ENGINEERING TEST REPORT

V-Station 4G
Model No.: 4GSTU1GGCMW
FCC ID: QC4-4GSTNG

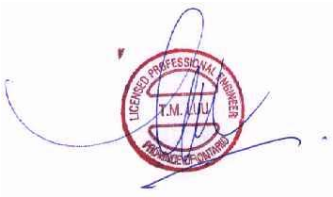
Applicant:

Bioscrypt, Inc.
505 Cochrane Drive
Markham, Ontario
Canada L3R 8E3

In Accordance With

Federal Communications Commission (FCC)
Part 15, Subpart C
Unlicensed Low Power Transmitter Operating in the Band 13.110-14.010 MHz

UltraTech's File No.: MYT-135F15C225

This Test report is Issued under the Authority of Tri M. Luu, Professional Engineer, Vice President of Engineering UltraTech Group of Labs Date: April 7, 2009	
Report Prepared by: Dan Huynh Issued Date: April 7, 2009	Tested by: Hung Trinh, EMC/RFI Technician Test Dates: March 11, 28, 30 & 31, 2009

- *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.*

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	FCC Part 15, Subpart C, Sec. 15.225 - Operation within the band 13.110 – 14.010 MHz.
Title:	Title 47, Code of Federal Regulations (CFR), Part 15, Subpart C
Purpose of Test:	To gain FCC Certification Authorization for Section 15.225 - Operation within the Band 13.110 - 14.010 MHz.
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	2008	Code of Federal Regulations – Telecommunication
ANSI C63.4	2003	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 22 EN 55022	2008-09, Edition 6.0 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:	505 Cochrane Drive Markham, Ontario Canada L3R 8E3
Contact Person:	Shiraz Kapadia Phone #: 905-940-7750 Fax #: 905-940-7642 Email Address: shiraz.kapadia@bioscrypt.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:	V-Station 4G
Model Name or Number:	4GSTU1GGCMW
Serial Number:	Test sample
Type of Equipment:	Low Power Communication Device Transmitter
Input Power Supply Type:	12 VDC on DC Line or 48 VDC on PoE
Primary User Functions of EUT:	Enroll, verification, communication output

2.3. EUT'S TECHNICAL SPECIFICATIONS

Transmitter	
Equipment Type:	Mobile
Intended Operating Environment:	Commercial, light industry & heavy industry
Power Supply Requirement:	7 – 12 VDC
Field Strength:	51.35 dBµV/m at 10 m
Operating Frequency Range:	13.56 MHz
RF Output Impedance:	50 Ω
20 dB Bandwidth:	3.48 kHz
Modulation Type:	ASK
Oscillator Frequencies:	13.56 MHz
Antenna Connector Type:	Integral

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	RJ45	Non shielded
2	Host RS-485	1	Header	Non shielded
3	Host RS-232	1	Header	Non shielded
4	Power	2	Bullet and Header	Non shielded
5	Wiegand I/O (8 Lines)	1	Header	Non shielded
6	General Purpose I/O (3 Inputs & 6 Outputs)	1	Header	Non shielded
7	Relay Control (NC, NO & COM)	1	Header	Non shielded
8	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:

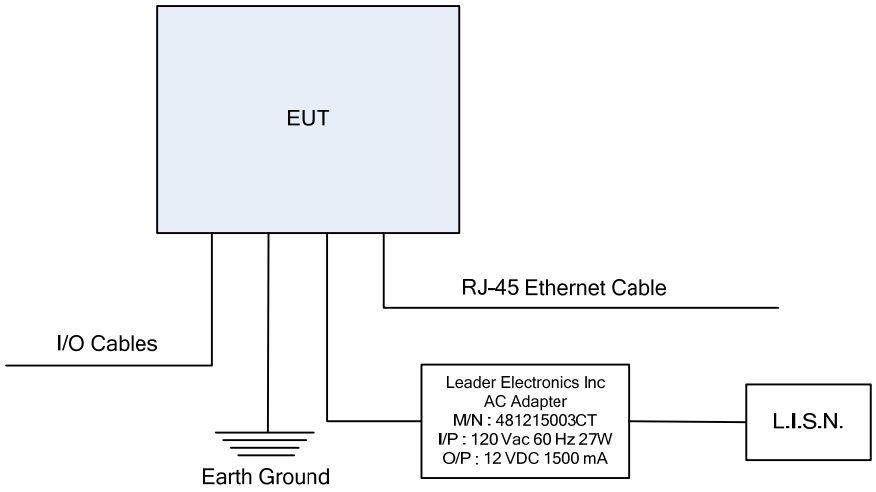
Ancillary Equipment # 1	
Description:	AC Adaptor
Brand Name:	Leader Electronics Inc.
Model Name or Number:	481215003CT
Serial Number:	N/A
Cable Length & Type:	< 3 m, Non-shielded
Connected to EUT's Port:	Power Connector

