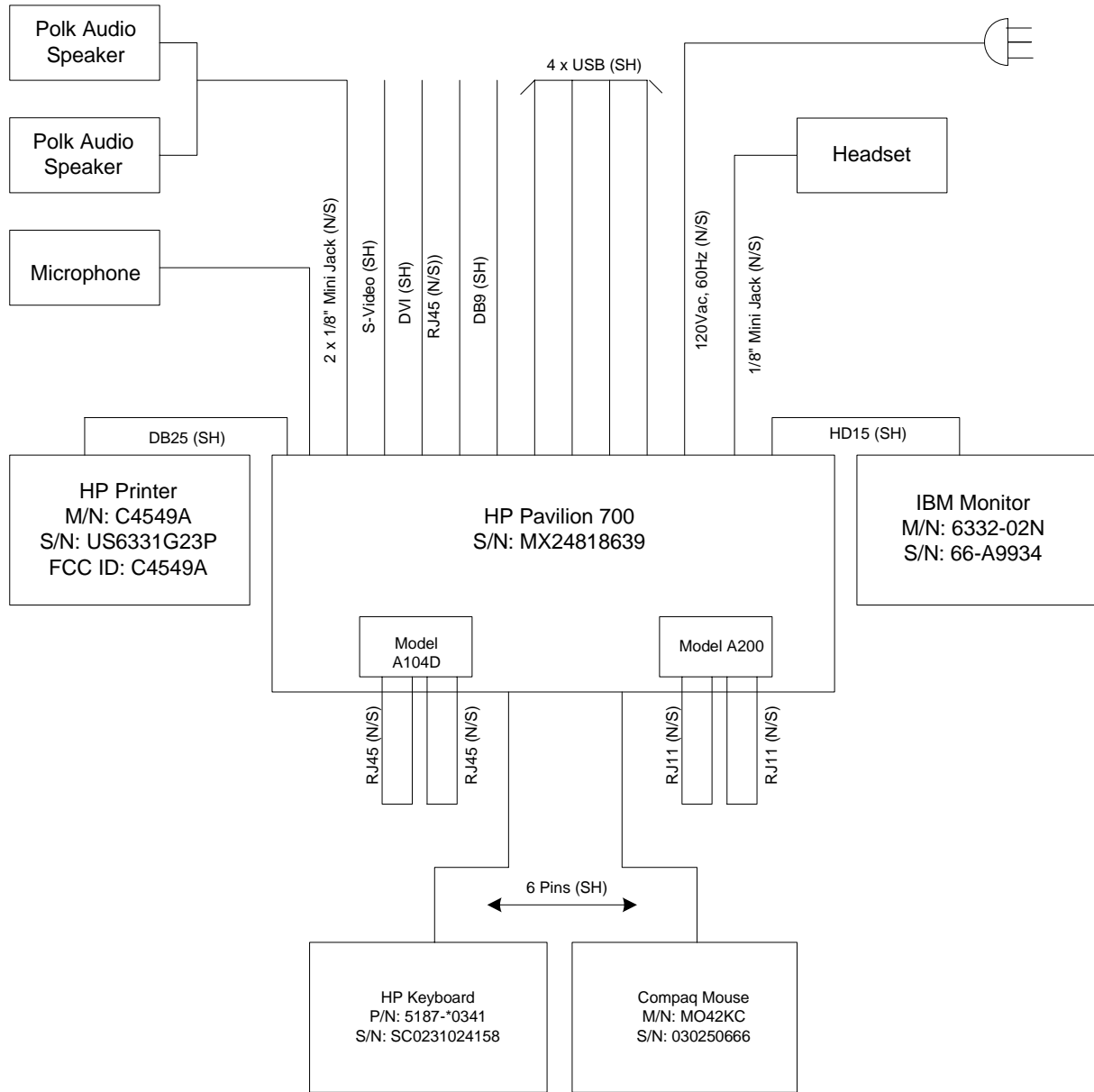
A104D is connected in back to back mode (port 1 to port 2, and port 3 to port 4).

