# ENGINEERING TEST REPORT

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4G V-Station Lite (S,P) Model No.: 4GSTLSP

# FCC ID: QC4-4GSTLSP

Applicant:

**Bioscrypt**, Inc. 50 Acadia Ave, Suite 200 Markham, Ontario Canada L3R 0B3

#### In Accordance With Federal Communications Commission (FCC) Part 15, Subpart C, Section 15.209

UltraTech's File No.: MYT-184F15C209

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

Date: October 14, 2011

Report Prepared by: Dharmajit Solanki

Tested by: Hung Trinh, EMC/RFI Technician

Issued Date: October 14, 2011

Test Dates: Sept. 18 to Oct 07, 2011

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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46390-2049

NVLAP Lab Code 200093-0





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# EXHIBIT 1. INTRODUCTION

## 1.1. SCOPE

Reference:	FCC Part 15, Subpart C
Title:	Code of Federal Regulations (CFR), Title 47, Telecommunication - Part 15
Purpose of Test:	To gain FCC Equipment Certification for section 15.209
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:	Commercial, Industrial or Business environment

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

None

# **1.3. NORMATIVE REFERENCES**

Publication	Year	Title
FCC 47 CFR 15	2010	Code of Federal Regulations – Telecommunication
ANSI C63.4	2003 2009	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
ANSI C63.10	2009	American National Standard for Testing Unlicensed Wireless Devices
CISPR 22 EN 55022	2008-09 2006	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1 +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances

# EXHIBIT 2. PERFORMANCE ASSESSMENT

### 2.1. CLIENT INFORMATION

APPLICANT		
Name:	Bioscrypt, Inc.	
Address:	Address: 50 Acadia Ave, Suite 200 Markham, Ontario Canada L3R 0B3	
Contact Person:	Ryan Watt Phone #: 905-940-7750 Fax #: 905-940-7642 Email Address: RWatt@L1ID.com	

MANUFACTURER		
Name:	Knight Wah Technology Ltd.	
Address:	Unit 16 - 19, 3/F Tower B,Regent Centre, 63-73 Wo Yi Hop Road, Kwai Chung, N. T. Hong Kong	
Contact Person:	Y.H. Chan Phone #: (852) 2619 0162 Fax #: (852) 2619 0132 Email Address: yhchan@knightwah.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:	Bioscrypt, Inc.
Product Name:	4G V-Station Lite (S,P)
Model Name or Number:	4GSTLSP
Serial Number:	Test sample
Type of Equipment:	Low Power Transceiver
Input Power Supply Type:	DC 12-24 VDC (-10% & +15%)
Primary User Functions of EUT:	Enroll, Verification, Communication Output

## 2.3. EUT'S TECHNICAL SPECIFICATIONS

TRANSMITTER		
Equipment Type:	Mobile	
Intended Operating Environment:	Commercial, Industrial or Business Environment	
Power Supply Requirement:	4.75 VDC – 16 VDC (HID)	
RF Output Power Rating:	12 μW	
<b>Operating Frequency Range:</b>	124.54 to 126.14 kHz	
20 dB Bandwidth:	0.98 kHz	
Modulation Type:	ASK	
Oscillator Frequencies:	125 kHz	
Antenna Connector Type:	Integrated within PCB	

## 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	Ethernet 100-Base TX	1	Header	Non shielded
2	Host RS-485	1	Header	Non shielded
3	Power	1	Header	Non shielded
4	Wiegand I/O (5 Lines)	1	Header	Non shielded
5	General Purpose I/O (2 Inputs & 2 Outputs)	1	Header	Non shielded
6	Relay Control (NC, NO & COM)	1	Header	Non shielded
7	USB OTG (Auxiliary Port)	1	USB-Micro-AB	Shielded

\* Note: Secured and used by service personnel only

## 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	
Description:	Laptop
Brand Name:	HP
Model Name or Number:	Compaq6910P
Serial Number:	CAT000133617
Connected to EUT's Port:	Ethernet

## 2.6. TEST SETUP BLOCK DIAGRAM

#### 2.6.1. Power Line Conducted Emission Test Setup



#### 2.6.2. Radiated Emission Test Setup



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, Website: http://www.ultratech-labs.com File #: MYT-184F15C209 October 14, 2011

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

# 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 VDC

# 3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TESTS

Operating Modes:	The EUT was configured for continuous transmission for the duration of testing.
Special Test Software:	N/A
Special Hardware Used:	N/A
Transmitter Test Antenna:	The EUT was tested with the antenna fitted in a manner typical of normal intended use as integral antenna equipment.

