

**Ultratech's  
Accreditations:**



0685



31040/SIT



C-1376



46390-2049



200093-0



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](http://www.ultratech-labs.com)  
Email: [vic@ultratech-labs.com](mailto:vic@ultratech-labs.com)

Aug. 09, 2006

**Librestream Technologies Inc.**  
Unit 200, 55 Rothwell Road  
Winnipeg, MB  
Canada, R3P 2M5

**Attn.: Elwood Friesen**

**Subject: Verification Authorization under FCC PART 15, SUBPART B,  
Class A - Computing Devices.**

**Product: Mobile Collaboration Device 1000**  
**Model No.: MCD1000**  
**FCC ID: T78-MCD1000**  
**Contains FCC ID: NKRDRCM**

Dear Mr. Friesen,

The product sample, as provided by you, has been tested and found to comply with **FCC PART 15, SUBPART B, Class A - Computing Devices.**

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

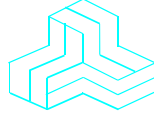
Yours truly,



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:	Librestream Technologies Inc. Unit 200, 55 Rothwell Road Winnipeg, MB Canada, R3P 2M5
Contact Person:	Elwood Friesen Phone #: (204) 487-0612 (221) Fax #: (204) 487-0914 Email Address: elwood.friesen@librestream.com

**Equipment Type:**

**Product Name:**

**Model Number:**

Computing Devices for Home and Office Use  
Mobile Collaboration Device 1000,  
MCD1000

**The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:**

FCC Part 15, Subpart B - Class A Computing Devices for Home & Office Use

- **Note(s):** See attached report, UltraTech's File No.:TUV-010FCC15B, dated Aug. 09, 2006 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](http://www.ultratech-labs.com) Email: [vic@ultratech-labs.com](mailto:vic@ultratech-labs.com), Email: [tri@ultratech-labs.com](mailto:tri@ultratech-labs.com)



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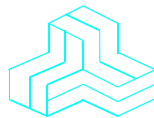


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SL2-IN-E-1119R

# ENGINEERING TEST REPORT



## Mobile Collaboration Device 1000 Model Number: MCD1000

*Applicant:* **Librestream Technologies Inc.**  
Unit 200, 55 Rothwell Road  
Winnipeg, MB  
Canada, R3P 2M5

*Tested in Accordance With*

**Federal Communications Commission (FCC)  
CFR 47, Part 15, Subpart B  
Class A Computing Devices**

**UltraTech's File No.: TUV-010FCC15B**

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

Date: Aug. 09, 2006



Report Prepared by: Tri Luu, P.Eng.

Tested by: Hung Trinh, RFI Technologist

Issued Date: Aug. 09, 2006

Test Dates: July 26-July 28, 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

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

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

Website: [www.ultratech-labs.com](http://www.ultratech-labs.com) Email: [vic@ultratech-labs.com](mailto:vic@ultratech-labs.com), Email: [tri@ultratech-labs.com](mailto:tri@ultratech-labs.com)



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## TABLE OF CONTENTS

<b>EXHIBIT 1. INTRODUCTION</b>	<b>4</b>
1.1. SCOPE	4
1.2. RELATED SUBMITTAL(S)/GRANT(S)	4
1.3. NORMATIVE REFERENCES	4
<b>EXHIBIT 2. PERFORMANCE ASSESSMENT</b>	<b>5</b>
2.1. CLIENT INFORMATION	5
2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION	5
LIST OF EUT'S PORTS	6
ANCILLARY EQUIPMENT	6
TEST SETUP BLOCK DIAGRAM	6
<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 RADIATED EMISSION MEASUREMENTS	10
<b>EXHIBIT 4. SUMMARY OF TEST RESULTS</b>	<b>12</b>
4.1. LOCATION OF TESTS	12
4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS	12
4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE	12
4.4. DEVIATION OF THE STANDARD TEST PROCEDURES	12
<b>EXHIBIT 5. MEASUREMENTS, EXAMINATIONS &amp; TEST DATA FOR EMC EMISSIONS</b>	<b>13</b>
5.1. TEST PROCEDURES	13
5.2. MEASUREMENT UNCERTAINTIES	13
5.3. MEASUREMENT EQUIPMENT USED	13
5.4. AC POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPART B, PARA.15.107(A)	14
5.4.1. <i>Limits</i>	14
5.4.2. <i>Method of Measurements</i>	14
5.4.3. <i>Test Equipment List</i>	14
5.4.4. <i>Test Data</i>	15
5.5. RADIATED EMISSIONS FROM CLASS A COMPUTING DEVICES (DIGITAL DEVICES) @ FCC 15.109(B)	17
5.5.1. <i>Limits</i>	17
5.5.2. <i>Method of Measurements</i>	17
5.5.3. <i>Test Equipment List</i>	18
5.5.4. <i>Test Data</i>	18
<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 &amp; VERIFICATION REQUIREMENTS</b>	<b>25</b>
7.1. SECTION 15.19 - LABELING REQUIREMENTS	25
7.2. SECTIONS 15.21 & 15.105 - INFORMATION TO USER	25
7.3. SECTION 2.909 - RESPONSIBLE PARTY	26