A200 is connected in 2 loops, port 1 (fxo) to port 3 (fxs) and port 2 (fxo) to port 4 (fxs).

All 4 ports of both cards are exercised (making connections, transmitting/receiving data).

A counter of total bytes transmitted and received is maintained to indicate port activity.

### 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





**ULTRATECH GROUP OF LABS**

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

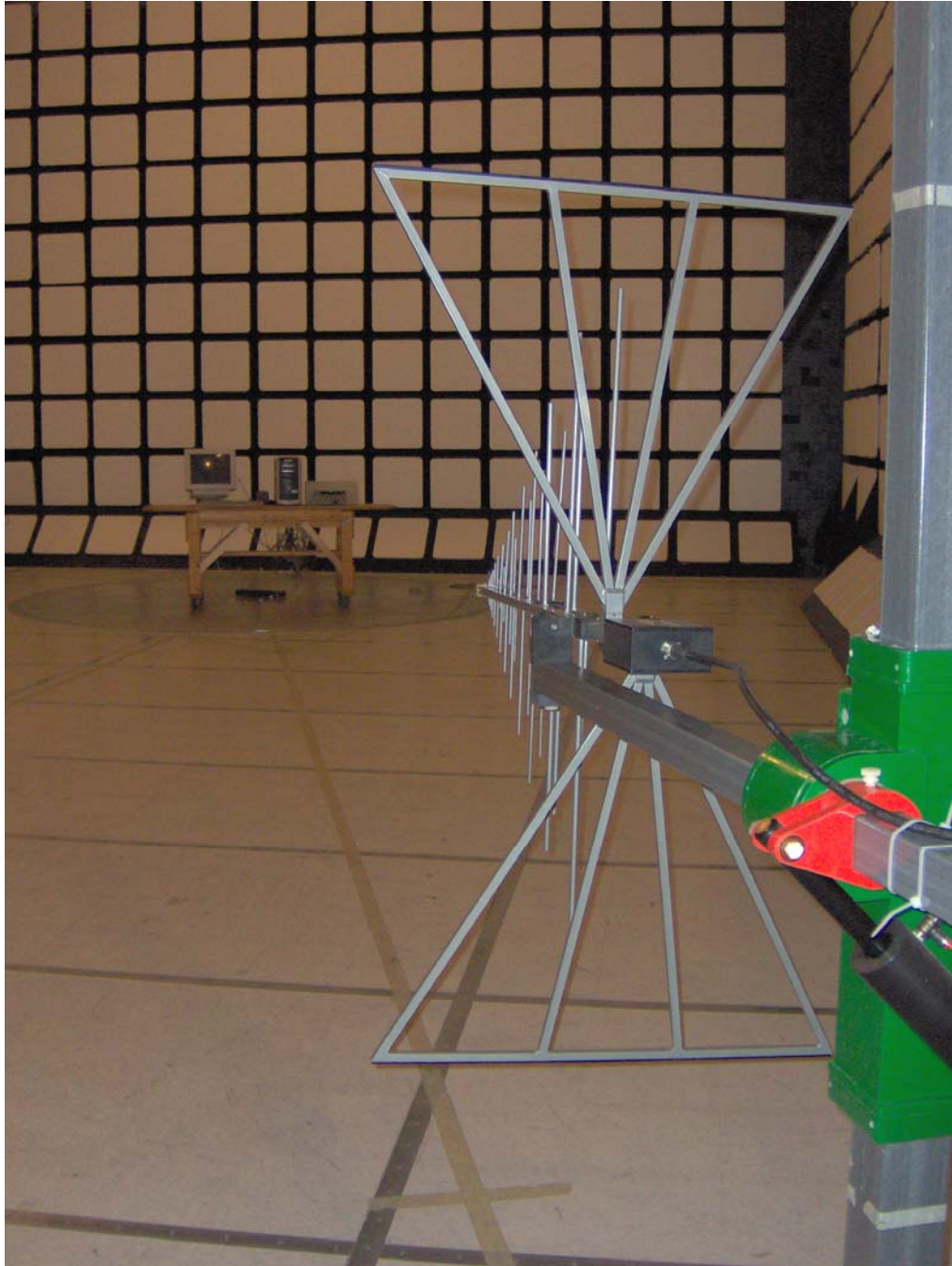
Tel. #: 905-829-1570, Fax. #: 905-829-8050, Email: [vic@ultratech-labs.com](mailto:vic@ultratech-labs.com), Website: <http://www.ultratech-labs.com>

