

FCC TCB & ISED CB















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 June 12, 2017

Camden Door Control 5502 Timberlea Blvd Mississauga, Ontario Canada, L4W 2T7

Attn.: Frank Gerlach

Subject: Verification Authorization under FCC PART 15, SUBPART B, Class B - Unintentional Radiators.

Product:SureWave Line Powered Hands Free SwitchModel No.:CM-331/CM-332

Dear Mr. Gerlach,

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

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 V.P., Engineering

Encl

VERIFICATION CERTIFICATE



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:	Camden Door Control.
Address:	5502 Timberlea Blvd
	Mississauga, Ontario
	Canada L4W 2T7
Contact Person:	Mr. Frank Gerlach
	Phone #: 905-282-1750
	Fax #: 905-282-9691
	Email Address: fgerlach@embeddedsense.com
Equipment Type: Product Name: Model No.:	Unintentional Radiators SureWave Line Powered Hands Free Switch CM-331/CM-332
The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	FCC Part 15, Subpart B - Class B Unintentional Radiators
Date of Authorization:	June 12, 2017

յԱղԱղԱղԱղԱղԱղԱղ

<u>Note(s)</u>: See attached report, UltraTech's File No.:17EMSI060_FCC15B, dated June 12, 2017 for details and conditions of Verification Compliance.

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

UltraTech

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











Π



91038

1309

46390-2049

AT-1945

SL2-IN-E-1119R



ENGINEERING TEST REPORT

SureWave Line Powered Hands Free Switch Model No.: CM-331/CM-332

Applicant:

Camden Door Control 5502 Timberlea Blvd Mississauga, Ontario Canada, LAW 2T7

Tested in Accordance With

Federal Communications Commission (FCC) CFR 47, Part 15, Subpart B Class B Unintentional Radiators

UltraTech's File No.: 17EMSI060_FCC15B

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

Date: June 12, 2017

Report Prepared by: Lien Trinh

Tested by: Hien Luu, Phuong Ngo

Issued Date: June 12, 2017

Test Dates: January 24 - June 1, 2017 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 any agency of the US Government.

This test report shall not be reproduced, except in full, without a written approval from UltraTech.

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





1309









91038



AT-1945



SL2-IN-E-1119R

CA2049

ԴԱրԱրԱրԱրԱրԱրԱրԱրԱր ՆոՍոՍոՍոՍոՍո

TABLE OF CONTENTS

EXHIBIT	1. INTRODUCTION	4
1.1.	SCOPE	4
1.2.	REVISION HISTORY	
1.3.	related Submittal(s)/grant(s)	
1.4.	NORMATIVE REFERENCES	4
EXHIBIT	2. PERFORMANCE ASSESSMENT	5
2.1.	CLIENT INFORMATION	5
2.2.	EQUIPMENT UNDER TEST (EUT) INFORMATION	
2.3.	FUNCTION /APPLICATION OF THE EUT	
	S A HAND FREE SWITCH TO OPERATE AND/OR UNLOCK A DOOR	
2.4.	LIST OF COMPONENTS/PARTS OF THE EUT	
2.5. 2.6.	LIST OF EUT'S PORTS	
-		
EXHIBIT		
3.1.	CLIMATE TEST CONDITIONS	
3.2.	OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS	
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	
3.5.	PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS	
EXHIBIT	4. SUMMARY OF TEST RESULTS	13
4.1.	LOCATION OF TESTS	13
4.2.	APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS	
4.3.	MODIFICATIONS REQUIRED FOR COMPLIANCE	
4.4.	DEVIATION OF THE STANDARD TEST PROCEDURES	13
EXHIBIT	5. MEASUREMENT DATA	14
5.1.	AC POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPART B, PARA.15.107(A)	14
5.1.	1. Limits	14
5.1.		
5.1.		
5.1.		
5.2.	RADIATED EMISSIONS FROM CLASS B UNINTENTIONAL RADIATORS (DIGITAL DEVICES) @ FCC 15.109(A)	
5.2.		
5.2 5.2.	5	
5.2.		
-		
EXHIBIT		
6.1.	LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY (9 KHz - 30 MHz)	
6.2.	RADIATED EMISSION MEASUREMENT UNCERTAINTY	
EXHIBIT	7. LABELLING & VERIFICATION REQUIREMENTS	21
7.1.	Section 15.19 - Labeling Requirements	
7.2.	Sections 15.21 & 15.105 - Information to User	
7.3.	Section 2.906 - Verification	22