Transmitter Test Signals	
Frequency Band(s):	125 kHz
Test Frequency(ies):	125 kHz
RF Power Output:	58.96 dBµV/m peak at 3m distance
Normal Test Modulation:	ASK
Modulating Signal Source:	Internal

# 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 Power Line Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(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: 2014-04-14.

# 4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Section(s)	Test Requirements	Compliance (Yes/No)
15.203	Antenna Requirement	Yes
15.207(a)	Power Line Conducted Emissions	Yes
15.215(c)	20 dB Bandwidth	Yes
15.209	Transmitter Radiated Emissions - Fundamental, Harmonic and Spurious Emissions	Yes
15.109(a), Class B	Radiated Emissions from Unintentional Radiators (Digital Devices)	Yes

# 4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

The following modifications were made for compliance:

#### Ferrite material added outside device on cables:

4G V-Station Lite required the addition of a Steward Ferrite P/N: 28A2432-0A2, requiring 2 turns on the Ethernet lines.

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

# 5.1. TEST PROCEDURES

This section contains test results only. Details of test methods and procedures can be found in ANSI C63.4, ANSI C63.10 and Ultratech's test procedures ULTR-P001-2004.

# 5.2. MEASUREMENT UNCERTAINTIES

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

# 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. ANTENNA REQUIREMENTS [47 CFR § 15.203]

#### 5.4.1. Requirements

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Notes: This requirement does not apply to carrier current devices operated under the provisions of @ 15.211, 15.213, 15.217, 17.219 or 15.221.

#### 5.4.2. Engineering Analysis

The antenna of this EUT is permanently integrated to the PCB, located inside the enclosure.

# 5.5. POWERLINE CONDUCTED EMISSION [47 CFR 15.207(a)]

#### 5.5.1. Limit(s)

The equipment shall meet the limits of the following table:

Frequency of emission	Conducted Limits (dBµV)			
(MHz)	Quasi-peak	Average		
0.15–0.5 0.5–5 5-30	66 to 56* 56 60	56 to 46* 46 50		

\*Decreases linearly with the logarithm of the frequency

#### 5.5.2. Method of Measurements

Refer to ANSI C63.4 & ANSI C63.10.

#### 5.5.3. Test Data

#### Plot 5.5.3.1. Power Line Conducted Emission Line Voltage: 12 VDC, Line Tested: Positive

#### **Current Graph**



9/19/2011 11:02:31 AM

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(Start = 0.15, Stop = 30.00) MHz
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#### **Current List**

Frequency	Peak	QP	Delta QP-QP Limit	Avg	Delta Avg-Avg Limit	Trace Name
MHz	dBuV	dBuV	dB	dBuV	dB	
0.315	44.7	43.8	-17.4	43.5	-7.7	Positive Trace
0.630	38.5	37.3	-18.7	36.7	-9.3	Positive Trace
0.944	35.1	33.3	-22.7	32.3	-13.7	Positive Trace
1.258	37.9	36.5	-19.5	35 9	-10.1	Positive Trace
1.574	34.8	32.9	-23.1	32.1	-13.9	Positive Trace