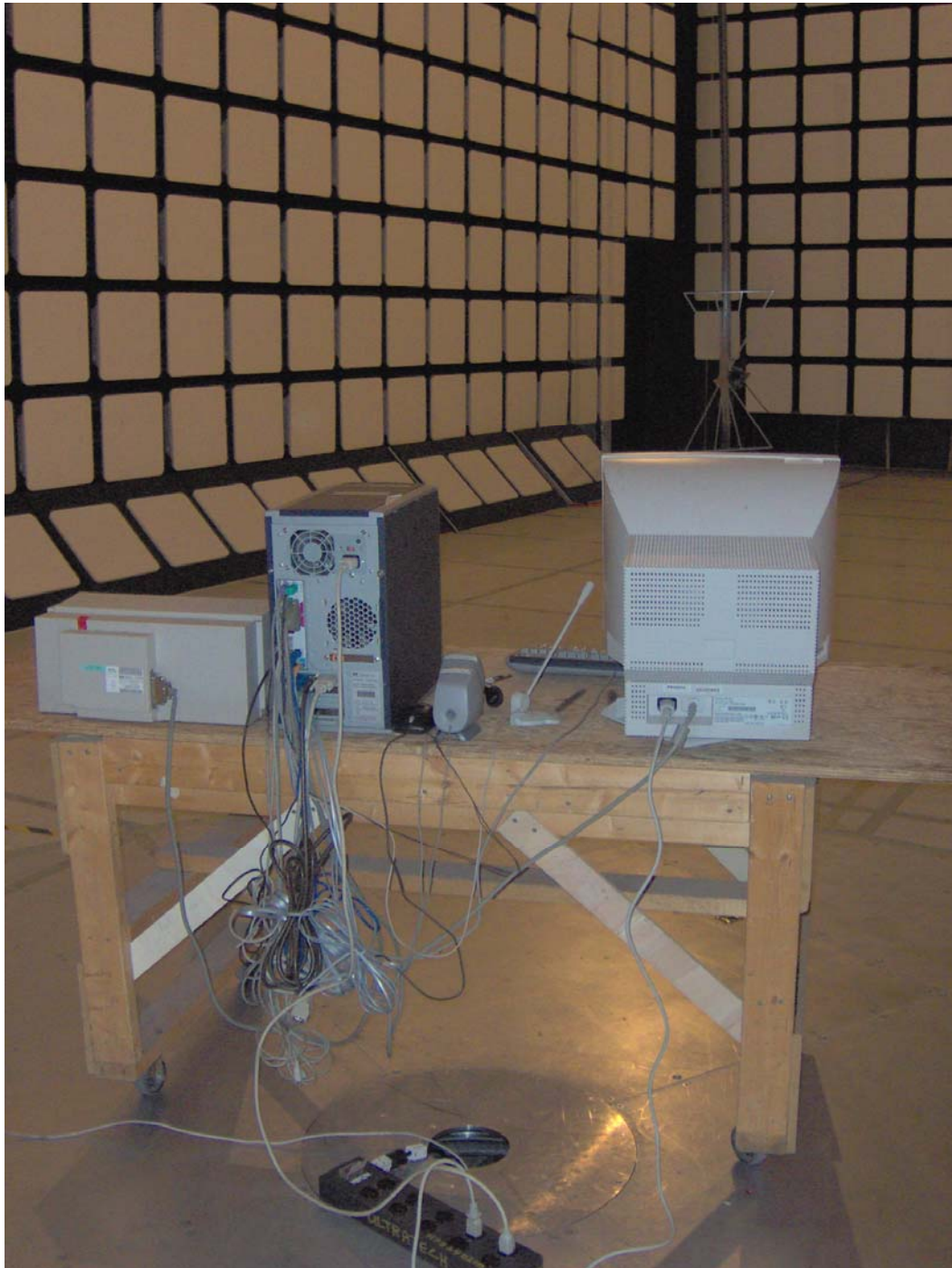
File #: SNG-024-CISPR22A

February 21, 2006

*All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

### 3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS





## 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 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, 2005.

### 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	- 21.5 dB @ 0.21 MHz	Yes
6, Table 5, Class A	Electromagnetic Radiation Disturbance in the frequency band 30 MHz to 1000 MHz	- 2.2 dB @ 181.3 MHz	Yes

### 4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

None

### 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 CISPR 16-1-1.



**5.4. AC MAINS TERMINAL DISTURBANCE VOLTAGE IN FREQUENCY BAND 150 KHZ TO 30 MHZ @ CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 [5.1, TABLE 2]**

**5.4.1. Limits**

The equipment shall meet the limits of the following table:

CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 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**

The emissions were scanned from 150 KHz to 30 MHz at AC mains Terminal via a LISN, and all emissions less than 20 dB below the limits were recorded.

FREQUENCY (MHz)	RF LEVEL (dBuV)	RECEIVER DETECTOR (P/QP/AVG)	QP LIMIT (dBuV)	AVG LIMIT (dBuV)	MARGIN (dB)	PASS/ FAIL	LINE TESTED (L1/L2)
0.20	40.5	QP	79.0	66.0	-38.5	PASS	L1
0.20	33.1	AVG	79.0	66.0	-32.9	PASS	L1
8.83	36.7	36	73.0	60.0	-36.3	PASS	L1
8.83	30.0	28.7	73.0	60.0	-30.0	PASS	L1
0.21	50.2	QP	79.0	66.0	-28.8	PASS	L2
0.21	44.5	AVG	79.0	66.0	-21.5	PASS	L2
0.31	38.3	QP	79.0	66.0	-40.7	PASS	L2
0.31	31.5	AVG	79.0	66.0	-34.5	PASS	L2
8.89	37.7	QP	73.0	60.0	-35.3	PASS	L2
8.89	31.6	AVG	73.0	60.0	-28.4	PASS	L2

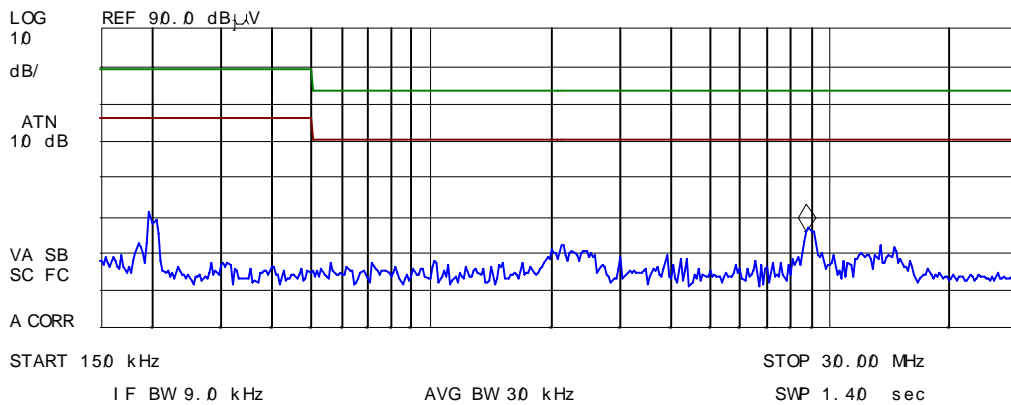
<b>UltraTech Group of Labs</b>	
Applicant:	Sangoma Technologies Inc.
Product:	Models A104D & A200