Ancillary Equipment # 2	
Description:	PoE Injector
Brand Name:	Allied Telesis
Model Name or Number:	AT-6101
Serial Number:	A03784G080700814A1
Cable Length & Type:	> 3 m, Non-shielded
Connected to EUT's Port:	Ethernet

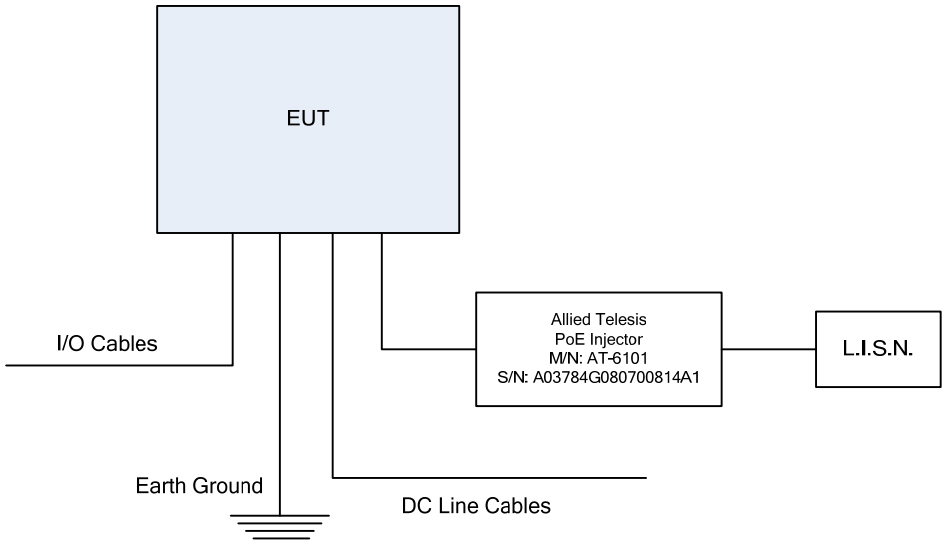
2.6. GENERAL TEST SETUP

2.6.1. Power Line Conducted Emission Test Setup

Test Configuration 1: External Wall Plug-in Adapter



Test Configuration 2: Power Over Ethernet (PoE) Injector



2.6.2. Radiated Emission Test Setup

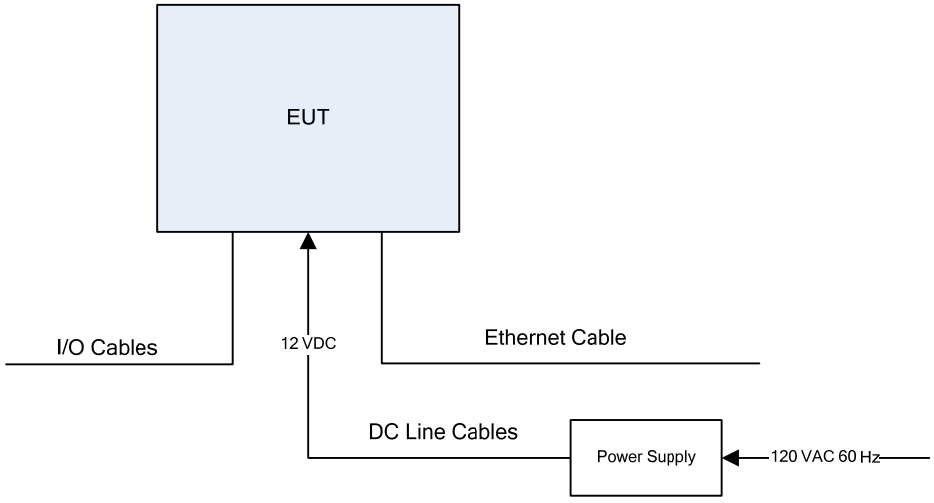


EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

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 VDC (from AC adapter) 48 VDC (from PoE)

