Compliance Testing, LLC
Previously Flom Test Lab
RF, EMC and Safety Testing Experts Since 1963
toll-free: (866) 311-3268
fax: (480) 926-3598
http://www.ComplianceTesting.com
info@ComplianceTesting.com

Date: September 28, 2009

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

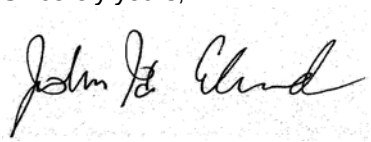
Applicant: Blackboard, Inc.
Equipment: MF4100
FCC ID: TMEMF4100X004
FCC Rules: 15.225

Gentlemen:

On behalf of the Applicant, enclosed please find Application Form 731, Engineering Test Report and all pertinent documentation, the whole for approval of the referenced equipment as shown.

We trust the same is in order. Should you need any further information, kindly contact the writer who is authorized to act as agent.

Sincerely yours,



John Erhard: Engineering Manager

Compliance Testing
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
(866) 311-3268 phone, (480) 926-3598 fax

List Of Exhibits

(FCC **Certification** (Transmitters) - Revised 9/28/98)

Applicant: Blackboard, Inc.

FCC ID: TMEMF4100X004

By Applicant:

1. Letter Of Authorization

2. Identification Drawings
   - __ Id Label
   - __ Location Info
   - __ Attestation Statement(S)
   - __ Location of Compliance Statement

3. Documentation: 2.1033(B)
   - (3) User Manual(S)
   - (4) Operational Description
   - (5) Block Diagram
   - (5) Schematic Diagram
   - (7) External Photographs
   - Internal Photographs
   - Parts List
   - Active Devices

By Compliance Testing

A. Testimonial & Statement of Certification

B. Statement of Qualifications

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Test Report

for

FCC ID: TMEMF4100X004

Model: MF4100

to

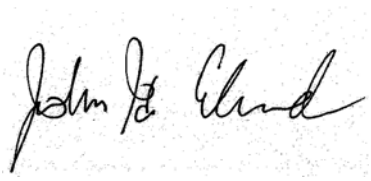
Federal Communications Commission

Rule Part(s)15.225

Date Of Report: September 28, 2009

On the Behalf of the Applicant: Blackboard, Inc.
22601 North 19th Ave, Suite 200
Phoenix, AZ 85027

Attention of: Tom Kuestersteffen
623-476-1263
email: tkuestersteffen@blackboard.com
and/or Tim Mattson
623-476-1400



Supervised By: John Erhard: Engineering Manager

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3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
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Test Report Revision History

Revision	Date	Revised By	Reason for revision
1.0	September 28, 2009	J. Erhard	Original Document

The applicant has been cautioned as to the following:

15.21 Information to User.

The users manual or instruction manual for an intentional 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.

15.27(a) Special Accessories.

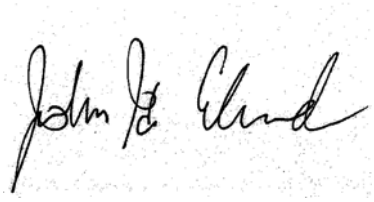
Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Testimonial And Statement Of Certification

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.



Certifying Engineer: John Erhard: Engineering Manager

Compliance Testing
3356 N. San Marcos Place, Suite 107
Chandler, Arizona 85225-7176
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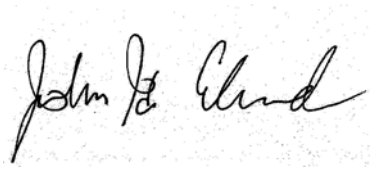
Table Of Contents

Required information per ISO 17025-2005, paragraph 5.10.2:

a) **Test Report**

b) Laboratory: (FCC: 31040/SIT) (Canada: IC 2044A-1)	Compliance Testing 3356 N. San Marcos Place, Suite 107 Chandler, AZ 85225
c) Report Number:	d0990014
d) Client:	Blackboard, Inc.
e) Identification:	MF4100
Description:	13.56 MHz Transmitter
f) EUT Condition:	Not required unless specified in individual tests.
g) Report Date:	September 28, 2009
h, j, k):	As indicated in individual tests.
i) Sampling method:	No sampling procedure used.
l) Uncertainty:	In accordance with Compliance Testing internal quality manual.

m) Supervised by:



John Erhard: Engineering Manager

n) Results:	The results presented in this report relate only to the item tested.
o) Reproduction:	This report must not be reproduced, except in full, without written permission from this laboratory.