<b>AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT</b>			
Detector: <input type="checkbox"/> PEAK <input checked="" type="checkbox"/> QUASI-PEAK <input type="checkbox"/> AVERAGE		Temp: 20°C	Humidity: 25%
Line Tested: L1	Line Voltage: 230Vac	Test Tech: William Tr.	Test Date: Jan. 19/06
Standard: CISPR22 Class A			

17:43:24 JAN 19, 2006  


Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV $\Delta$ L2
1	0.204500	44.2	40.6	33.1	-32.9
2	8.826125	39.0	36.7	30.0	-30.0

ACTV DET: PEAK  
MEAS DET: PEAK QP AVG  
MKR 8.82 MHz  
35.65 dB $\mu$ V



<b>UltraTech Group of Labs</b>	
Applicant:	Sangoma Technologies Inc.
Product:	Models A104D & A200

<b>AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT</b>			
Detector: [ X ] PEAK [ X ] QUASI-PEAK [ X ] AVERAGE		Temp: 20°C	Humidity: 25%
Line Tested: L2	Line Voltage: 230Vac	Test Tech: William Tr.	Test Date: Jan. 19/06
Standard: CISPR22 Class A			

17:49:13 JAN 19, 2006

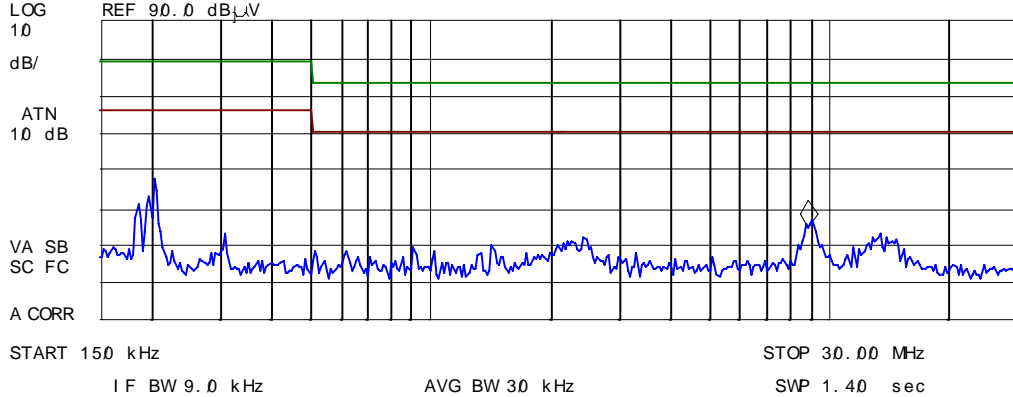
Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV $\Delta$ L2
1	0.205655	52.1	50.2	44.5	-21.5
2	0.309635	40.9	38.3	31.5	-34.5
3	8.888125	39.9	37.7	31.6	-28.4

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 8.94 MHz

34.59 dB $\mu$ V



## 5.5. ELECTROMAGNETIC RADIATION DISTURBANCE FOM 30 TO 1000 MHZ @ CISPR 22:2003 +A1:2004 & +A2:2006 / EN 55022:2003 [6, TABLE 6]

### 5.5.1. Limits

Test Frequency Range (MHz)	Class A Limits @10 M (dB $\mu$ V/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 – 230	40.0	Quasi-Peak	RBW = 120 kHz, VBW $\geq$ 120 kHz
230 – 1000	47.0	Quasi-Peak	RBW = 120 kHz, VBW $\geq$ 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 1000 MHz at 10 Meters distance and all emissions less than 20 dB below the limits were recorded.