3.2. OPEPERATIONAL 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:	13.56 MHz
Transmitter Wanted Output Test Signals:	
▪ RF Power Output (measured maximum output power):	51.35 dBµV/m at 10 m
▪ 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.: 31040/SIT 1300B3) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date of Site Calibration: May 17, 2009.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Regulations	Test Requirements	Compliance (Yes/No)
15.203 & 15.204	The transmitter shall use a transmitting antenna that is an integral part of the device	Yes
15.215	20 dB & 99% Bandwidth	Yes
15.225(a) – (d)	Field Strength of Emissions Inside and Outside the Permitted Band 13.110 - 14.010 MHz	Yes
15.225(e)	Frequency Stability	Yes
15.107 & 15.207	Class B - Power Line Conducted Emissions	Yes

4.3. MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

The following modifications were made for compliance:

1) V-Station 4G required the addition of a Steward Ferrite P/N: 28A4155-0A2, requiring 1/2 turn on the IO and Power lines close to the unit power and IO port.

2) V-Station 4G required the addition of a Steward Ferrite P/N: 28A2432-0A2, requiring 1/2 turn on the Ethernet lines close to the unit RJ45 port.

3) V-Station 4G also required the addition of two Steward Ferrites, P/N: 28B0562-000, and each ferrite required 1 ½ turns on the internal LVDs cable. One ferrite close to one end of the LVDs cable and another ferrite close to other end of the LVDs cable.

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 and ULTR-P001-2004.

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. COMPLIANCE WITH FCC PART 15 – GENERAL TECHNICAL REQUIREMENTS

FCC Section	FCC Rules	
15.203	Described how the EUT complies with the requirement that either its antenna is permanently attached, or that it employs a unique antenna connector, for every antenna proposed for use with the EUT. The exception is in those cases where EUT must be professionally installed. In order to demonstrate that professional installation is required, the following 3 points must be addressed: • The application (or intended use) of the EUT • The installation requirements of the EUT • The method by which the EUT will be marketed	Integral PCB antenna
15.204	Provided the information for every antenna proposed for use with the EUT: (a) type (e.g. Yagi, patch, grid, dish, etc…), (b) manufacturer and model number (c) gain with reference to an isotropic radiator	Only furnished integral antenna will be used in the EUT.

5.5. OCCUPIED BANDWIDTH

5.5.1. Limits

The 20 dB bandwidth of the emission shall be contained within the band 13.110–14.010 MHz.

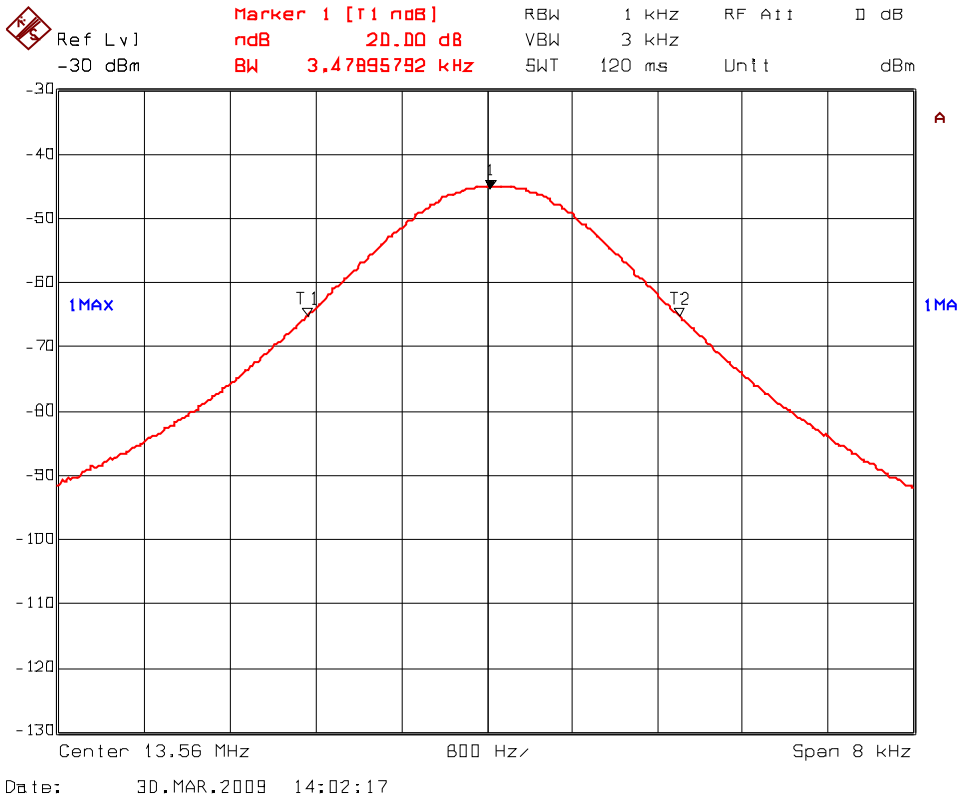
5.5.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