7.4. SECTION 2.945 - SAMPLING TEST OF EQUIPMENT COMPLIANCE ..... 26

7.5. SECTION 2.946 - PENALTY FOR FAILURE TO PROVIDE TEST SAMPLES AND DATA. .... 26

7.6. LIMITATION ON VERIFICATION: FCC PART 2, SUBPART J, SECTION 2.952..... 26

7.7. RESPONSIBILITY OF MANUFACTURER OR IMPORTER: FCC PART 2, SUBPART J, SECTION 2.953..... 27

7.8. IDENTIFICATION: FCC PART 2, SUBPART J, SECTION 2.954..... 27

7.9. RETENTION OF RECORDS: FCC PART 2, SUBPART J, SECTION 2.955 ..... 27

7.10. FCC INSPECTION & SUBMISSION OF EQUIPMENT FOR TESTING: FCC PART 2, SUBPART J, SEC.  
2.956 28

7.11. SAMPLING TESTS OF EQUIPMENT COMPLIANCE: FCC PART 2, SUBPART J, SECTION 2.957 ..... 28

## EXHIBIT 1. INTRODUCTION

### 1.1. SCOPE

<b>Reference:</b>	FCC Part 15, Subpart B, Sections 15.107 & 15.109
<b>Title</b>	Telecommunication - Code of Federal Regulations, CFR 47, Part 15
<b>Purpose of Test:</b>	To gain FCC Verification Authorization for a Class A Unintentional Radiator.
<b>Test Procedures</b>	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - 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.
<b>Environmental Classification:</b>	Residential, Light-industry, Commercial & Industry

### 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 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
FCC 47 CFR 15	2006	Code of Federal Regulations – Telecommunication

## EXHIBIT 2. PERFORMANCE ASSESSMENT

### 2.1. CLIENT INFORMATION

<b>APPLICANT:</b>	
<b>Name:</b>	Librestream Technologies Inc.
<b>Address:</b>	Unit 200, 55 Rothwell Road Winnipeg, MB Canada, R3P 2M5
<b>Contact Person:</b>	Elwood Friesen Phone #: (204) 487-0612 (221) Fax #: (204) 487-0914 Email Address: elwood.friesen@librestream.com

<b>MANUFACTURER:</b>	
<b>Name:</b>	Librestream Technologies Inc.
<b>Address:</b>	Unit 200, 55 Rothwell Road Winnipeg, MB Canada, R3P 2M5
<b>Contact Person:</b>	Elwood Friesen Phone #: (204) 487-0612 (211) Fax #: (204) 487-0914 Email Address: elwood.friesen@librestream.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>	Librestream Technologies Inc.
<b>Product Name</b>	Mobile Collaboration Device 1000
<b>Model Number:</b>	MCD1000
<b>Serial Number</b>	preproduction sample
<b>Type of Equipment</b>	Digital Modulation Transmitters
<b>Input Power Supply Type</b>	3 Vdc rechargeable battery (CUI Battery Charger, Model 3A-181WP12)
<b>Primary User Functions of EUT:</b>	Provide data communication link through air

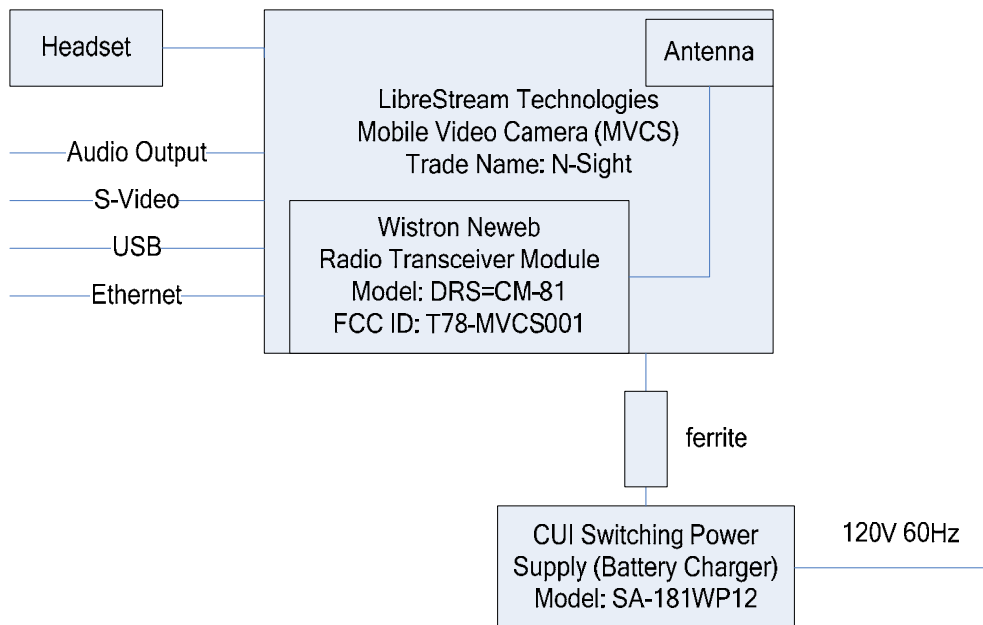
## LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Shielded/Non-shielded)
1	Ethernet	1	RJ-45	Non-shielded
2	S-Video	1	S-Video	Non-shielded
3	Subject Audio	1	1.8mm Stereo	Non-shielded
4	USB	1	USB	Non-shielded
5	Headset	1	2.5 mm	Non-shielded

## ANCILLARY EQUIPMENT

N/A

## TEST SETUP BLOCK DIAGRAM





## 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:	3 Vdc Rechargeable Battery (CUI Battery Charger, Model 3A-181WP12)

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

The MCD1000 was operated in standby mode during test.