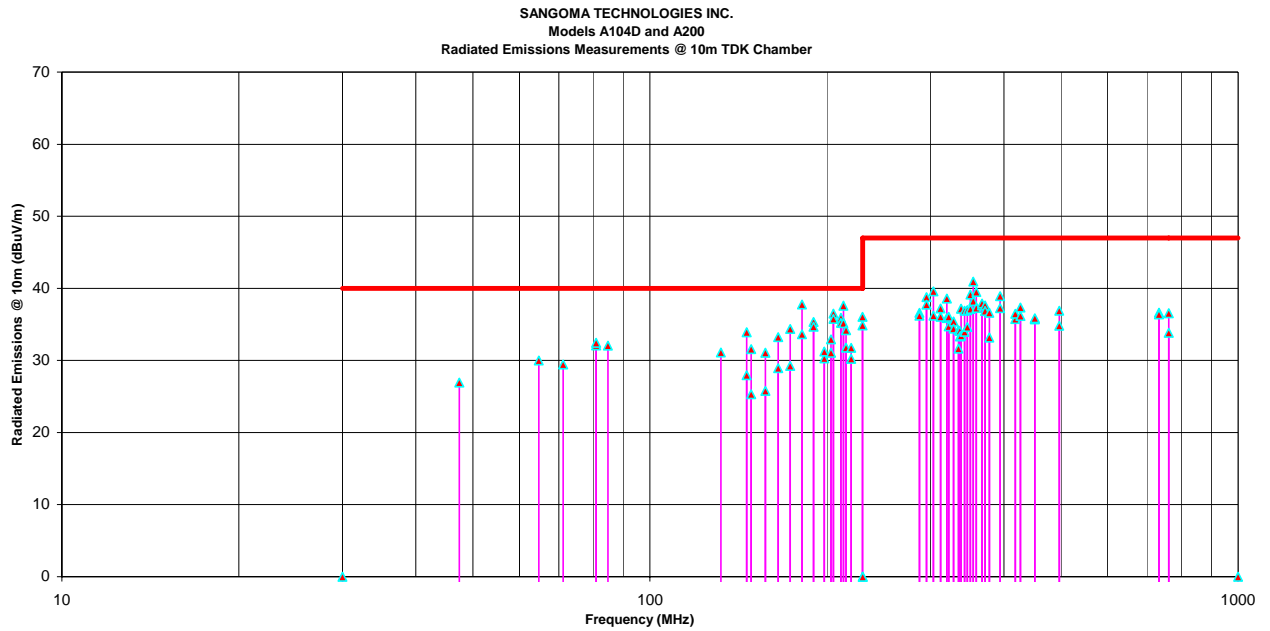
FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
47.4	27.0	PEAK	V	40.0	-13.1	PASS
64.7	30.0	PEAK	V	40.0	-10.0	PASS
71.2	29.5	PEAK	V	40.0	-10.6	PASS
81.0	32.1	PEAK	V	40.0	-7.9	PASS
81.0	32.5	PEAK	H	40.0	-7.5	PASS
84.8	32.1	PEAK	V	40.0	-7.9	PASS
132.0	31.1	PEAK	V	40.0	-8.9	PASS
146.1	33.9	PEAK	V	40.0	-6.1	PASS
146.1	28.0	PEAK	H	40.0	-12.0	PASS
148.6	31.6	PEAK	V	40.0	-8.4	PASS
148.6	25.3	PEAK	H	40.0	-14.7	PASS
157.1	31.1	PEAK	V	40.0	-8.9	PASS
157.1	25.8	PEAK	H	40.0	-14.2	PASS
165.2	33.2	PEAK	V	40.0	-6.8	PASS
165.2	28.9	PEAK	H	40.0	-11.1	PASS
173.2	34.4	PEAK	V	40.0	-5.6	PASS
173.2	29.3	PEAK	H	40.0	-10.8	PASS
181.3	37.8	PEAK	V	40.0	-2.2	PASS
181.3	33.6	PEAK	H	40.0	-6.4	PASS
189.8	35.4	PEAK	V	40.0	-4.7	PASS
189.8	34.7	PEAK	H	40.0	-5.3	PASS
197.9	30.3	PEAK	V	40.0	-9.7	PASS
197.9	31.2	PEAK	H	40.0	-8.8	PASS
203.1	32.9	PEAK	V	40.0	-7.1	PASS
203.1	31.1	PEAK	H	40.0	-8.9	PASS
205.1	36.5	QP	V	40.0	-3.5	PASS
205.1	35.8	PEAK	H	40.0	-4.2	PASS
211.3	35.9	PEAK	V	40.0	-4.1	PASS
211.3	35.2	PEAK	H	40.0	-4.8	PASS
213.2	37.6	PEAK	V	40.0	-2.4	PASS
213.2	35.2	PEAK	H	40.0	-4.8	PASS
215.5	31.8	PEAK	V	40.0	-8.2	PASS
215.5	34.2	PEAK	H	40.0	-5.8	PASS
219.8	30.2	PEAK	V	40.0	-9.8	PASS
219.8	31.8	PEAK	H	40.0	-8.3	PASS
229.9	34.9	PEAK	V	40.0	-5.1	PASS
229.9	36.1	PEAK	H	40.0	-3.9	PASS
287.2	36.6	PEAK	V	47.0	-10.4	PASS
287.2	36.2	PEAK	H	47.0	-10.8	PASS