List Of General Information Required For Certification

In Accordance with FCC Rules and Regulations, Volume II, Part 2 and to 15.225

Sub-Part 2.1033
(c)(1):

Name and Address of Applicant: Blackboard, Inc.

(c)(2): **FCC ID**: TMEMF4100X004

Model Number: MF4100

(c)(3): **Instruction Manual(s)**:

Please See Attached Exhibits

(c)(4): **Type of Emission**: ASK

(c)(5): **FREQUENCY RANGE, MHz**: 13.56

(c)(6): **Power Rating, W**: 70 femto W

____ Switchable ____ Variable _X_ N/A

(c)(7): **Maximum Power Rating, W**: 5 micro W

15.203: **Antenna Requirement**:

_X_ The antenna is permanently attached to the EUT
_____ The antenna uses a unique coupling
_____ The EUT must be professionally installed
_____ The antenna requirement does not apply

Subpart 2.1033 (continued)

(c)(8): **Circuit Diagram/Circuit Description**:
Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please See Attached Exhibits

(c)(9): **Label Information**:

Please See Attached Exhibits

(c)(10): **Photographs**:

Please See Attached Exhibits

(c)(11): **Digital Modulation Description**:

___ Attached Exhibits
__X__ N/A

(c)(12): **Test And Measurement Data**:

Follows

Sub-part 2.1033(b):

Test And Measurement Data

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2 and the following individual Parts, 15.225.

Standard Test Conditions and Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-2003 unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Measurement results, unless otherwise noted, are worst-case measurements.

A2LA

"A2LA has accredited Compliance Testing in Chandler, AZ for technical competence in the field of Electrical testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO 17025:2005 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Please refer to www.a2la.org for current scope of accreditation.

Certificate number: 2152.01

ACCREDITED
TESTING CERT# 2152.01

FCC OATS Reg. #933597

IC Reg. # 2044A-1

Test Results Summary

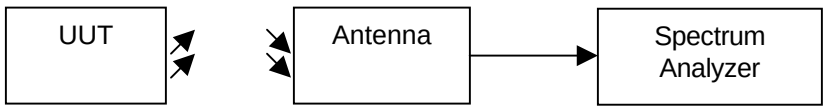
Specification	Test Name	Pass, Fail, N/A	Comments
15.225(a)	Fundamental Field Strength	Pass	
15.225(b)(c)(d)	Out of Band Spurious Emissions	Pass	
15.225(e)	Frequency Stability	Pass	
12.209	Radiated Emissions	Pass	
12.207	Conducted Powerline Emissions	Pass	
RSS-210	99% Occupied Bandwidth	Pass	

Name of Test: Field Strength
Specification: 15.225(a)(b)(c)(d) **Engineer: J. Erhard**
Test Equipment Utilized i00033, i00326 **Test Date: 9/24/2009**

Test Procedure

The UUT was tested on an anechoic chamber at a distance of 1 meter from the receiving loop antenna. The EUT was rotated 360 degrees with the receiving antenna on the X, Y, and Z-axis. A spectrum analyzer was used to verify that the UUT met the requirements for Fundamental Field Strength. The antenna correction and distance correction factors were summed with the quasi-peak measurement to ensure accurate readings were obtained. The following table indicates the highest emission in each of the indicated bands.

Test Setup



Field Strength

Frequency Band (MHz)	Measured Frequency (MHz)	Monitored Level (dBuV/m)	Distance CF (dB)	Antenna CF (dB)	Corrected Measurement (dBuV/m)	Limit (dBuV/m)	Result
13.110_13.410	13.348453	59.88	59.1	17.8	-17.02	40.51	Pass
13.410_13.553	13.54916	60.41	59.1	17.8	-16.49	50.47	Pass
13.553_13.567	13.56007	82.05	59.1	17.8	5.15	84.00	Pass
13.567_13.710	13.56871	63.79	59.1	17.8	-13.11	50.47	Pass
13.710_14.010	13.8602	32.36	59.1	17.8	-44.54	40.51	Pass

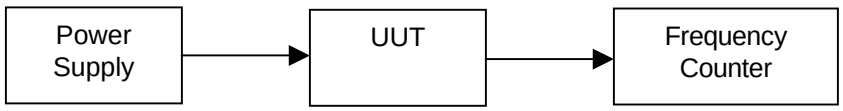
- Note. Cable correction factors are not included in this measurement as the low loss of the high quality TWINAX cable at low frequencies in practically non-existent.