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

Photo #1: Test Setup for AC Powerline Conducted Emissions



Photo #2: Test Setup for AC Powerline Conducted Emissions



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

Photo #3: Test Setup for Radiated Emissions

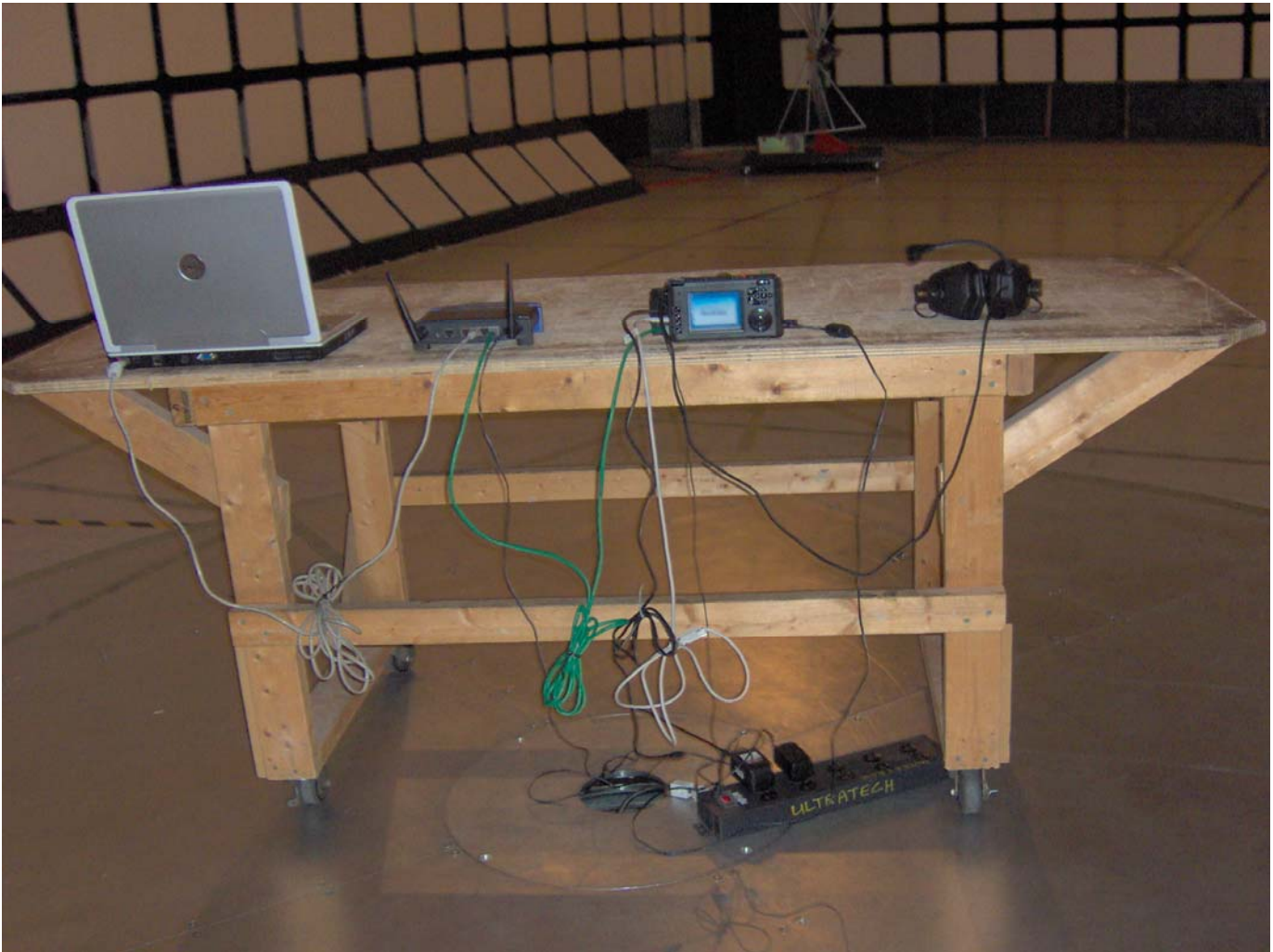


Photo #4: Test Setup for Radiated Emissions



## 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

FCC PART 15, SUBPART B	TEST REQUIREMENTS	COMPLIANCE (YES/NO)
15.107(a), Class B	AC Power Line Conducted Emissions Measurements	Yes
15.109(b), Class A	Radiated Emissions from Computing Devices (Digital Devices)	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, ANSI C63.4, 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 POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPART B, PARA.15.107(A)

### 5.4.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	CLASS B LIMITS		Measuring Bandwidth
	Quasi-Peak (dB $\mu$ V)	Average* (dB $\mu$ V)	
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 kHz VBW $\geq$ 9 kHz for QP VBW = 10 Hz for Average
0.5 to 5	56	46	RBW = 9 kHz VBW $\geq$ 9 kHz for QP VBW = 10 Hz for Average
5 to 30	60	50	RBW = 9 kHz VBW $\geq$ 9 kHz for QP VBW = 10 Hz for Average

\* Decreasing linearly with logarithm of frequency

### 5.4.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-2004 & ANSI C63.4 for method of measurements.

### 5.4.3. Test Equipment List

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
EMI Receiver System/Spectrum Analyzer with built-in Amplifier	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 $\mu$ H
12'x16'x12' RF Shielded Chamber	RF Shielding	...	..	...