Continued...

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
295.4	38.8	PEAK	V	47.0	-8.2	PASS
295.4	37.7	PEAK	H	47.0	-9.3	PASS
303.5	39.6	PEAK	V	47.0	-7.4	PASS
303.5	36.2	PEAK	H	47.0	-10.8	PASS
312.0	37.2	PEAK	V	47.0	-9.8	PASS
312.0	36.1	PEAK	H	47.0	-11.0	PASS
319.8	38.6	PEAK	V	47.0	-8.4	PASS
319.8	35.9	PEAK	H	47.0	-11.1	PASS
322.1	34.7	PEAK	V	47.0	-12.3	PASS
322.1	36.1	PEAK	H	47.0	-11.0	PASS
328.3	35.4	PEAK	V	47.0	-11.6	PASS
328.3	34.4	PEAK	H	47.0	-12.6	PASS
334.5	34.2	PEAK	V	47.0	-12.8	PASS
334.5	31.6	PEAK	H	47.0	-15.4	PASS
336.4	34.1	PEAK	V	47.0	-12.9	PASS
336.4	33.3	PEAK	H	47.0	-13.7	PASS
338.0	37.2	PEAK	V	47.0	-9.8	PASS
338.0	33.5	PEAK	H	47.0	-13.6	PASS
342.6	36.9	PEAK	V	47.0	-10.1	PASS
342.6	34.0	PEAK	H	47.0	-13.0	PASS
346.5	37.0	PEAK	V	47.0	-10.0	PASS
346.5	34.7	PEAK	H	47.0	-12.4	PASS
350.8	37.2	PEAK	V	47.0	-9.9	PASS
350.8	39.1	PEAK	H	47.0	-7.9	PASS
354.7	38.2	PEAK	V	47.0	-8.8	PASS
354.7	41.0	PEAK	H	47.0	-6.0	PASS
359.0	37.3	PEAK	V	47.0	-9.7	PASS
359.0	39.5	PEAK	H	47.0	-7.5	PASS
367.1	37.6	PEAK	V	47.0	-9.4	PASS
367.1	37.9	PEAK	H	47.0	-9.1	PASS
371.4	37.6	PEAK	V	47.0	-9.4	PASS
371.4	36.9	PEAK	H	47.0	-10.1	PASS
377.6	36.6	PEAK	V	47.0	-10.4	PASS
377.6	33.2	PEAK	H	47.0	-13.8	PASS
393.8	37.3	PEAK	V	47.0	-9.8	PASS
393.8	38.9	PEAK	H	47.0	-8.1	PASS
418.2	35.8	PEAK	V	47.0	-11.3	PASS
418.2	36.5	PEAK	H	47.0	-10.5	PASS
426.4	36.2	PEAK	V	47.0	-10.8	PASS
426.4	37.3	PEAK	H	47.0	-9.7	PASS
451.2	35.7	PEAK	V	47.0	-11.3	PASS
451.2	35.9	PEAK	H	47.0	-11.2	PASS

Continued...