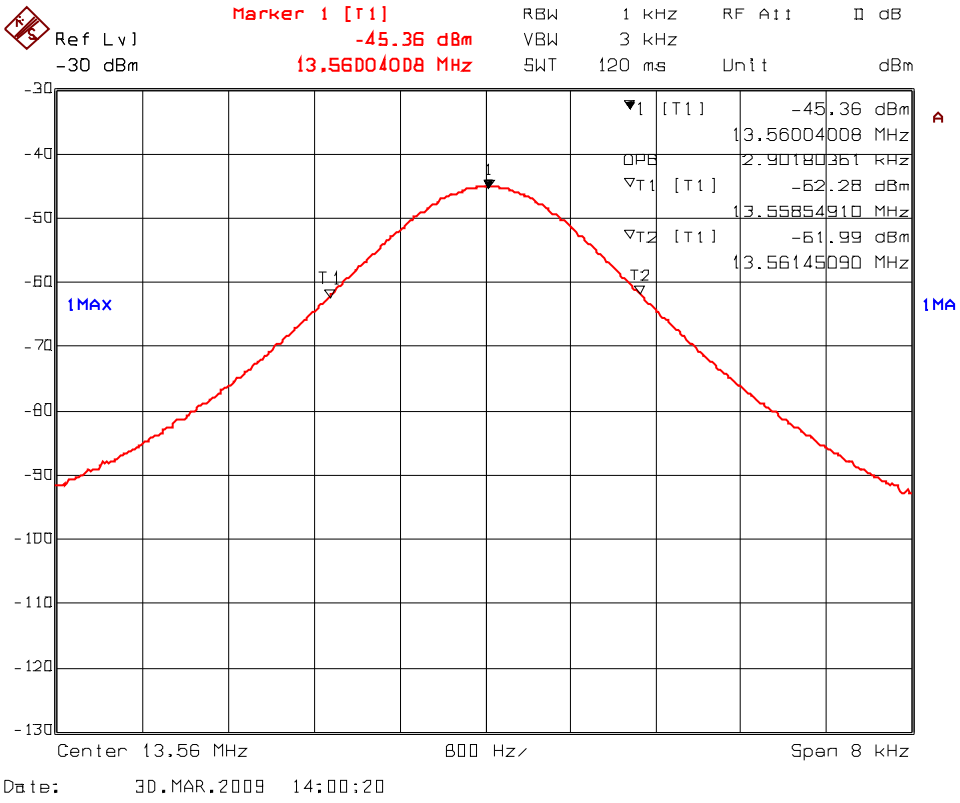
5.5.3. Test Data

Test Frequency (MHz)	Occupied Bandwidth (kHz)	
	20 dB BW	99 % BW
13.56	3.48	2.90

Plot 5.5.3.1 20 dB Bandwidth
Test Frequency: 13.56 MHz



Plot 5.5.3.2 99% Occupied Bandwidth
Test Frequency: 13.56 MHz



5.6. FIELD STRENGTH OF EMISSIONS INSIDE & OUTSIDE THE PERMITTED BAND 13.110-14.010 MHz [47 CFR 15.225 (a) to (d)]

5.6.1. Limits

(a) The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.
(b) Within the bands 13.410-13.553 MHz and 13.567-13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters.
(c) Within the bands 13.110-13.410 MHz and 13.710-14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters.
(d) The field strength of any emissions appearing outside of the 13.110 – 14.010 MHz band shall not exceed the general radiated emission limits in § 15.209.

