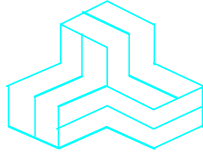


ENGINEERING TEST REPORT



V-Station 4G
Model No.: 4GSTU1HW
FCC ID: QC4-4GSTNH

Applicant:

Bioscript, 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-136F15C225

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



Date: April 8, 2009

Report Prepared by: Dan Huynh

Tested by: Hung Trinh, EMC/RFI Technician

Issued Date: April 8, 2009

Test Dates: March 10, 28 & 29, 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.*

UltraTech

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SL2-IN-E-1119R



2005-82 & 83

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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 |

ULTRATECH GROUP OF LABS

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File #: MYT-136F15C225
April 8, 2009

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

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: | 4GSTU1HW |
| 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: | 5 – 16 VDC |
| Field Strength: | 51.55 dBµV/m at 10 m |
| Operating Frequency Range: | 13.56 MHz |
| RF Output Impedance: | 50 Ω |
| 20 dB Bandwidth: | 5.31 kHz |
| Modulation Type: | ASK |
| Oscillator Frequencies: | 27.12MHz |
| 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:

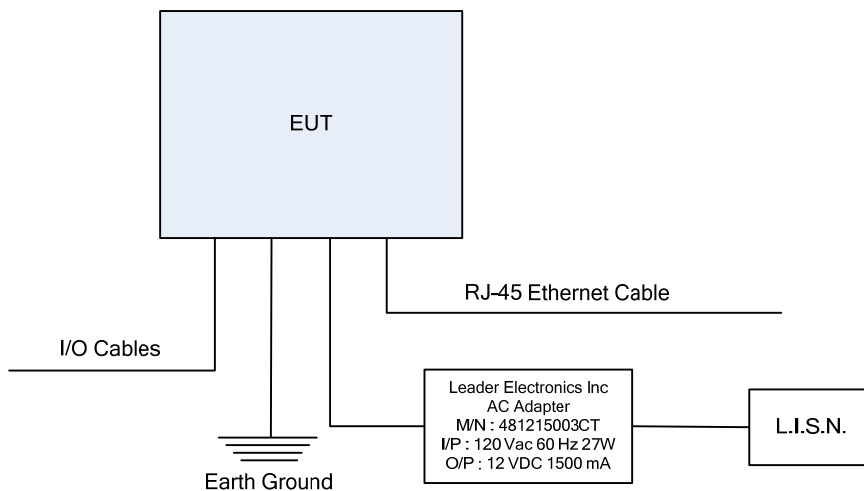
| Ancillary Equipment # 1 | |
|--------------------------------|-------------------------|
| Description: | AC Adaptor |
| Brand Name: | Leader Electronics Inc. |
| Model Name or Number: | 481215003CT |
| Serial Number: | N/A |
| Cable Length & Type: | < 3 m, Non-shielded |
| Connected to EUT’s Port: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