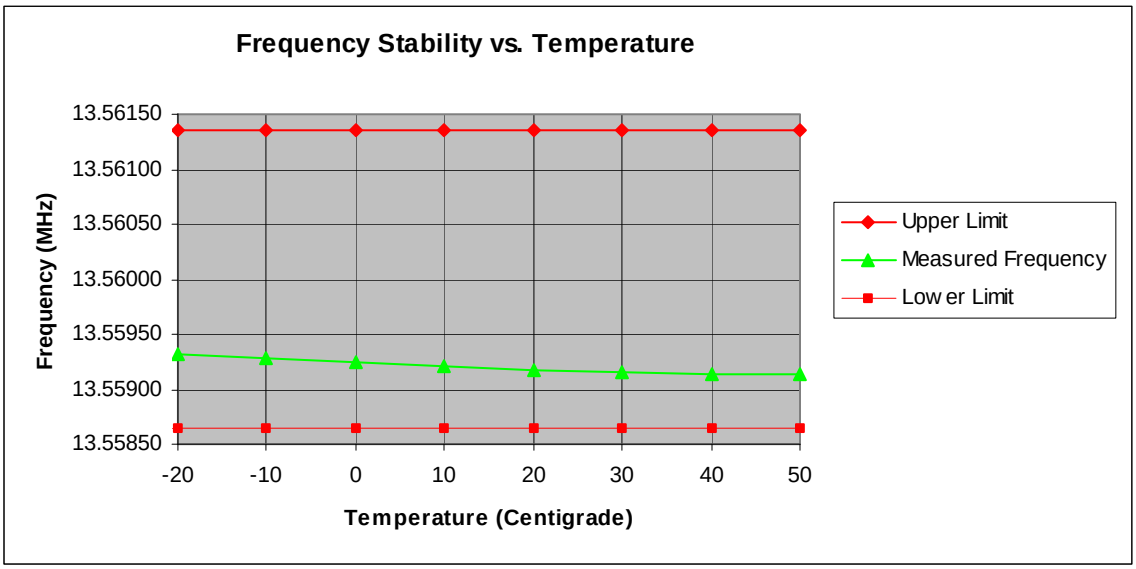
Name of Test: Frequency Stability
Specification: 15.225(e) **Engineer: J. Erhard**
Test Equipment Utilized i00019, i00027, i00108, i00319 **Test Date: 9/24/2009**

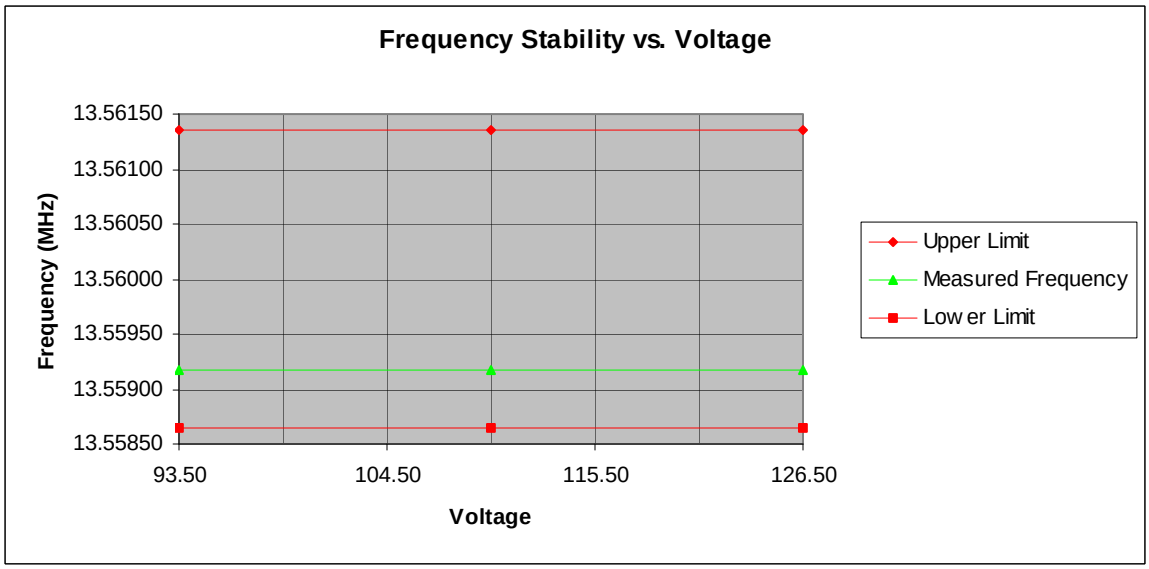
Test Procedure

The UUT was placed in an environmental test chamber and a frequency counter was utilized to verify that the frequency stability met the requirement for frequency stability across the temperature range from –20°C to +50°C. A variable power supply was used to vary the voltage from 85% to 115% of the rated voltage.