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
496.5	36.9	PEAK	V	47.0	-10.1	PASS
496.5	34.8	PEAK	H	47.0	-12.2	PASS
733.9	36.6	PEAK	V	47.0	-10.4	PASS
733.9	36.4	PEAK	H	47.0	-10.6	PASS
762.1	36.6	PEAK	V	47.0	-10.4	PASS
762.1	33.8	PEAK	H	47.0	-13.2	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	$\pm 1.5$	$\pm 1.5$
LISN coupling specification	Rectangular	$\pm 1.5$	$\pm 1.5$
Cable and Input Transient Limiter calibration	Normal (k=2)	$\pm 0.3$	$\pm 0.5$
Mismatch: Receiver VRC $\Gamma_1 = 0.03$ LISN VRC $\Gamma_R = 0.8(9 \text{ kHz}) 0.2 (30 \text{ MHz})$ Uncertainty limits $20\text{Log}(1+\Gamma_1\Gamma_R)$	U-Shaped	$\pm 0.2$	$\pm 0.3$
System repeatability	Std. deviation	$\pm 0.2$	$\pm 0.05$
Repeatability of EUT	--	--	--
Combined standard uncertainty	Normal	$\pm 1.25$	$\pm 1.30$
Expanded uncertainty U	Normal (k=2)	$\pm 2.50$	$\pm 2.60$

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

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

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

## 6.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

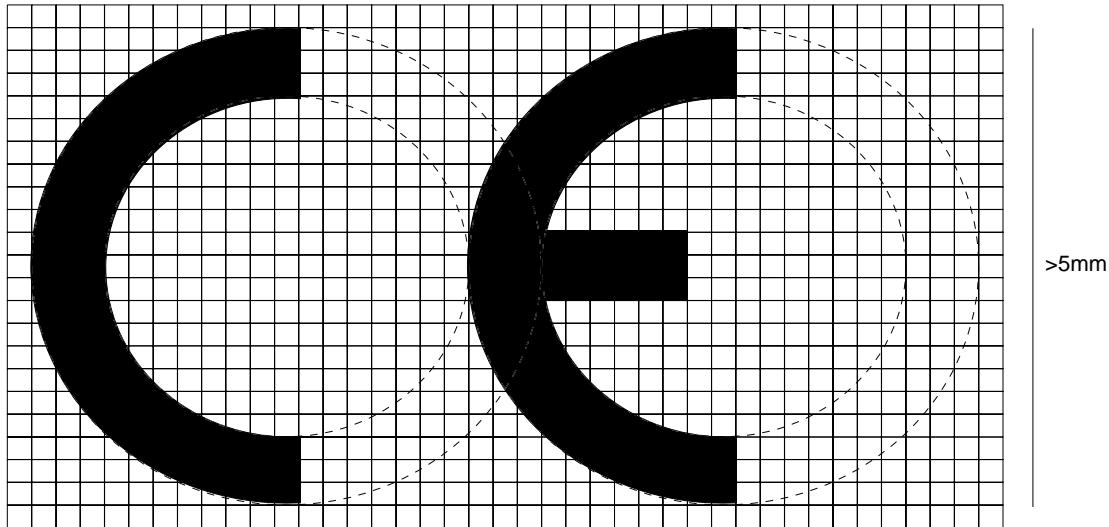
CONTRIBUTION (Electromagnetic Radiation Disturbance)	PROBABILITY DISTRIBUTION	Uncertainty (dB)	
		3 M	10 M
Antenna Factor Calibration	Normal (k=2)	+1.0	+1.0
Cable Loss Calibration	Normal (k=2)	+0.3	+0.5
EMI Receiver specification	Rectangular	+1.5	+1.5
Antenna Directivity	Rectangular	+0.5	+0.5
Antenna 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 $\Gamma_1 = 0.2$ Antenna VRC $\Gamma_R = 0.67(\text{Bi}) 0.3 (\text{Lp})$ Uncertainty limits $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$	U-Shaped	+1.1 -1.25	$\pm 0.5$
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 is used:

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

## 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.