47 CFR 15.209(a) – Radiated Emission Limts; general requirements

Frequency (MHz)	Field Strength Limits (microvolts/m)	Distance (Meters)
0.009 - 0.490	2,400 / F (KHz)	300
0.490 - 1.705	24,000 / 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

5.6.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

Applies to harmonics/spurious that fall in the restricted bands listed in Section 15.205. the maximum permitted average field strength is listed in Section 15.209. A Pre-Amp and high-pass filter are used for this measurement.

- For measurements from 9 KHz to 150 KHz, set RBW = 200 Hz, VBW $\geq$ RBW, SWEEP=AUTO.
- For measurements from 150 KHz to 30 MHz, set RBW = 10 KHz, VBW $\geq$ RBW, SWEEP=AUTO.
- For measurements from 30 MHz to 1 GHz, set RBW = 100 KHz, VBW $\geq$ RBW, SWEEP=AUTO.
- For measurement above 1 GHz, set RBW = 1 MHz, VBW = 1 MHz, SWEEP=AUTO.

If the emission is pulsed, modified the unit for continuous operation, then use the settings above for measurements, then correct the reading by subtracting the peak-average correction factor derived from the appropriate duty cycle calculation. See Section 15.35(b) and (c).

5.6.3. Test Data

Remarks:

- Radiated spurious emissions measurements were performed at 10 m distance, from 10 MHz – 10th harmonic of the fundamental and all spurious emissions that are in excess of 20 dB below the specified limit shall be recorded.
- For frequencies below 30 MHz, the results measured at 10 m distance shall be extrapolated to 30 m distance using an extrapolation factor of 40 dB/decade (40*log(10/30)).

5.6.3.1. Field Strength of Emissions Inside the Permitted Band

Frequency (MHz)	Measured Field Strength @ 10 m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	Field Strength @ 30 m Extrapolated Value (dBµV/m)	§ 15.225 Field Strength Limits	Margin (dB)
13.56	51.35	Peak	V	32.3	84.0	-51.7
13.56	43.47	Peak	H	24.4	84.0	-59.6

5.6.3.2. Field Strength of Emissions Outside the Permitted Band

Frequency (MHz)	Measured Field Strength @ 3m (dBµV/m)	Detector Used (Peak/QP)	Antenna Plane (H/V)	§ 15.209 Field Strength Limits	Margin (dB)
40.68	33.70	Peak	V	40.0	-6.3
40.68	23.10	Peak	H	40.0	-16.9
54.24	28.50	Peak	V	40.0	-11.5
81.36	23.20	Peak	V	40.0	-16.8
81.36	20.50	Peak	H	40.0	-19.5
94.92	26.20	Peak	V	43.5	-17.3
108.48	27.50	Peak	V	43.5	-16.0
108.48	24.10	Peak	H	43.5	-19.4
122.04	24.90	Peak	V	43.5	-18.6
122.04	28.00	Peak	H	43.5	-15.5
135.60	27.60	Peak	V	43.5	-15.9
135.60	27.40	Peak	H	43.5	-16.1

5.7. FREQUENCY STABILITY [47 CFR 15.225(e)]

5.7.1. Limits

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01% of the operating frequency over a temperature variation of –20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

5.7.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004.

5.7.3. Test Data

Frequency Band:	13.56 MHz
Center Frequency:	13.56 MHz
Frequency Tolerance Limit:	± 0.01% (±1356 Hz)
Max. Frequency Tolerance Measured:	+150 Hz
Input Voltage Rating:	12-24 VDC on DC input 48 VDC on PoE

Ambient Temperature (°C)	Frequency Drift (Hz)		
	Supply Voltage (Nominal) 12 VDC	**Supply Voltage (85 % of Nominal) 10.2 VDC**	**Supply Voltage (115% of Nominal) 27.6 VDC**
-30	+100	--	--
-20	+150	--	--
-10	+50	--	--
0	+150	--	--
+10	+100	--	--
+20	0	0	0
+30	0	--	--
+40	+100	--	--
+50	+50	--	--
+60	+50	--	--

Ambient Temperature (°C)	Frequency Drift (Hz)		
	Supply Voltage (Nominal) 48 VDC	Supply Voltage (85 % of Nominal) 40.8 VDC	Supply Voltage (115% of Nominal) 55.2 VDC
-30	+50	--	--
-20	+100	--	--
-10	0	--	--
0	+100	--	--
+10	0	--	--
+20	0	0	0
+30	-50	--	--
+40	+50	--	--
+50	0	--	--
+60	0	--	--