**5.4.4. Test Data**

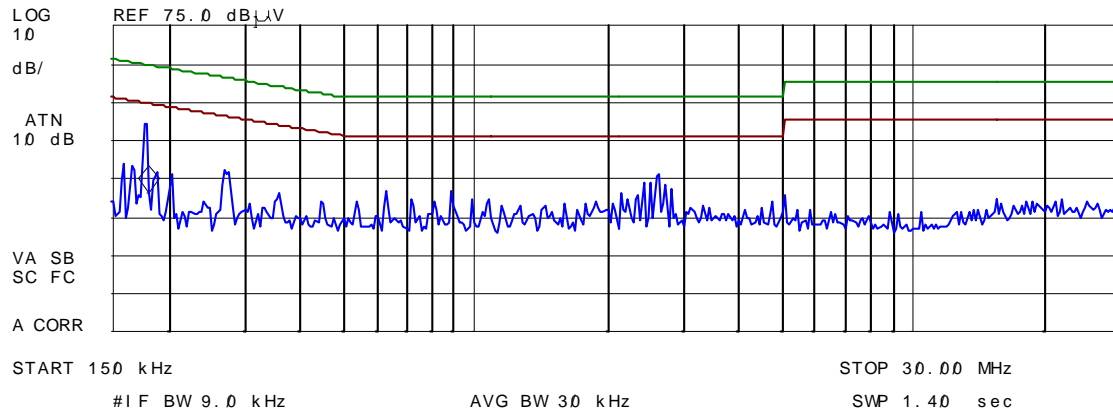
Conforms with FCC Part 15, Subpart B, Class B. Please find the attached Plots # 1 to 2 for details of measurements.

Plot #1: AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT						
Detector: <input checked="" type="checkbox"/> PEAK	<input checked="" type="checkbox"/> QUASI-PEAK	<input checked="" type="checkbox"/> AVERAGE	Temp: 23°C	Humidity :20%	File #: TUVR-011Q	
Line Tested: L1		Line Voltage : 120 Vac		Test Tech : Wei		Test Date: 25 <sup>st</sup> Jul, 2006
Standard : FCC Class A		Comments:				

h/p

Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV $\Delta$ L1
1	0.181975	52.0	50.5	38.7	-25.8
2	0.452000	33.0	30.6	27.9	-29.0
3	2.619500	38.0	36.0	30.2	-25.8

ACTV DET: PEAK  
 MEAS DET: PEAK QP AVG  
 MKR 180 kHz  
 31.19 dB $\mu$ V



**Plot #2: AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT PLOT**

Detector: <input checked="" type="checkbox"/> PEAK <input checked="" type="checkbox"/> QUASI-PEAK <input checked="" type="checkbox"/> AVERAGE	Temp: 23°C	Humidity :20%	File #: TUVR-011Q
Line Tested: L2	Line Voltage : 120 Vac	Test Tech : Wei	Test Date: 25 <sup>st</sup> Jul, 2006
Standard : FCC Class A	Comments:		

hp

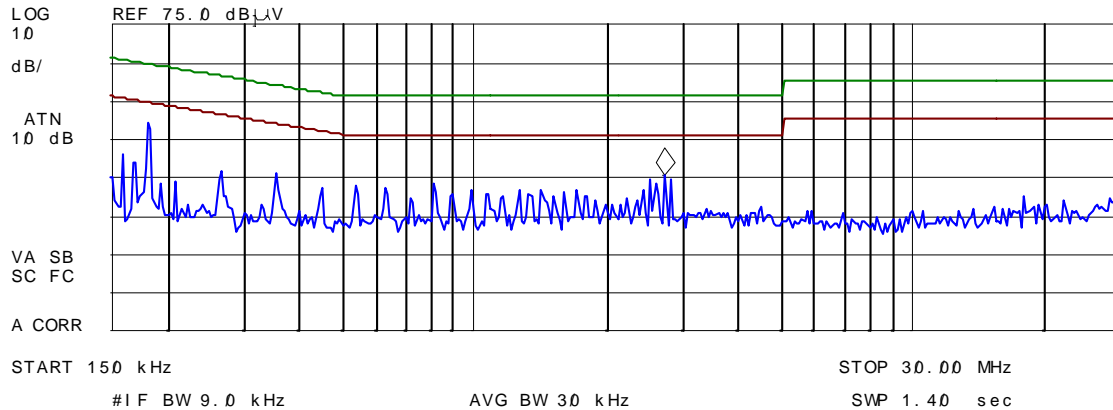
Signal	Freq (MHz)	PK Amp	QP Amp	AV Amp	AV $\Delta$ L1
1	0.181725	52.8	51.5	41.1	-23.4
2	0.363375	39.6	37.1	32.7	-26.0
3	2.717500	39.3	37.0	35.0	-21.0