Test Setup





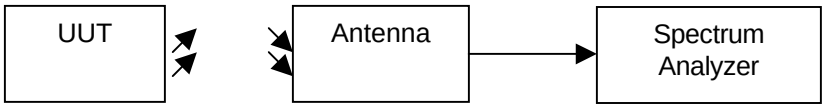


Name of Test: Radiated Emissions
Specification: 15.209 **Engineer: J. Erhard**
Test Equipment Utilized i00049, i00267 **Test Date: 9/24/2009**

Test Procedure

The UUT was tested on an Open Area Test Site (OATS) at a distance of 3 meters from the receiving antenna. A spectrum analyzer was used to verify that the UUT met the requirements for Radiated Emissions. The spectrum for each tuned frequency was examined beyond the 10th harmonic.

Test Setup



Radiated Emissions

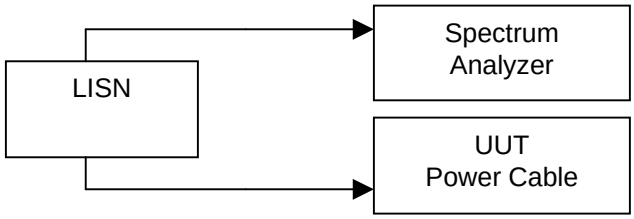
Emission Freq (MHz)	Measured Value (dBuV/m)	Correction Factor (dB)	Corrected Value (dBuV/m)	Limit (dBuV/m)	Margin dB
41.660	12.8	12.8	25.6	40.0	-14.4
142.956	15.3	13.9	29.2	43.0	-13.8
170.910	28.1	12.1	40.2	43.0	-2.8
221.030	18.7	12.3	31.0	46.0	-15.0
285.988	24.8	15.0	39.8	46.0	-6.2
337.977	23.8	16.7	40.5	46.0	-5.5

Name of Test: Powerline Conducted Emissions
Specification: 15.207 **Engineer: J. Erhard**
Test Equipment Utilized i00033, i00270 **Test Date: 9/24/2009**

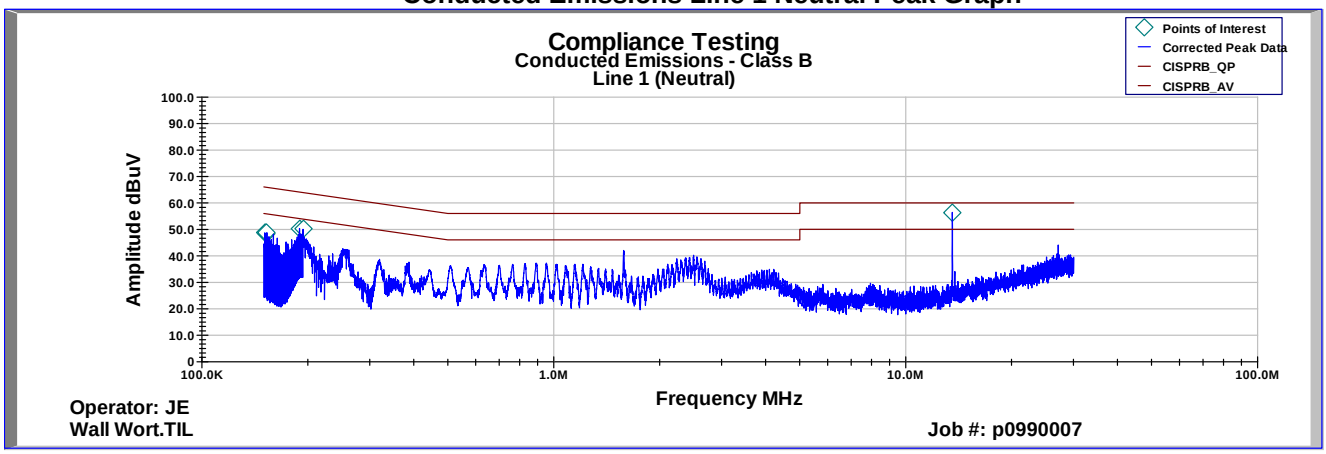
Test Procedure

The UUT power cable connected to a LISN and the monitored output of the LISN was connected directly to a spectrum analyzer. The conducted emissions from 150 kHz to 30 MHz were monitored and compared to the specification limits. The average measurements were the worst-case and are recorded in the tables below.