5.8. POWERLINE CONDUCTED EMISSIONS [47 CFR 15.107(a) & 15.207]

5.8.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class B Limits (dBμV)		Measuring Bandwidth
	Quasi-Peak	Average	
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
0.5 to 5	56	46	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average
5 to 30	60	50	RBW = 9 kHz VBW ≥ 9 kHz for QP VBW = 1 Hz for Average

* Decreasing linearly with logarithm of frequency

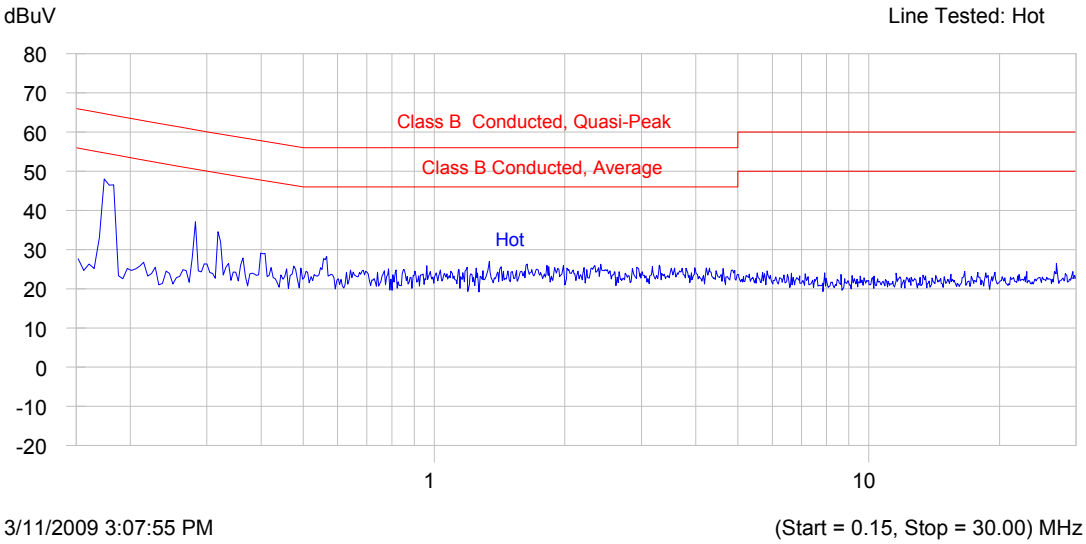
5.8.2. Method of Measurements

Refer to Ultratech Test Procedures, File # ULTR P001-2004 and ANSI C63.4 for measurement methods

5.8.3. Test Data

Plot 5.8.3.1 Power Line Conducted Emission
Test Configuration 1: External Wall Plug-in Adapter
Line Voltage: 120VAC 60Hz
Line Tested: Hot