ACTV DET: PEAK

MEAS DET: PEAK QP AVG

MKR 2.73 MHz

35.23 dB $\mu$ V



## 5.5. RADIATED EMISSIONS FROM CLASS A COMPUTING DEVICES (DIGITAL DEVICES) @ FCC 15.109(B)

### 5.5.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class A Limits @ 10 m (dB $\mu$ V/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 – 88	39.1	Quasi-Peak	RBW = 120 kHz, VBW $\geq$ 120 kHz
88 – 216	43.5	Quasi-Peak	RBW = 120 kHz, VBW $\geq$ 120 kHz
216 – 960	46.4	Quasi-Peak	RBW = 120 kHz, VBW $\geq$ 120 kHz
Above 960	49.5	Average	RBW = 1 MHz, VBW = 10 Hz

### 5.5.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-2004 & ANSI C63.4 for method of measurements.

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 -1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

**5.5.3. Test Equipment List**

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer/ EMI Receiver	Rohde & Schawrz	FSEK20/B4/B21	834157/005	9 kHz – 40 GHz with external mixer
EMI Receiver System/Spectrum Analyzer with built-in Amplifier	Hewlett Packard	HP 8546A	3520A00248	9KHz-5.6GHz, 50 Ohms
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 5 GHz at 10 Meters distance and all emissions less than 30 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
45.30	29.2	QP	V	39.1	-9.9	PASS
85.00	24.0	PEAK	V	39.1	-15.1	PASS
85.00	18.3	PEAK	H	39.1	-20.8	PASS
89.50	21.4	PEAK	V	43.5	-22.1	PASS
89.50	18.5	PEAK	H	43.5	-25.0	PASS
94.30	20.0	PEAK	V	43.5	-23.5	PASS
94.30	14.2	PEAK	H	43.5	-29.3	PASS
95.00	25.3	PEAK	V	43.5	-18.2	PASS
96.30	23.5	QP	V	43.5	-20.0	PASS
96.30	17.2	PEAK	H	43.5	-26.3	PASS
98.80	28.8	PEAK	V	43.5	-14.7	PASS
98.80	20.3	PEAK	H	43.5	-23.2	PASS
102.00	29.4	PEAK	V	43.5	-14.1	PASS
102.00	21.5	PEAK	H	43.5	-22.0	PASS
114.80	28.5	PEAK	V	43.5	-15.0	PASS
114.80	22.2	PEAK	H	43.5	-21.3	PASS
125.30	26.0	QP	V	43.5	-17.5	PASS
125.30	18.1	PEAK	H	43.5	-25.4	PASS
130.80	26.0	PEAK	V	43.5	-17.5	PASS
140.80	26.9	PEAK	V	43.5	-16.6	PASS
140.80	18.5	PEAK	H	43.5	-25.0	PASS
160.00	25.4	PEAK	V	43.5	-18.1	PASS
160.00	21.6	PEAK	H	43.5	-21.9	PASS
169.10	25.9	PEAK	V	43.5	-17.6	PASS
169.10	20.9	PEAK	H	43.5	-22.6	PASS

Continued ....

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
175.40	26.9	PEAK	V	43.5	-16.6	PASS
175.40	22.4	PEAK	H	43.5	-21.1	PASS
186.40	25.7	PEAK	V	43.5	-17.8	PASS
186.40	23.7	PEAK	H	43.5	-19.8	PASS
196.90	26.4	PEAK	V	43.5	-17.1	PASS
196.90	26.4	PEAK	H	43.5	-17.1	PASS
200.90	26.0	QP	V	43.5	-17.5	PASS
200.90	24.5	PEAK	H	43.5	-19.0	PASS
203.20	25.4	PEAK	V	43.5	-18.1	PASS
203.20	28.5	PEAK	H	43.5	-15.0	PASS
220.60	22.6	PEAK	V	46.4	-23.8	PASS
220.60	22.8	PEAK	H	46.4	-23.6	PASS
225.30	21.5	PEAK	V	46.4	-24.9	PASS
225.30	21.7	PEAK	H	46.4	-24.7	PASS
229.50	23.6	PEAK	V	46.4	-22.8	PASS
229.50	20.8	PEAK	H	46.4	-25.6	PASS
237.60	26.2	PEAK	H	46.4	-20.2	PASS
240.30	30.7	PEAK	V	46.4	-15.7	PASS
240.30	27.5	PEAK	H	46.4	-18.9	PASS
250.00	27.5	PEAK	H	46.4	-18.9	PASS
254.30	26.1	PEAK	H	46.4	-20.3	PASS
271.30	28.2	PEAK	V	46.4	-18.2	PASS
271.30	32.6	PEAK	H	46.4	-13.8	PASS
275.30	24.9	PEAK	V	46.4	-21.5	PASS
275.30	20.8	PEAK	H	46.4	-25.6	PASS
288.10	28.8	PEAK	V	46.4	-17.6	PASS
288.10	25.8	PEAK	H	46.4	-20.6	PASS
293.10	25.2	PEAK	V	46.4	-21.2	PASS
293.10	23.5	PEAK	H	46.4	-22.9	PASS
300.30	24.4	PEAK	V	46.4	-22.0	PASS
300.30	26.7	PEAK	H	46.4	-19.7	PASS
325.30	24.8	PEAK	V	46.4	-21.6	PASS
325.30	25.1	PEAK	H	46.4	-21.3	PASS
335.60	24.6	PEAK	V	46.4	-21.8	PASS
338.10	28.8	PEAK	V	46.4	-17.6	PASS
338.10	28.1	PEAK	H	46.4	-18.3	PASS
360.90	28.2	PEAK	V	46.4	-18.2	PASS
360.90	25.9	PEAK	H	46.4	-20.5	PASS
375.60	26.7	PEAK	V	46.4	-19.7	PASS
375.60	24.6	PEAK	H	46.4	-21.8	PASS
383.40	37.2	QP	V	46.4	-9.2	PASS
383.40	31.1	PEAK	H	46.4	-15.3	PASS

Continued ....