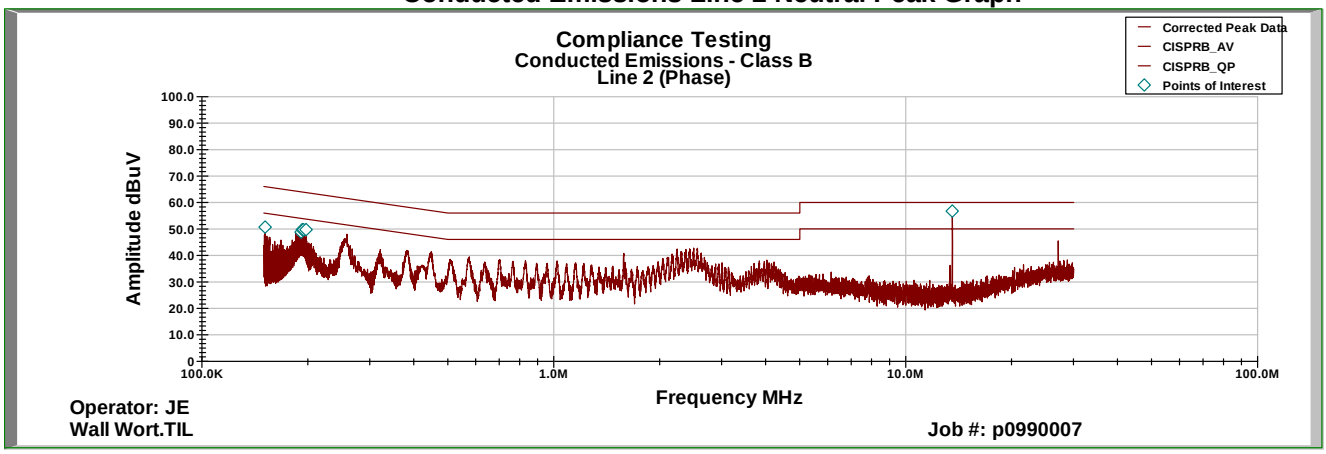
Test Setup



Conducted Emissions Line 1 Neutral Peak Graph



Conducted Emissions Line 2 Neutral Peak Graph



Line 1 Neutral AVG Detector

Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L1	Limit	AVG Margin (dB)
13.559 MHz	35.99	0.00	0.692	10.000	46.682	50.000	-3.318
192.97 KHz	18.15	0.20	0.011	10.000	28.361	54.772	-26.411
187.53 KHz	16.77	0.20	0.004	10.000	26.971	54.928	-27.957
150.95 KHz	14.12	0.29	0.041	10.000	24.454	55.973	-31.518
150.65 KHz	14.34	0.29	0.041	10.000	24.671	55.982	-31.310
150.33 KHz	14.32	0.30	0.038	10.000	24.654	55.991	-31.336

Line 2 Phase AVG Detector

Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L2	Limit	AVG Margin (dB)
13.56 MHz	34.63	0.00	0.691	10.000	45.321	50.000	-4.679
194.48 KHz	21.16	0.20	0.011	10.000	31.371	54.729	-23.358
193.01 KHz	21.53	0.20	0.011	10.000	31.741	54.771	-23.030
192.25 KHz	21.24	0.20	0.012	10.000	31.452	54.793	-23.341
190.51 KHz	21.13	0.20	0.008	10.000	31.341	54.843	-23.501
151.83 KHz	15.41	0.28	0.041	10.000	25.730	55.948	-30.218