FCC PART 15, SUBPART B - CLASS B UNINTENTIONAL RADIATORS

Page 3 of 24 Model No.: CM-331/CM-332

7.6.	SECTION 2.946 - PENALTY FOR FAILURE TO PROVIDE TEST SAMPLES AND DATA.	22
7.7.	RESPONSIBILITY OF MANUFACTURER OR IMPORTER: FCC PART 2, SUBPART J, SECTION 2.953	23
7.8.	IDENTIFICATION: FCC PART 2, SUBPART J, SECTION 2.954	23
7.9.	RETENTION OF RECORDS: FCC Part 2, Subpart J, Section 2.955	
7.10.		
7.11.	SAMPLING TESTS OF EQUIPMENT COMPLIANCE: FCC Part 2, Subpart J, Section 2.957	

EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart B, Sections 15.107 & 15.109
Title	Telecommunication - Code of Federal Regulations, CFR 47, Part 15
Purpose of Test:	To gain FCC Verification Authorization for a Class B Unintentional Radiator.
Test Procedures	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.
Environmental Classification:	Residential, Light-industry, Commercial & Industry

1.2. REVISION HISTORY

Document	Issue Date	Description
17EMSI060_FCC15B	June 12, 2017	Original Document

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

None

1.4. NORMATIVE REFERENCES

Publication	Year	Title	
CISPR 22	2008-09, Edition	Information Technology Equipment - Radio Disturbance Characteristics -	
	6.0	Limits and Methods of Measurement	
EN 55022	2010		
CISPR 16-1-1	2006	Specification for radio disturbance and immunity measuring apparatus and	
+A1	2006	methods.	
+A2	2007	Part 1-1: Measuring Apparatus	
CISPR 16-1-2	2003	Specification for radio disturbance and immunity measuring apparatus and	
+A1: 2004		methods.	
+A2: 2006		Part 1-2: Conducted disturbances	
FCC 47 CFR 15	2013	Code of Federal Regulations – Telecommunication	
ANSI C63.4	2014	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	

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

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT:				
Name:	Camden Door Control			
Address:	5502 Timberlea Blvd			
	Mississauga, Ontario			
	Canada L4W 2T7			
Contact Person:	Mr. Frank Gerlach			
	Phone #: 905-282-1750			
	Fax #: 905-282-9691			
	Email Address: fgerlach@embeddedsense.com			

MANUFACTURER:	
Name:	Embedded Sense Inc.
Address:	5155 Spectrum Way, Unit 17
	Mississauga, Ontario
	Canada L4W 5A1
Contact Person:	Mr. Frank Gerlach
	Phone #: 905-282-1750
	Fax #: 905-282-9691
	Email Address: fgerlach@embeddedsense.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.

Brand Name	SureWave Hands Free Switch	
Product Name	SureWave Line Powered Hands Free Switch	
Model Name or Number	CM-331/CM-332	
Type of Equipment	Unintentional Radiators	
Power input source:	12/24 VAC/VDC	

2.3. FUNCTION / APPLICATION OF THE EUT

EUT is a hand free switch to operate and/or unlock a door.