#### **Plot 5.5.3.2.** Power Line Conducted Emission Line Voltage: 12 VDC, Line Tested: Negative

#### **Current Graph**



9/19/2011 11:29:12 AM

(Start = 0.15, Stop = 30.00) MHz

#### **Current List**

Frequency	Peak	QP	Delta QP-QP Limit	Avg	Delta Avg-Avg Limit	Trace Name
MHz	dBuV	dBuV	dB	dBuV	dB	
0.314	44.5	43.6	-17.6	43.3	-8.0	Negative Trace
0.630	40.0	38.9	-17.1	38.3	-7.7	Negative Trace
1.258	44.6	43.7	-12.3	43.4	-2.6	Negative Trace
1.437	44.3	43.5	-12.5	43.3	-2.7	Negative Trace
1.573	46.1	45.5	-10.5	45.3	-0.7	Negative Trace

# 5.6. 20 dB BANDWIDTH [47 CFR 15.215(c)]

#### 5.6.1. Limit(s)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

Also emission bandwidth shall not be located in the restricted bands in 15.205 and the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz.

#### 5.6.2. Method of Measurements

The measurements were performed in accordance with Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 & ANSI C63.10.

The transmitter output was loosely coupled to the spectrum analyzer through a receiving antenna. The bandwidth of the fundamental frequency was measured with the spectrum analyzer, with the resolution BW set to 1% to 3 % of the approximate emission width and video BW set to 3 times the resolution BW.

#### 5.6.3. Test Data

Channel Frequency (MHz)	20 dB Bandwidth (kHz)		
125 kHz	0.980		

See the following plot for details.



#### Plot 5.6.3.1: 20 dB Bandwidth Fc: 125 kHz

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, Website: http://www.ultratech-labs.com File #: MYT-184F15C209 October 14, 2011

# 5.7. TRANSMITTER RADIATED EMISSIONS [47 CFR §§ 15.209 & 15.205]

#### 5.7.1. Limit(s)

§ 15.209:

(a) The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)					
0.009 - 0.490	2400/F(kHz)	300					
0.490 - 1.705	24000/F(kHz)	30					
1.705 - 30.0	30	30					
30 – 88	100 **	3					
88 – 216	150 **	3					
216 – 960	200 **	3					
Above 960	500	3					
** Except as provided in par	agraph (g), fundamental emissions f	from intentional radiators operating under					
this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-							
806 MHz. However, operation	806 MHz. However, operation within these frequency bands is permitted under other sections of this						
Part. e.g., Sections 15,231 a	and 15.241.						

47	CFR	15.	209(a)	General	Field	Strend	ith I	imits
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- (b) In the emission table above, the tighter limit applies at the band edges.
- (c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other Sections within this Part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.
- (d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
- (e) The provisions in Sections 15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this part.
- (f) In accordance with Section 15.33(a), in some cases the emissions from an intentional radiator must be measured to beyond the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator because of the incorporation of a digital device. If measurements above the tenth harmonic are so required, the radiated emissions above the tenth harmonic shall comply with the general radiated emission limits applicable to the incorporated digital device, as shown in Section 15.109 and as based on the frequency of the emission being measured, or, except for emissions contained in the restricted frequency bands shown in Section 15.205, the limit on spurious emissions specified for the intentional radiator, whichever is the higher limit. Emissions which must be measured above the tenth harmonic of the highest fundamental frequency designed to be emitted by the intentional radiator and which fall within the restricted bands shall comply with the general radiated emission limits in Section 15.109 that are applicable to the incorporated digital device.

(g) Perimeter protection systems may operate in the 54-72 MHz and 76-88 MHz bands under the provisions of this section. The use of such perimeter protection systems is limited to industrial, business and commercial applications.

#### 5.7.2. Method of Measurements

Refer to Ultratech Test Procedure # ULTR P001-2004 and ANSI C63.4 & ANSI C63.10 for measurement methods.

#### 5.7.3. Test Data

#### **Remarks:**

- The measuring receiver shall be tuned over the frequency range 9 kHz to 30 MHz.
- All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.
- EUT was initially tested at 10m, signal was not detected at this distance, and test distance was reduced to 3m. The value measured at 3m shall be extrapolated as applicable to compare with limit and measurement distance specified in section 15.209(a).
- Extrapolation factor of 40dB/decade shall be used for frequencies below 30 MHz.
- The 125 kHz radio was set to transmit continuously during radiated emission test.