**ULTRATECH GROUP OF LABS**3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4  
Tel. : 905-829-1570, Fax. : 905-829-8050

File #: TUV-010FCC15B

Aug. 09, 2006

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

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
400.80	31.3	PEAK	V	46.4	-15.1	PASS
400.80	36.1	QP	H	46.4	-10.3	PASS
406.20	35.1	QP	V	46.4	-11.3	PASS
406.20	30.0	PEAK	H	46.4	-16.4	PASS
428.70	32.0	QP	V	46.4	-14.4	PASS
428.70	32.4	PEAK	H	46.4	-14.0	PASS
433.00	27.6	PEAK	H	46.4	-18.8	PASS
451.20	25.4	PEAK	V	46.4	-21.0	PASS
451.20	27.6	PEAK	H	46.4	-18.8	PASS
467.30	28.1	PEAK	H	46.4	-18.3	PASS
473.70	29.5	PEAK	V	46.4	-16.9	PASS
473.70	25.6	PEAK	H	46.4	-20.8	PASS
480.60	28.7	PEAK	V	46.4	-17.7	PASS
480.60	28.5	PEAK	H	46.4	-17.9	PASS
482.30	26.1	PEAK	V	46.4	-20.3	PASS
484.60	26.2	PEAK	V	46.4	-20.2	PASS
486.50	25.5	PEAK	V	46.4	-20.9	PASS
500.10	35.0	PEAK	V	46.4	-11.4	PASS
500.10	31.6	PEAK	H	46.4	-14.8	PASS
532.60	27.4	PEAK	V	46.4	-19.0	PASS
532.60	22.2	PEAK	H	46.4	-24.2	PASS
540.40	29.5	PEAK	H	46.4	-16.9	PASS
566.40	30.7	PEAK	V	46.4	-15.7	PASS
566.40	25.3	PEAK	H	46.4	-21.1	PASS
576.60	29.7	PEAK	V	46.4	-16.7	PASS
576.60	33.9	PEAK	H	46.4	-12.5	PASS
600.20	27.5	PEAK	V	46.4	-18.9	PASS
600.20	29.4	PEAK	H	46.4	-17.0	PASS
625.70	33.6	PEAK	V	46.4	-12.8	PASS
625.70	29.6	PEAK	H	46.4	-16.8	PASS
632.70	28.5	PEAK	V	46.4	-17.9	PASS
648.60	29.4	PEAK	V	46.4	-17.0	PASS
648.60	34.8	PEAK	H	46.4	-11.6	PASS
672.20	28.5	QP	V	46.4	-17.9	PASS
672.20	34.2	PEAK	H	46.4	-12.2	PASS
700.30	26.0	PEAK	V	46.4	-20.4	PASS
700.30	27.5	PEAK	H	46.4	-18.9	PASS
720.00	28.4	PEAK	V	46.4	-18.0	PASS
720.00	27.1	PEAK	H	46.4	-19.3	PASS
750.70	31.6	PEAK	V	46.4	-14.8	PASS
750.70	31.4	PEAK	H	46.4	-15.0	PASS

Continued ....

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Aug. 09, 2006

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FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
768.60	29.1	PEAK	V	46.4	-17.3	PASS
768.60	30.8	PEAK	H	46.4	-15.6	PASS
798.50	27.0	PEAK	H	46.4	-19.4	PASS
864.90	30.9	QP	V	46.4	-15.5	PASS
864.90	27.6	QP	H	46.4	-18.8	PASS
887.60	28.5	QP	H	46.4	-17.9	PASS
900.60	34.4	PEAK	V	46.4	-12.0	PASS
900.60	32.7	QP	H	46.4	-13.7	PASS
935.00	29.9	PEAK	V	46.4	-16.5	PASS
935.00	35.0	PEAK	H	46.4	-11.4	PASS
950.40	29.5	PEAK	H	46.4	-16.9	PASS
960.50	34.4	PEAK	V	49.5	-15.1	PASS
960.50	32.7	QP	H	49.5	-16.8	PASS
973.70	29.5	PEAK	H	49.5	-20.0	PASS
1000.00	32.6	PEAK	H	49.5	-16.9	PASS
1055.00	42.6	QP	V	49.5	-6.9	PASS
1055.00	39.8	PEAK	H	49.5	-9.7	PASS
1153.00	42.8	QP	V	49.5	-6.7	PASS
1153.00	39.8	PEAK	H	49.5	-9.7	PASS
1168.00	36.2	PEAK	V	49.5	-13.3	PASS
1168.00	34.4	PEAK	H	49.5	-15.1	PASS
1248.00	41.0	PEAK	V	49.5	-8.5	PASS
1248.00	36.0	PEAK	H	49.5	-13.5	PASS
1345.00	32.9	PEAK	V	49.5	-16.6	PASS
1345.00	31.4	PEAK	H	49.5	-18.1	PASS
1395.00	35.9	PEAK	V	49.5	-13.6	PASS
1395.00	29.9	PEAK	H	49.5	-19.6	PASS
1599.00	40.1	PEAK	V	49.5	-9.4	PASS
1599.00	31.5	PEAK	H	49.5	-18.0	PASS
1693.00	34.3	PEAK	H	49.5	-15.2	PASS