Current Graph

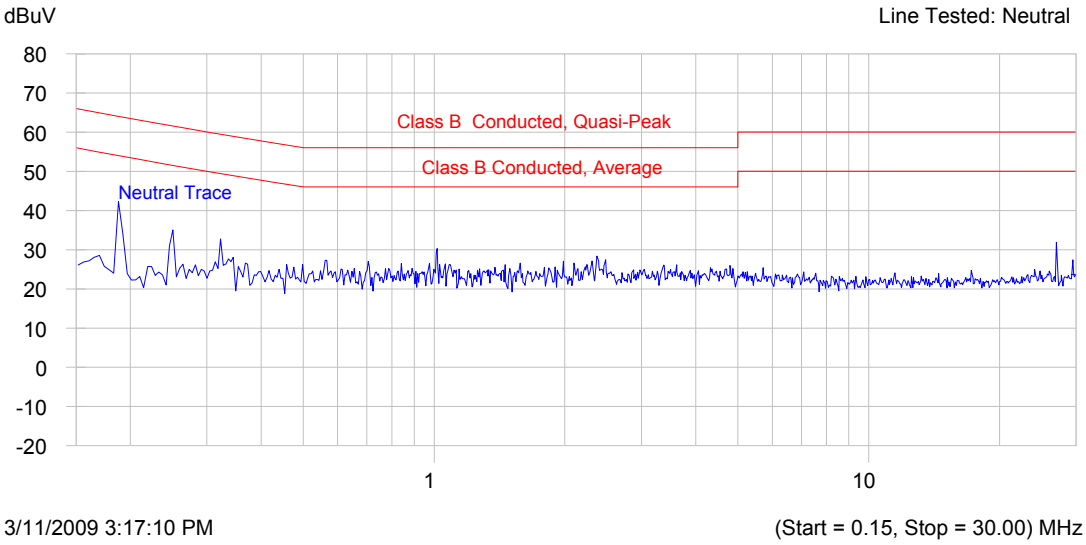


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.156	53.7	45.9	-19.8	14.8	-40.9	Hot Trace
0.292	38.0	29.4	-31.1	14.2	-36.3	Hot Trace
0.316	38.3	29.8	-30.0	15.0	-34.8	Hot Trace
0.564	29.6	25.1	-30.9	20.4	-25.6	Hot Trace
27.005	24.1	17.9	-42.1	11.4	-38.6	Hot Trace

Plot 5.8.3.2 Power Line Conducted Emission
Test Configuration 1: External Wall Plug-in Adapter
Line Voltage: 120VAC 60Hz
Line Tested: Neutral

Current Graph

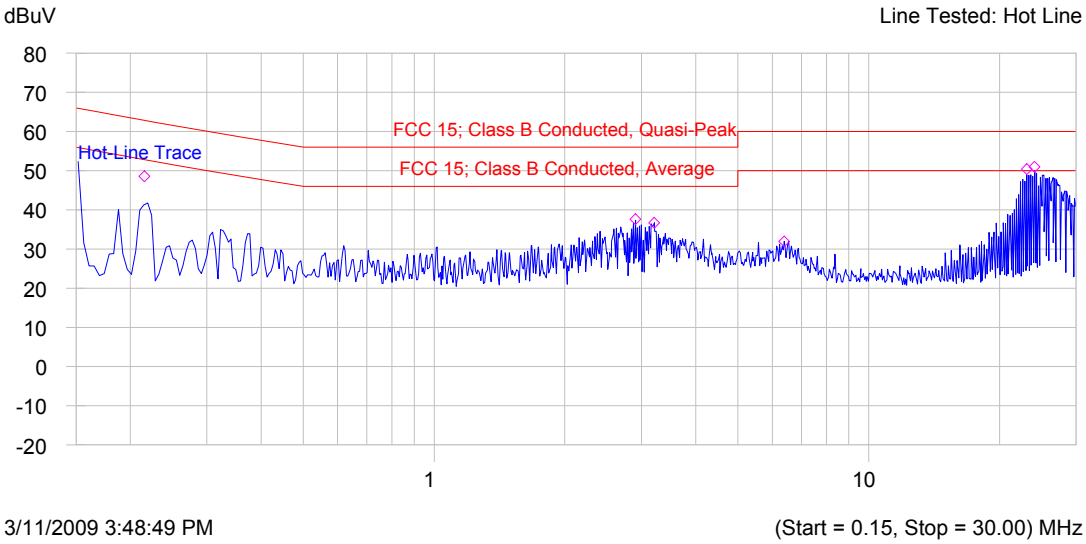


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.169	49.3	43.1	-21.8	16.2	-38.8	Neutral Trace
0.240	38.7	30.4	-31.8	14.8	-37.3	Neutral Trace
0.317	38.2	29.3	-30.5	14.3	-35.5	Neutral Trace
1.009	29.3	23.9	-32.1	18.3	-27.7	Neutral Trace
2.369	26.3	21.1	-34.9	14.0	-32.0	Neutral Trace
27.001	31.6	29.5	-30.5	28.2	-21.8	Neutral Trace

Plot 5.8.3.3 Power Line Conducted Emission
Test Configuration 2: Power over Ethernet (PoE) Injector
Line Voltage: 120VAC 60Hz
Line Tested: Hot