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

2.4. LIST OF COMPONENTS/PARTS OF THE EUT

None

2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Connector Type	Cable Type (Specify minimum length and shielded/non-shielded)
1	External Switch	3	Terminal Block	Shielded, 1m
2	Relay Contacts	2	Terminal Block	Shielded, 1m

2.6. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests: None

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:	12/24 VAC/VDC

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

I) Equipment Setup / operating instructions:

Power on device and wait approximately 10 seconds for unit to boot up and stabilize

II) Description or theory of normal operation:

The EUT will take about 10s to boot and stabilize. The DIP switches are used to change the operating configurations and the potentiometers are used to adjust the operating time or the relays and the sensing range distance.

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

File #: 17EMSI060_FCC15B June 12, 2017



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

File #: 17EMSI060_FCC15B June 12, 2017

Page 11 of 24 Model No.: CM-331/CM-332

3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS



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

File #: 17EMSI060_FCC15B June 12, 2017



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

File #: 17EMSI060_FCC15B June 12, 2017

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.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2017-04-02.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC PART 15, SUBPART B	TEST REQUIREMENTS	MARGIN BELOW (-) / ABOVE (+) THE LIMITS	COMPLIANCE (YES/NO)
15.107(a), Class B	AC Power Line Conducted Emissions Measurements	- 7.2 dB @ 0.155 MHz	Yes
15.109(a), Class B	Radiated Emissions from Unintentional Radiators (Digital Devices)	- 9.6 dB @ 73.5 MHz	Yes

4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

None

4.4. DEVIATION OF THE STANDARD TEST PROCEDURES

None

EXHIBIT 5. MEASUREMENT DATA

5.1. AC POWERLINE CONDUCTED EMISSIONS @ FCC PART 15, SUBPART B, PARA.15.107(A)

5.1.1. Limits

The equipment shall meet the limits of the following table:

	CLASS B LIMITS		
Test Frequency Range (MHz)	Quasi-Peak (dBµV)	Average* (dBµV)	Measuring Bandwidth
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 kHz VBW $\ge 9 \text{ kHz}$ for QP VBW = 10 Hz for Average
0.5 to 5	56	46	RBW = 9 kHz VBW $\ge 9 \text{ kHz}$ for QP VBW = 10 Hz for Average
5 to 30	60	50	$\begin{array}{l} \text{RBW} = 9 \text{ kHz} \\ \text{VBW} \geq 9 \text{ kHz} \text{ for } \text{QP} \\ \text{VBW} = 10 \text{ Hz} \text{ for Average} \end{array}$

* Decreasing linearly with logarithm of frequency

5.1.2. Method of Measurements

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

Calculation of Conducted Emission Voltage (dBµV):

This is calculated by adding the L.I.S.N factor, Cable loss factor, and Attenuator factor to the measured reading. The basic equation with a sample calculation is as follows:

Voltage $(dB\mu V) = RA + AF + CF + LF$

Where

RA	=	Receiver/Analyzer Reading in dBµV
AF	=	Attenuation Factor in dB
CF	=	Cable loss Factor in dB
LF	=	L.I.S.N Factor in dB

5.1.3. Test Instruments

Refer to Exhibit 6 for Test Instruments & Measurement Uncertainty

ULTRATECH GROUP OF LABS 3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4 Tel. : 905-829-1570, Fax. : 905-829-8050 File #: 17EMSI060_FCC15B June 12, 2017

5.1.4. Test Results

FCC 15 Sub B; Class B Power Line Conducted Emission

Description: Line Voltage: 24Vdc Setup Name: FCC 15 Class B Customer Name: Embedded Sense Inc. Project Number: EMSI-060Q Operator Name: Phuong Luu EUT Name: SureWave hands Free Switch Date Created: 6/1/2017 1:25:11 PM Date Modified: 6/1/2017 2:09:28 PM



6/1/2017 2:11:28 PM

(Start = 0.15, Stop = 30.00) MH:

Frequency	Peak	QP	QP-QP Limit	Avg	Avg-Avg Limit	Trace Name
MHz	dBuV	dBuV	dB	dBuV	dB	
0.177	45.0	47.8	-16.8	46.1	-8.5	Positive Trace
0.286	43.9	35.0	-25.7	40.1	-10.6	Positive Trace
0.556	40.2	35.8	-20.2	32.4	-13.6	Positive Trace
0.685	35.6	29.4	-26.6	23.0	-23.0	Positive Trace
0.939	34.4	29.1	-26.9	21.5	-24.5	Positive Trace

ULTRATECH GROUP OF LABS 3000 Bristol Circle, Oakville, Ontario, Canada L6H 6G4 Tel. : 905-829-1570, Fax. : 905-829-8050 File #: 17EMSI060_FCC15B June 12, 2017

FCC 15 Sub B; Class B Power Line Conducted Emission

Description: Line Voltage: 24Vdc Setup Name: FCC 15 Class B Customer Name: Embedded Sense Inc. Project Number: EMSI-060Q Operator Name: Phuong Luu EUT Name: SureWave hands Free Switch Date Created: 6/1/2017 1:25:11 PM Date Modified: 6/1/2017 1:25:11 PM



6/1/2017 1:28:59 PM

(Start = 0.15, Stop = 30.00) MHz

Frequency	Peak	QP	QP-QP Limit	Avg	Avg-Avg Limit	Trace Name
MHz	dBuV	dBuV	dB	dBuV	dB	
0.155	51.5	46.4	-19.4	48.6	-7.2	negative Trace
0.178	49.3	42.5	-22.1	45.4	-9.2	negative Trace
0.194	48.6	43.3	-20.6	45.7	-8.1	negative Trace
0.220	46.9	43.3	-19.5	41.7	-11.1	negative Trace
0.239	46.9	43.2	-18.9	42.9	-9.2	negative Trace
0.260	45.8	40.2	-21.2	36.4	-15.1	negative Trace
0.554	40.0	35.3	-20.7	30.8	-15.2	negative Trace

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

5.2. RADIATED EMISSIONS FROM CLASS B UNINTENTIONAL RADIATORS (DIGITAL DEVICES) @ FCC 15.109(A)

5.2.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class B Limits (dBµV/m) EMI Detector Used		Measurement Distance (meters)
30 - 88	40.0	Quasi-Peak	3
88 - 216	43.5	Quasi-Peak	3
216 - 960	46.0	Quasi-Peak	3
960 -1000	54.0	Quasi-Peak	3
Above 1000	54.0	Average	3
	74.0	Peak	

5.2.2. 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 th harmonic of the highest frequency or 40 GHz,
	whichever is lower

Calculation of Field Strength:

The field strength is calculated by adding the calibrated antenna factor and cable factor, and subtracting the Amplifier gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength

RA	=	Receiver/Analyzer Reading

- AF = Antenna Factor
- CF = Cable Attenuation Factor
- AG = Amplifier Gain

5.2.3. Test Instruments

Refer to Exhibit 6 for Test Instruments & Measurement Uncertainty

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

5.2.4. Test Results

The emissions were scanned from 30 to 1000 MHz at 3 Meters distance and all emissions less than 20 dB below the limits were recorded.

mints were recorded.						
FREQUENCY	RF LEVEL	DETECTOR USED	ANTENNA PLANE	LIMIT	MARGIN	PASS/
(MHz)	(dBuV/m)	(PEAK/QP)	(H/V)	(dBuV/m)	(dB)	FAIL
73.5	30.5	PEAK	V	40.0	-9.6	PASS
73.5	17.5	PEAK	Н	40.0	-22.5	PASS
95.3	33.5	PEAK	V	43.5	-10.0	PASS
95.3	18.0	PEAK	Н	43.5	-25.5	PASS
113.9	30.9	PEAK	V	43.5	-12.6	PASS
129.5	30.2	PEAK	V	43.5	-13.3	PASS