**ULTRATECH GROUP OF LABS**

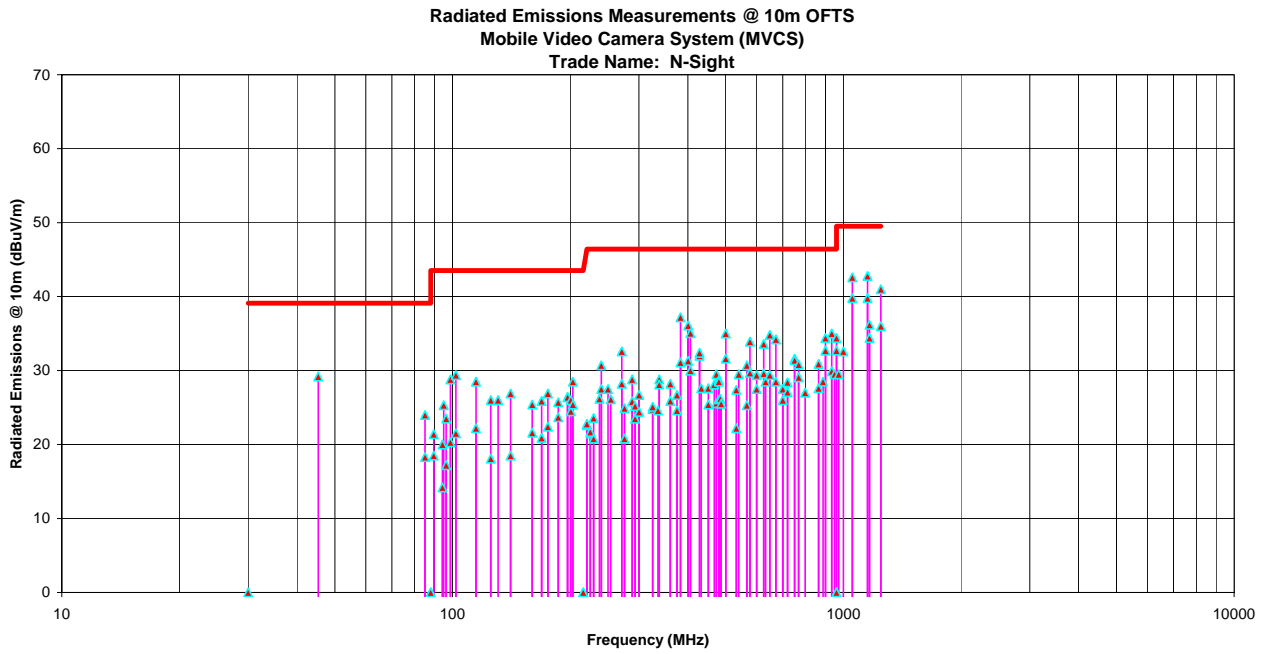
3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4  
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Plot #3:





## 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 $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$	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 (Radiated Emissions)	PROBABILITY DISTRIBUTION	Uncertainty (dB)	
		3m	10m
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:

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

## EXHIBIT 7. LABELLING & VERIFICATION REQUIREMENTS

### 7.1. SECTION 15.19 - LABELING REQUIREMENTS

For a Class A digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual.

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.*

- (1) The label shall NOT be a stick-on , paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase, as described in FCC 2.925(d). “Permanently” affixed means that the label is etched, engraved, stamped, silk-screened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal plastic, or other material fastened to the equipment by welding, riveting, or a permanent adhesive. The label must be designed to last the expected life-time of the equipment in the environment in which the equipment may be operated and must not be readily detachable.
- (2) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified in this Section is required to be affixed only to the main control unit.
- (3) When the device is so small or for such use that it is not practicable to place the statement specified in this Section on it, the information required by these paragraphs shall be placed in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

### 7.2. SECTIONS 15.21 & 15.105 - INFORMATION TO USER

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

***NOTE:*** *This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provided reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.*

**Warning:** Changes or modifications not expressly approved by <manufacturer> could void the user's authority to operate the equipment.

### 7.3. SECTION 2.909 - RESPONSIBLE PARTY

The following parties are responsible for the compliance of radio frequency equipment with the applicable standards:

- (c) In the case of the equipment subject to authorization under the Declaration of Conformity procedure:
  - (1) The manufacturer or, if the equipment is assembled from individual component parts and the resulting system is subject to authorization under Declaration of Conformity, the assembler.
  - (2) If the equipment, by itself, is subject to Declaration of Conformity and the equipment is imported, the importer.

### 7.4. SECTION 2.945 - SAMPLING TEST OF EQUIPMENT COMPLIANCE

The Commission will, from time to time, request the responsible party to submit equipment subject to this chapter to determine the extent to which subsequent production of such equipment continues to comply with the data filed by the applicant (or on file with the responsible party for equipment subject to notification or a Declaration of Conformity). Shipping costs to the Commission's laboratory and return shall be borne by the responsible party.