Current Graph

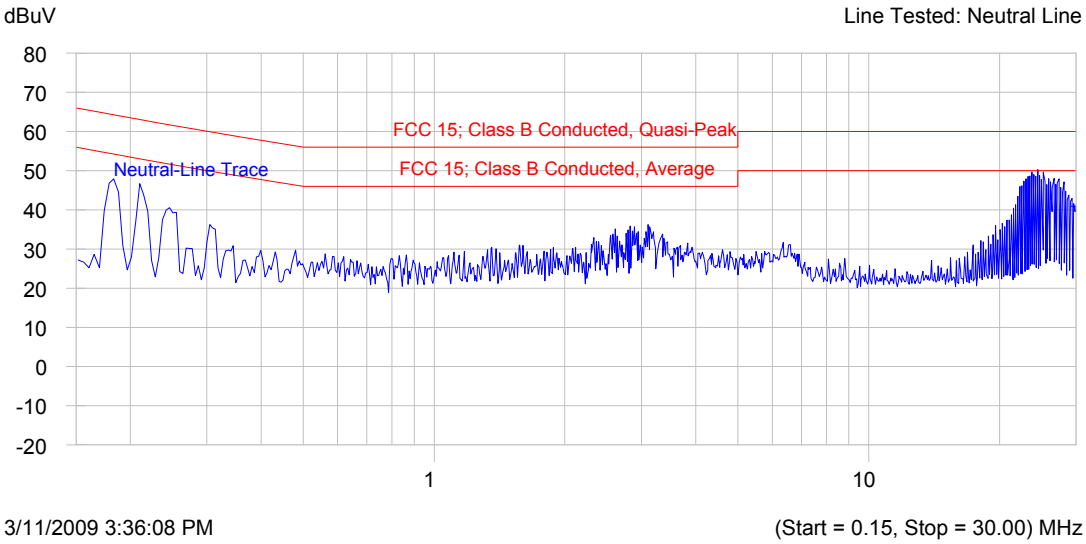


Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.215	48.6	41.0	-22.0	27.3	-25.7	Hot-Line Trace
2.903	37.6	37.0	-19.0	32.3	-13.7	Hot-Line Trace
3.210	36.7	34.3	-21.7	31.3	-14.7	Hot-Line Trace
6.390	31.9	29.0	-31.0	24.2	-25.8	Hot-Line Trace
23.088	50.4	48.1	-11.9	35.6	-14.4	Hot-Line Trace
24.070	51.0	49.4	-10.6	28.6	-21.4	Hot-Line Trace

Plot 5.8.3.4 Power Line Conducted Emission
Test Configuration 2: Power over Ethernet (PoE) Injector
Line Voltage: 120VAC 60Hz
Line Tested: Neutral

Current Graph



Current List

Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.185	52.1	47.1	-17.1	31.4	-22.8	Neutral-Line Trace
0.212	46.8	39.6	-23.6	24.6	-28.5	Neutral-Line Trace
2.827	37.2	30.8	-25.2	25.9	-20.1	Neutral-Line Trace
3.105	32.8	29.4	-26.6	28.1	-17.9	Neutral-Line Trace
23.722	25.2	18.8	-41.2	10.1	-39.9	Neutral-Line Trace
24.466	27.2	20.9	-39.1	13.8	-36.2	Neutral-Line Trace

EXHIBIT 6. TEST EQUIPMENT LIST

Test Instruments	Manufacturer	Model No.	Serial No.	Operating 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 μH
12'x16'x12' RF Shielded Chamber	RF Shielding	…	..	…
EMI-Test Receiver	Rohde & Schwarz	ESU40	100037	20 Hz- 40 GHz Build in amplifier
Spectrum Analyzer	Rohde & Schwarz	FSEK30	100077	20 Hz- 40 GHz
Loop Antenna	Emco	6502	2611	10 kHz – 30 MHz
Biconilog Anenna	Emco	3142	10005	26 – 3000 MHz
Biconilog Anenna	Emco	3142B	1575	26 – 2000 MHz
Log Periodic	Emco	93148	1101	0.2 – 2 GHz
Log Periodic	Emco	3148	23845	0.2 – 2 GHz
Horn Antenna	Emco	3115	6570	1 – 18 GHz
Horn Antenna	Emco	3115	5955	1 – 18 GHz
RF Amplifier	Com-Power	PA-103A	161243	10 MHz – 1000 MHz
RF Amplifier	Hewlett Packard	84498	3008A00769	1 – 26.5 GHz
Temperature & Humidity Chamber	Tenney	T5	9723B	-40°C - +80°C range

EXHIBIT 7. MEASUREMENT UNCERTAINTY

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

7.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY

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

Sample Calculation for Measurement Accuracy in 450 kHz to 30 MHz Band:

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

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

7.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

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

Calculation for maximum uncertainty when 3m biconical antenna including a factor of k = 2 is used:

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