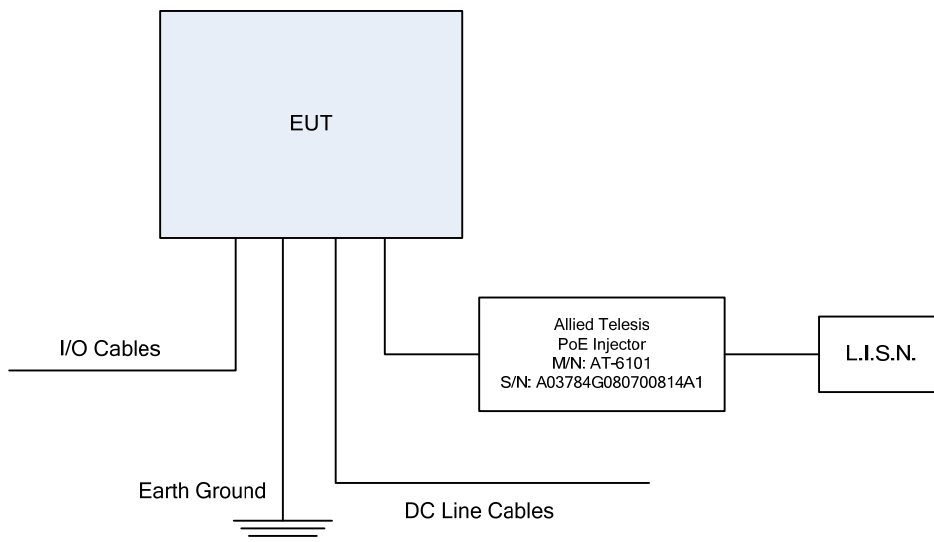
2.6. GENERAL TEST SETUP

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

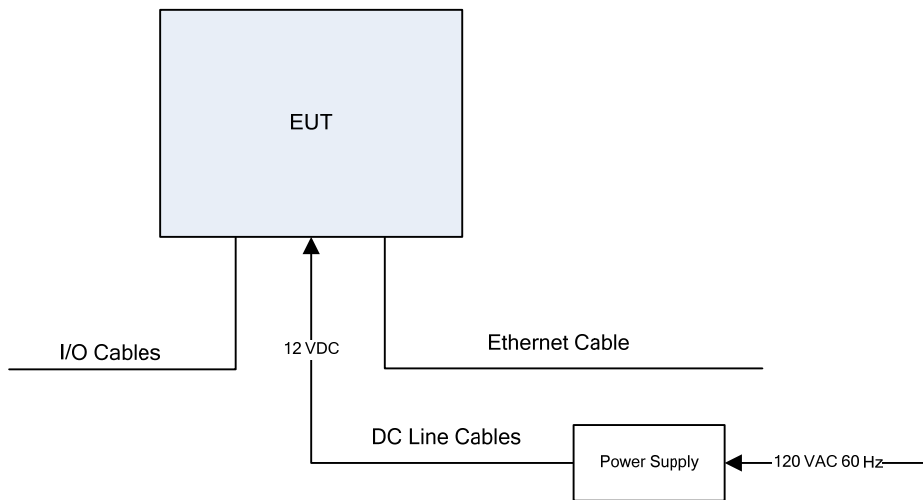


EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

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): | 51.55 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 | <p>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.</p> <p>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:</p> <ul style="list-style-type: none">• 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 | <p>Provided the information for every antenna proposed for use with the EUT:</p> <p>(a) type (e.g. Yagi, patch, grid, dish, etc...), (b) manufacturer and model number (c) gain with reference to an isotropic radiator</p> | 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.