#### 5.7.3.1. Fundamental Emissions

#### **Remarks:**

- Field strength limit of the fundamental 125 kHz at 300m distance is 20\*log(2400/125) = 25.67 dBµV/m
- For frequency band 0.009- 0.490 MHz, the measured E-Field at 3m (column 2) will be extrapolated to 300m E-Field Level (column 3) using the extrapolation factor of 40\*log(3/300) = -80 dB

Frequency (MHz)	Peak E-Field @ 3m (dBµV/m)	Extrapolated E-Field Level @ 300m (dBµV/m)	Antenna Plane (H/V)	§ 15.209 (a) Limits @ 300m (dBµV/m)	Margin (dB)
0.125	58.96	-21.04	V	25.67	-46.71
0.125	57.59	-22.41	Н	25.67	-48.08

#### 5.7.3.2. Harmonic/Spurious Emissions

#### **Remarks:**

- For frequency band 0.009- 0.490 MHz, the measured E-Field at 3m (column 2) will be extrapolated to 300m E-Field Level (column 3) using the extrapolation factor of 40\*log(3/300) = -80 dB
- For frequency bands 0.490-1.705 MHz and 1.705-30.0 MHz, the measured E-Field at 3m (column 2) will be extrapolated to 30m E-Field Level (column 3) using the extrapolation factor of 40\*log(3/30) = -40 dB

Frequency (MHz)	Peak E-Field @ 3m (dBµV/m)	Extrapolated E-Field Level (dBµV/m)	Antenna Plane (H/V)	§ 15.209 (a) Limits (dBμV/m)	Margin (dB)			
0.010 - 0.490	*	*	H/V	25.7	*			
0.490 - 1.705	*	*	H/V	45.7	*			
1.705 - 30.0	*	*	H/V	29.5	*			

\* No emission found.

# 5.8. RADIATED EMISSIONS FROM CLASS B UNINTENTIONAL RADIATORS (DIGITAL DEVICES) [§ 15.109(a)]

#### 5.8.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class B Limits @ 3m (dBµV/m)	EMI Detector Used	Measuring Bandwidth (kHz)
30 - 88	40.0	Quasi-Peak	RBW = 120 kHz, VBW <u>≥</u> 120 kHz
88 – 216	43.5	Quasi-Peak	RBW = 120 kHz, VBW <u>&gt;</u> 120 kHz
216 – 960	46.0	Quasi-Peak	RBW = 120 kHz, VBW <u>&gt;</u> 120 kHz
Above 960	54.0	Quasi-Peak (below 1 GHz) Average (above 1 GHz)	RBW = 120 kHz, VBW <u>&gt;</u> 120 kHz RBW = 1 MHz, VBW <u>&gt;</u> 1 Hz

#### 5.8.2. Method of Measurements

RSS-Gen and ANSI C63.4

#### 5.8.3. Test Data

Remarks:

• All spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.

Frequency (MHz)	Measured Field Strength @ 3 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Field Strength Limits (dBµV/m)	Margin (dB)
34.82	32.15	Peak	V	40.0	-7.85
34.82	23.36	Peak	Н	40.0	-16.64
46.49	30.05	Peak	V	40.0	-9.95
83.06	33.53	Peak	V	40.0	-6.47
144.07	29.90	Peak	V	43.5	-13.6
144.07	23.75	Peak	Н	43.5	-19.75
168.10	37.68	Peak	V	43.5	-5.82
168.10	33.88	Peak	Н	43.5	-9.62
264.10	35.65	Peak	Н	46.0	-10.35
288.14	29.84	Peak	V	46.0	-16.16
288.14	37.94	Peak	Н	46.0	-8.06
298.07	30.53	Peak	V	46.0	-15.47
298.07	35.02	Peak	Н	46.0	-10.98
360.09	32.13	Peak	V	46.0	-13.87