### 7.5. SECTION 2.946 - PENALTY FOR FAILURE TO PROVIDE TEST SAMPLES AND DATA.

- (a) Any responsible party, as defined in Section 2.909 of this chapter, or nay party who markets equipment subject to the provisions of this chapter, shall provide test sample(s) or data upon request by the Commission. Failure to comply with such a request with the time frames shown below may be cause for forfeiture, pursuant to Section 1.80 of Part 1 of this chapter, or other administrative sanctions such as suspending action on any applications for equipment authorization submitted by such party while the matter is being resolved.
  - (1) When the equipment is subject to authorization under Declaration of Conformity, data shall be provided within 14 days of delivery of the request and test sample(s) shall be provided within 60 days of delivery of the request.
  - (2) For all other devices, test sample(s) or data shall be provided within 60 days of the request.
- (b) In the case of the equipment involving harmful interference or safety of life or property, the Commission may specify that test samples subject to the provisions of this section be submitted within less than 60 days, but not less than 14 days. Failure to comply within the specified time period will be subject to the sanctions specified in paragraph (a) of this section.

### 7.6. LIMITATION ON VERIFICATION: FCC PART 2, SUBPART J, SECTION 2.952

- (a) Verification signifies that the manufacturer or importer has determined that the equipment has been shown to be capable of compliance with the applicable technical standards if no unauthorized change is made in the equipment and if the equipment is properly maintained and operated. Compliance with these standards shall not be construed to be a finding by the manufacturer or importer with respect to matters not encompassed by the Commission's rules.
- (b) Verification of the equipment by the manufacturer or importer is effective until a termination date is otherwise established by the Commission.

- (c) No person shall, in any advertising matter, brochure, etc., use or make reference to a verification in a deceptive or misleading manner or convey the impression that such verification reflects more than a determination by the manufacturer or importer that the device or product has been shown to be capable of compliance with the applicable technical standards of the Commission's Rules.

#### **7.7. RESPONSIBILITY OF MANUFACTURER OR IMPORTER: FCC PART 2, SUBPART J, SECTION 2.953**

- (a) In verifying compliance, the manufacturer or importer (in the case of imported equipment) warrants that each unit of the equipment marketed under the verification procedure will conform to the unit tested and found acceptable by the manufacturer or importer and that data on file with the manufacturer or importer continues to be representative of the equipment being produced under such verification within the variation that can be expected due to quantity production and testing on a statistical basis.
- (b) The importer of equipment subject to verification may upon receiving a written statement from the manufacturer that the equipment complies with the appropriate technical standards rely on the manufacturer or independent testing agency to verify compliance. The test records required by Section 2.955 however should be in English language and made available to the Commission upon a reasonable request.
- (c) In the case of transfer of control of equipment, as in the case of sale or merger of the grantee, the new manufacturer or importer shall bear the responsibility of continued compliance of the equipment.
- (d) Equipment verified by the manufacturer or importer shall be re-verified if the modification or change adversely affects the emanation characteristics of the modified equipment. The manufacturer or importer continues to bear the responsibility for continued compliance of subsequently produced equipment.

#### **7.8. IDENTIFICATION: FCC PART 2, SUBPART J, SECTION 2.954**

The identification of equipment subject to verification shall be consistent with current manufacturer or marketing practices: *Provided*, The manufacturer or importer maintains adequate identification records for each unit verified to facilitate positive identification of each equipment marketed.

#### **7.9. RETENTION OF RECORDS: FCC PART 2, SUBPART J, SECTION 2.955**

- (a) For each equipment subject to verification, the manufacturer (or importer) shall maintain the records listed below:
- (1) A record of the original design drawings and specifications and all changes that have been made that may affect compliance with the requirements of Section 2.953.
  - (2) A record of the procedures used for production inspection and testing (if tests were performed) to insure the conformance required by Section 2.953. (Statistical production line emission testing is not required).
- (b) The records listed in paragraphs (a) of this section shall be retained for two years after the manufacture of said equipment item has been permanently discontinued, or until the conclusion of an investigation or a proceeding if the manufacturer or importer is officially notified that an investigation or any other administrative proceeding involving his equipment has been instituted.

## **7.10. FCC INSPECTION & SUBMISSION OF EQUIPMENT FOR TESTING: FCC PART 2, SUBPART J, SEC. 2.956**

- (a) Each manufacturer or importer of equipment subject to verification shall upon receipt of reasonable request submit to the Commission the records required by Section 2.955.
- (b) The Commission may require the manufacturer or importer of equipment subject to verification to submit one or more of sample units for measurements at the Commission's Laboratory.
- (c) In the event the manufacturer believes that shipment of the sample to the Commission's Laboratory is impractical because of the size or weight of the equipment, or the power requirement or for any other reason, the applicant may submit a written explanation why such shipment is impractical and should not be required.

## **7.11. SAMPLING TESTS OF EQUIPMENT COMPLIANCE: FCC PART 2, SUBPART J, SECTION 2.957**

The Commission will from time to time, request the manufacturer or importer to submit to the FCC Laboratory in Columbia, Maryland, various equipment(s) for which verification has been made, to determine the extent to which subsequently produced units continue to comply with the applicable standards.