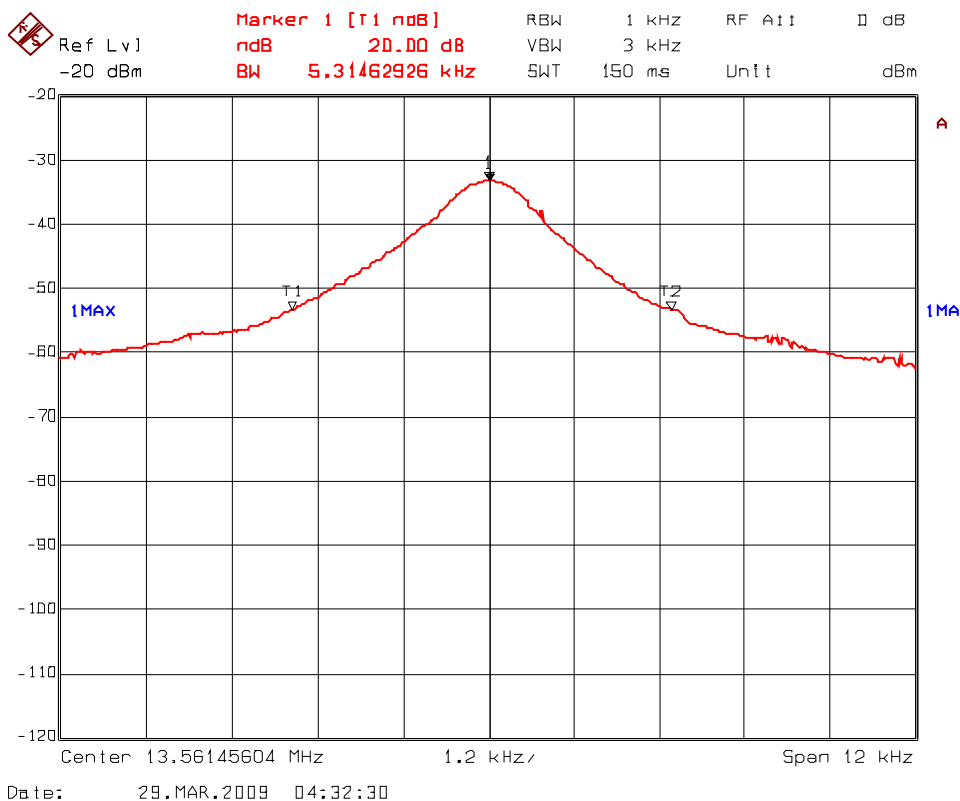
5.5.2. Method of Measurements

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

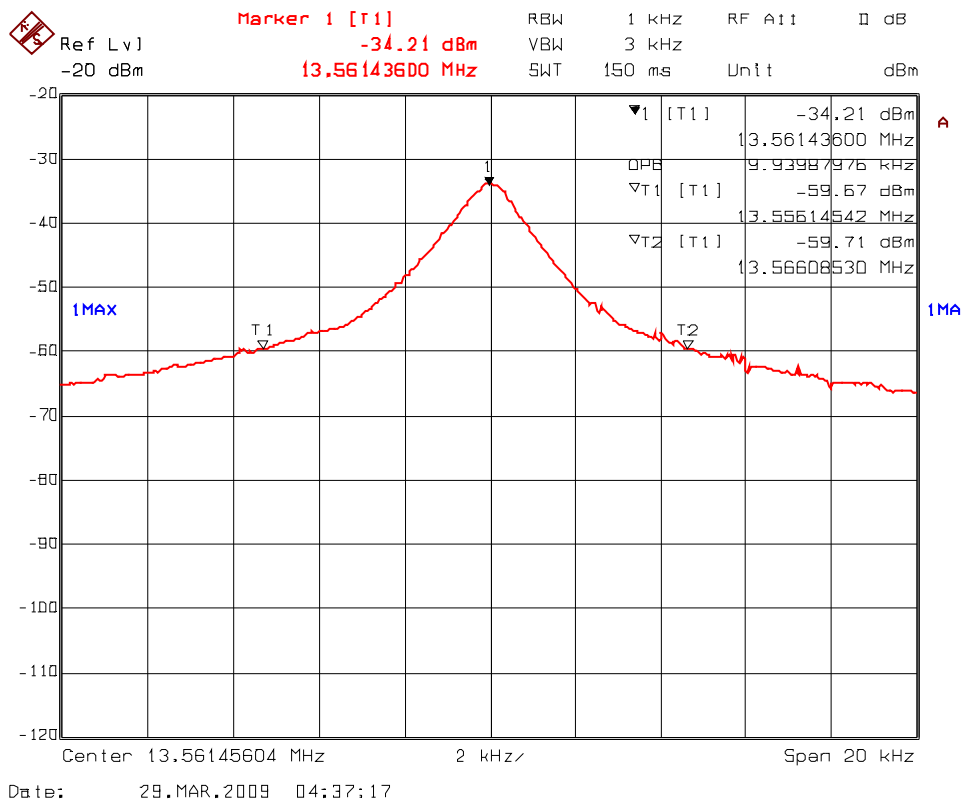
5.5.3. Test Data

| Test Frequency (MHz) | Occupied Bandwidth (kHz) | |
|----------------------|--------------------------|---------|
| | 20 dB BW | 99 % BW |
| 13.56 | 5.31 | 9.94 |

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 Limits; 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 ≥ RBW, SWEEP=AUTO.
- For measurements from 150 KHz to 30 MHz, set RBW = 10 KHz, VBW ≥ RBW, SWEEP=AUTO.
- For measurements from 30 MHz to 1 GHz, set RBW = 100 KHz, VBW ≥ 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 | 51.55 | Peak | V | 32.5 | 84.0 | -51.5 |
| 13.56 | 38.53 | Peak | H | 19.4 | 84.0 | -64.6 |

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 | 35.42 | QP | V | 40.0 | -4.6 |
| 40.68 | 25.66 | Peak | H | 40.0 | -14.3 |
| 54.24 | 31.94 | Peak | V | 40.0 | -8.1 |
| 54.24 | 21.30 | Peak | H | 40.0 | -18.7 |
| 67.80 | 25.54 | Peak | V | 40.0 | -14.5 |
| 81.36 | 24.18 | Peak | V | 40.0 | -15.8 |
| 81.36 | 20.20 | Peak | H | 40.0 | -19.8 |
| 94.92 | 30.10 | Peak | V | 43.5 | -13.4 |
| 108.48 | 31.81 | Peak | V | 43.5 | -11.7 |
| 108.48 | 28.48 | Peak | H | 43.5 | -15.0 |
| 122.04 | 41.4 | QP | V | 43.5 | -2.1 |
| 122.04 | 40.2 | QP | H | 43.5 | -3.3 |
| 135.60 | 28.87 | Peak | V | 43.5 | -14.6 |
| 135.60 | 28.10 | Peak | H | 43.5 | -15.4 |