#### 5.8.3.1. Radiated Emission from Frequency Range 30 MHz to 1000 MHz at a Measuring Distance of 3 m

Frequency (MHz)	Measured Field Strength @ 3 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Field Strength Limits (dBµV/m)	Margin (dB)
360.09	32.60	Peak	Н	46.0	-13.40
372.11	30.20	Peak	V	46.0	-15.80
372.11	27.29	Peak	Н	46.0	-18.71
403.04	29.09	Peak	V	46.0	-16.91
403.04	30.73	Peak	Н	46.0	-15.27
408.01	30.38	Peak	V	46.0	-15.62
408.01	35.83	Peak	Н	46.0	-10.17
432.05	30.90	Peak	V	46.0	-15.10
432.05	38.00	Peak	Н	46.0	-8.00
450.00	28.17	Peak	V	46.0	-17.83
450.00	38.25	Peak	Н	46.0	-7.75
720.03	34.25	Peak	V	46.0	-11.75
720.03	41.34	Peak	Н	46.0	-4.66
750.48	36.59	Peak	V	46.0	-9.41
750.48	41.61	Peak	Н	46.0	-4.39
840.06	38.49	Peak	V	46.0	-7.51
840.06	43.20	QP	Н	46.0	-2.8
864.10	40.59	Peak	V	46.0	-5.41
864.10	45.00	QP	Н	46.0	-1.00
888.03	41.15	Peak	V	46.0	-4.85
888.03	44.90	QP	Н	46.0	-1.10

# EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	ESU40	100037	20 Hz – 40 GHz	15 Mar 2012
Spectrum Analyzer	Rohde & Schwarz	FSEK	834157/005	9 kHz – 40 GHz	18 Jul 2012
Spectrum Analyzer	Agilent	E7401A	US40240432	9.5KHz-1.3GHz	10 Jan 2012
RF Amplifier	AH System	PAM-0118	225	20 MHz – 18 GHz	15 Mar 2012
Loop Antenna	EMCO	6502	9104-2611	10KHz-30MHz	25 Aug 2012
Biconi-Log Antenna	Emco	3142C	00034792	26 – 3000 MHz	26 April 2012
LISN	ECMO	3825/2	8907-1531	10KHz-100MHz	30 Mar 2012
RF Current Probe	Fischer Custom Comm	F-33-4	100975	1KHz-100MHz	11 Aug 2012
Attenuator	Pastermack	PE-7010-20 (20 dB)		DC-2GHz	18 Jan 2012

# EXHIBIT 7. MEASUREMENT UNCERTAINTY

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.

# 7.1. Line Conducted Emission Measurement Uncertainty (0.15-30 MHz)

	Line Conducted Emission Measurement Uncertainty (150 kHz – 30 MHz):	Measured	Limit
u <sub>c</sub>	Combined standard uncertainty: $u_c(y) = \sqrt{m \sum_{i=1}^{m} u_i^2(y)}$	<u>+</u> 1.57	<u>+</u> 1.8
U	Expanded uncertainty U: U = 2u <sub>c</sub> (y)	<u>+</u> 3.14	<u>+</u> 3.6

### 7.2. Radiated Emission Measurement Uncertainty

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal (30-1000 MHz):	Measured	Limit
Uc	Combined standard uncertainty: $u_c(y) = \sqrt{\underset{l=1}{^{m}\Sigma}u_i^2(y)}$	<u>+</u> 2.15	<u>+</u> 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	<u>+</u> 4.30	<u>+</u> 5.2

	Radiated Emission Measurement Uncertainty @ 3m, Vertical (30-1000 MHz):	Measured	Limit
u <sub>c</sub>	Combined standard uncertainty: $u_c(y) = \sqrt{\underset{l=1}{\overset{m}{\sum}} u_i^2(y)}$	<u>+</u> 2.39	<u>+</u> 2.6
U	<b>Expanded uncertainty U:</b> $U = 2u_c(y)$	<u>+</u> 4.78	<u>+</u> 5.2

	Radiated Emission Measurement Uncertainty @ 3m, Horizontal & Vertical (1 – 18 GHz):	Measured	Limit
u <sub>c</sub>	Combined standard 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