EXHIBIT 6. TEST INSTRUMENTS & MEASUREMENT UNCERTAINTY (K=2, 95% CONFIDENCE LEVEL)

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

6.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY (9 KHZ - 30 MHZ)

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
EMI Receiver	HP	8593EM	3710A00223	9KHz-22 GHz,	Oct 4, 2017
System/Spectrum					
Analyzer with built-					
in Amplifier					
Attenuator	Pasternack	PE7010-20	07	DC to 2 GHz	Mar 13, 2018
L.I.S.N.	EMCO	3810/2	2209	9Khz-30Mhz	Jan 23, 2018

Test Date: Jun 1, 2017

	Line Conducted Emission Measurement Uncertainty (9 kHz – 30 MHz):	Measured	Limit
Uc	Combine <u>d standa</u> rd uncertainty: $u_c(y) = \sqrt{\underset{l=1}{\overset{m}{\sum}}u_i^2(y)}$	<u>+</u> 1.44	<u>+</u> 1.8
U	Expanded uncertainty U: U = 2u _c (y)	<u>+</u> 2.89	<u>+</u> 3.6

6.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Due Date
EMI Receiver	Rohde &	ESU40	100037	20 Hz to 40 GHz	May 8, 2017
	Schawrz				
Pre Amplifier	Com-Power	Pam-118A	551052	500 MHz to 18 GHz	July 13, 2017
Biconilog Antenna	EMCO	3142	9601-1005	26 – 3000 MHz	May 12, 2018
Horn Antenna	EMCO	3115	9911-5061	1GHz – 18 GHz	April 24, 2018
Semi-Anechoic	TDK	FCC: 91038			Mar 27, 2020
Chamber		IC: 2049A-3			

Test Date: January 24, 2017

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	Measured (dB)	Limit (dB)
Uc	Combined standard uncertainty: $u_c(y) = \sqrt{m \sum_{i=1}^{m} u_i^2(y)}$	<u>+</u> 2.39	<u>+</u> 2.6
U	Expanded uncertainty U: U = 2u _c (y)	<u>+</u> 4.79	<u>+</u> 5.2

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	Measured (dB)	Limit (dB)
Uc	Combined standard uncertainty: $u_c(y) = \sqrt{\substack{m \sum u_i^2(y)}}$	<u>+</u> 2.39	<u>+</u> 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	<u>+</u> 4.78	<u>+</u> 5.2

	Radiated Emission Measurement Uncertainty @ 3 m, Horizontal & Vertical (1 – 18 GHz):	Measured (dB)	Limit (dB)
Uc	Combine <u>d standa</u> rd uncertainty: $u_c(y) = \sqrt{\underset{l=1}{\overset{m}{\sum}}u_i^2(y)}$	<u>+</u> 1.87	Under consideration
U	Expanded uncertainty U: U = 2u _c (y)	<u>+</u> 3.75	Under consideration

EXHIBIT 7. LABELLING & VERIFICATION REQUIREMENTS

7.1. SECTION 15.19 - LABELING REQUIREMENTS

For a digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location on the device.

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 <u>NOT</u> 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.

(a) For a Class B 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.

<u>NOTE</u>: This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

7.3. SECTION 2.906 - VERIFICATION

- (a) A Verification is a procedure where the responsible party, as defined in Section 2.909, makes measurements or takes other necessary steps to ensure that the equipment complies with the appropriate technical standards. Submittal of a sample unit or representative data to the Commission demonstrating compliance is not required unless specifically requested pursuant to Section 2.1076 of this part.
- (b) Verification attaches to all items subsequently marketed by the responsible party which are identical, as define in Section 2.908 of this part, to the sample tested and found acceptable by the responsible party.

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

7.5. 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 Verification). Shipping costs to the Commission's laboratory and return shall be borne by the responsible party.

7.6. 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 Verification, 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.

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

(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 standard