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: | $\pm 0.01\%$ (± 1356 Hz) |
| Max. Frequency Tolerance Measured: | +250 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 | +200 | -- | -- |
| -20 | +200 | -- | -- |
| -10 | +150 | -- | -- |
| 0 | +100 | -- | -- |
| +10 | +50 | -- | -- |
| +20 | 0 | 0 | 0 |
| +30 | +100 | -- | -- |
| +40 | +50 | -- | -- |
| +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 | +250 | -- | -- |
| -20 | +250 | -- | -- |
| -10 | +200 | -- | -- |
| 0 | +150 | -- | -- |
| +10 | +100 | -- | -- |
| +20 | 0 | 0 | 0 |
| +30 | +150 | -- | -- |
| +40 | +100 | -- | -- |
| +50 | 0 | -- | -- |
| +60 | +100 | -- | -- |

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 (dB μ V) | | Measuring Bandwidth |
|----------------------------|-----------------------------|-----------|--|
| | Quasi-Peak | Average | |
| 0.15 to 0.5 | 66 to 56* | 56 to 46* | RBW = 9 kHz VBW \geq 9 kHz for QP VBW = 1 Hz for Average |
| 0.5 to 5 | 56 | 46 | RBW = 9 kHz VBW \geq 9 kHz for QP VBW = 1 Hz for Average |
| 5 to 30 | 60 | 50 | RBW = 9 kHz VBW \geq 9 kHz for QP VBW = 1 Hz for Average |

* Decreasing linearly with logarithm of frequency

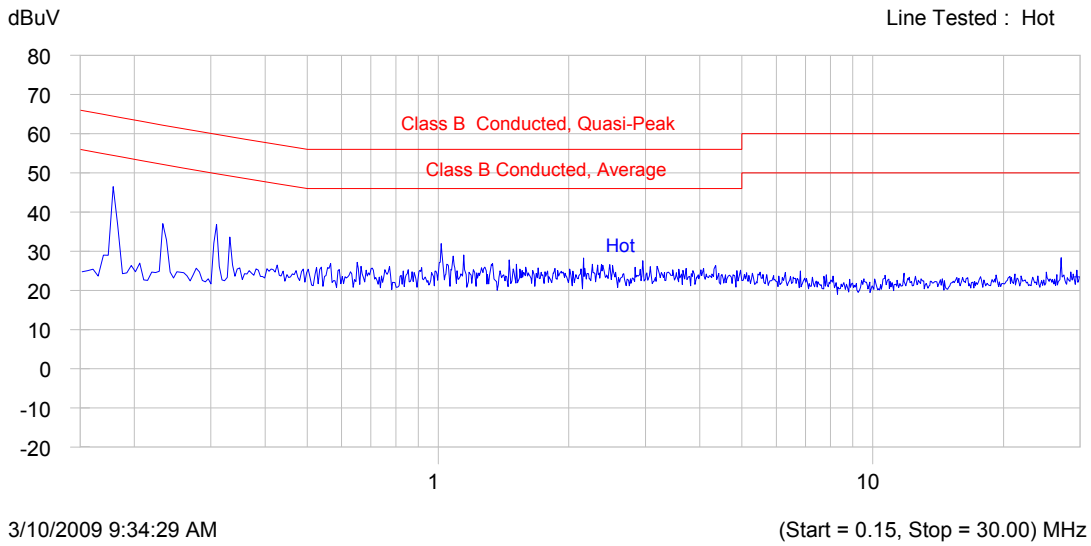
5.8.2. Method of Measurements

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

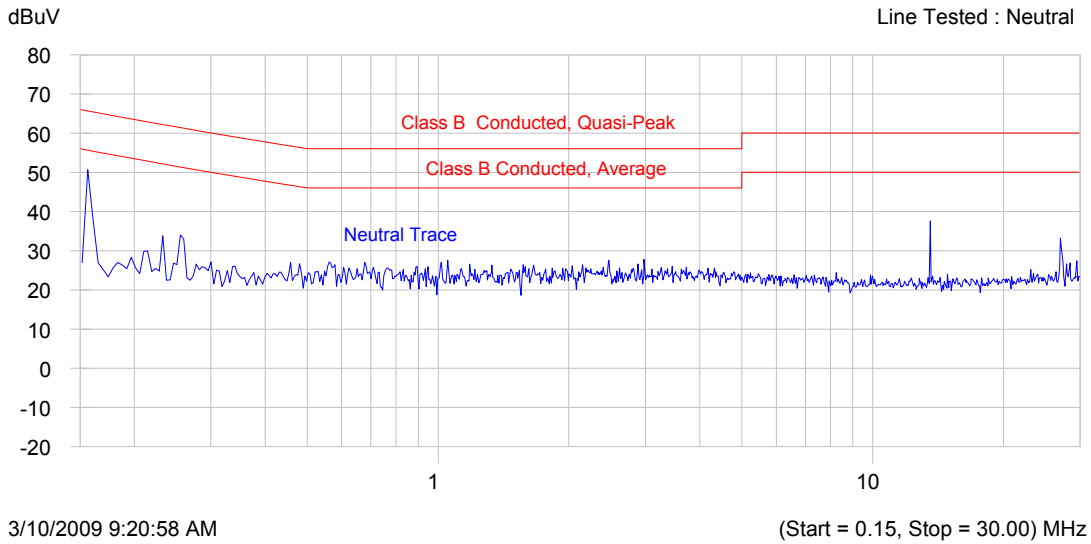


Current List

| Frequency MHz | Peak dBuV | QP dBuV | Delta Qp-Qp dB | Limit dB | Avg dBuV | Delta Avg-Avg dB | Limit dB | Trace Name |
|---------------|-----------|---------|----------------|----------|----------|------------------|----------|------------|
| 0.167 | 50.8 | 41.8 | -23.3 | | 15.8 | -39.3 | | Hot Trace |
| 0.216 | 43.9 | 35.2 | -27.8 | | 15.1 | -37.8 | | Hot Trace |
| 0.294 | 38.8 | 29.5 | -30.9 | | 15.4 | -35.0 | | Hot Trace |
| 1.010 | 35.3 | 31.7 | -24.3 | | 26.5 | -19.5 | | Hot Trace |
| 27.122 | 31.3 | 26.7 | -33.3 | | 23.5 | -26.5 | | 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

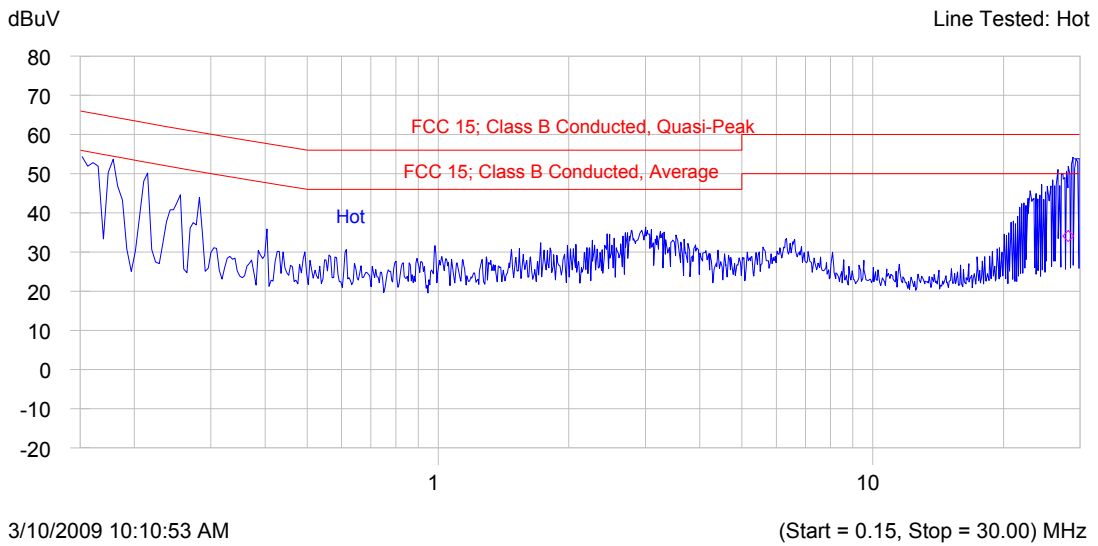


Current List

| Frequency MHz | Peak dBuV | QP dBuV | Delta Qp-Qp Limit dB | Avg dBuV | Delta Avg-Avg Limit dB | Trace Name |
|---------------|-----------|---------|----------------------|----------|------------------------|---------------|
| 0.214 | 43.0 | 34.9 | -28.2 | 15.5 | -37.6 | Neutral Trace |
| 0.265 | 37.4 | 29.6 | -31.7 | 16.0 | -35.2 | Neutral Trace |
| 13.563 | 38.3 | 34.9 | -25.1 | 18.8 | -31.2 | Neutral Trace |
| 27.001 | 35.7 | 32.0 | -28.0 | 28.7 | -21.3 | 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

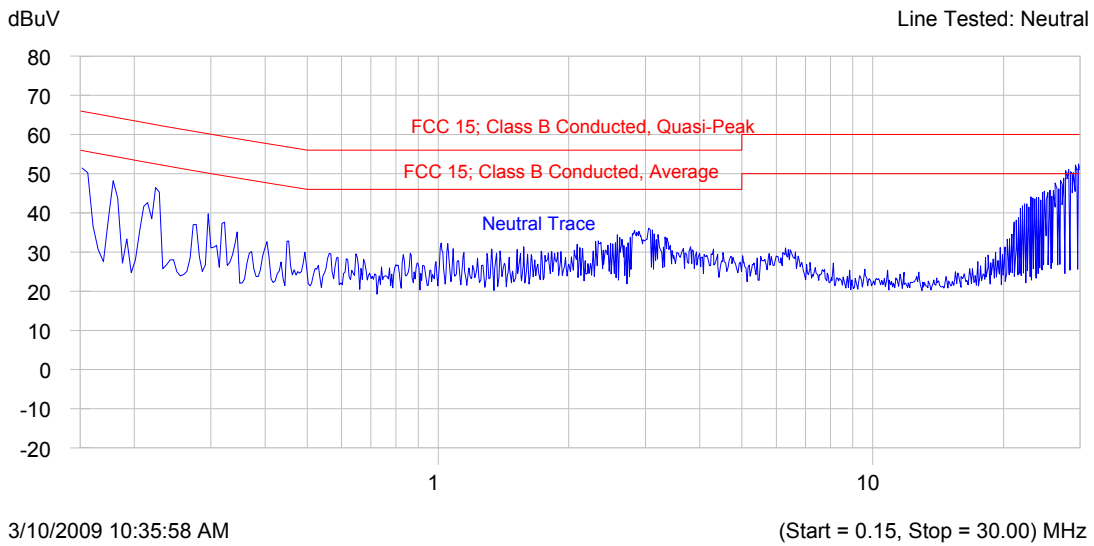


Current List

| Frequency MHz | Peak dBuV | QP dBuV | Delta dB | QP-QP Limit dB | Avg dBuV | Delta dB | Avg-Avg Limit dB | Trace Name |
|---------------|-----------|---------|----------|----------------|----------|----------|------------------|------------|
| 0.186 | 53.7 | 45.7 | -18.5 | | 29.7 | -24.6 | | Hot Trace |
| 0.214 | 50.9 | 43.1 | -20.0 | | 28.2 | -24.9 | | Hot Trace |
| 0.276 | 45.8 | 39.0 | -22.0 | | 29.9 | -21.0 | | Hot Trace |
| 26.702 | 49.6 | 47.3 | -12.7 | | 43.6 | -6.4 | | Hot Trace |
| 28.893 | 34.5 | 27.7 | -32.3 | | 19.8 | -30.2 | | Hot Trace |
| 28.170 | 34.1 | 29.9 | -30.1 | | 24.3 | -25.7 | | Hot 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 |
|---------------|-----------|---------|----------------------|----------|------------------------|---------------|
| 0.184 | 52.9 | 45.9 | -18.4 | 29.9 | -24.4 | Neutral Trace |
| 0.215 | 48.7 | 41.4 | -21.6 | 26.2 | -26.8 | Neutral Trace |
| 26.282 | 42.0 | 47.2 | -12.8 | 43.8 | -6.2 | Neutral Trace |
| 28.239 | 51.5 | 48.7 | -11.3 | 37.9 | -12.1 | Neutral Trace |
| 29.226 | 52.7 | 50.3 | -9.7 | 46.3 | -3.7 | Neutral 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 $\Gamma_1 = 0.03$ 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 | ± 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:

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

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

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 $\Gamma_1 = 0.2$ Antenna VRC $\Gamma_R = 0.67$ (Bi) 0.3 (Lp) Uncertainty limits $20\text{Log}(1 \pm \Gamma_1 \Gamma_R)$ | 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:

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