Line 1 Neutral QP Detector

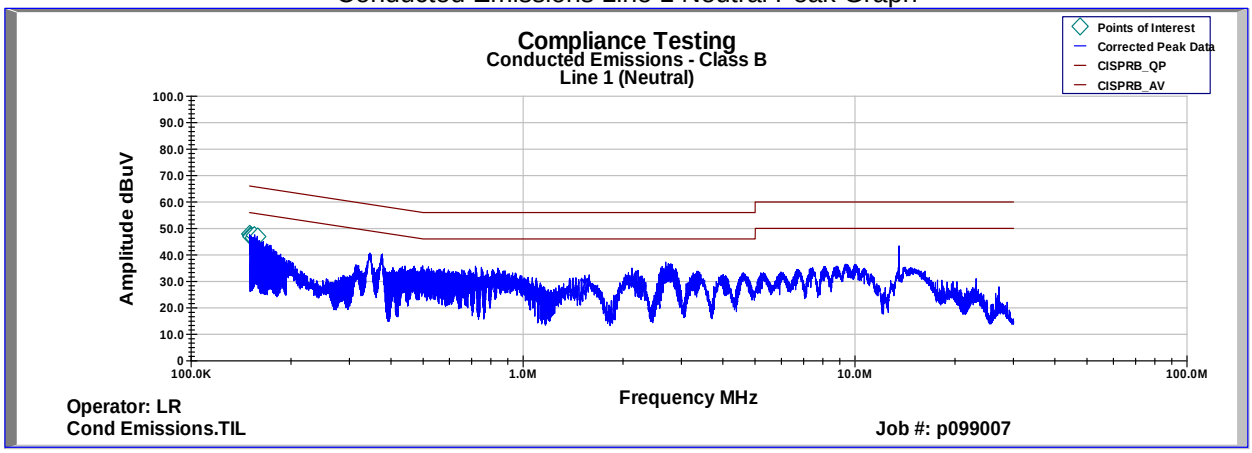
Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L1	Limit	QP Margin (dB)
13.559 MHz	45.280	0.000	0.692	10.000	55.972	60.000	-4.028
192.97 KHz	35.150	0.200	0.011	10.000	45.361	64.772	-19.411
187.53 KHz	34.310	0.200	0.004	10.000	44.514	64.928	-20.414
150.95 KHz	31.940	0.291	0.041	10.000	42.271	65.973	-23.702
150.65 KHz	32.010	0.294	0.041	10.000	42.344	65.982	-23.637
150.33 KHz	32.000	0.297	0.038	10.000	42.334	65.991	-23.656

Line 2 Phase QP Detector

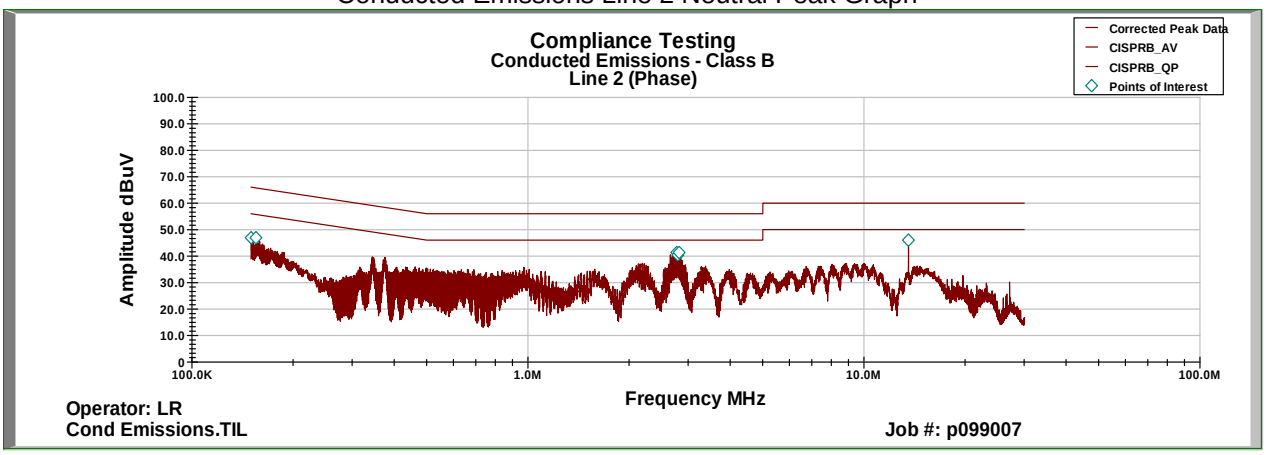
Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L2	Limit	QP Margin (dB)
13.56 MHz	44.46	0.00	0.691	10.000	55.151	60.000	-4.849
194.48 KHz	35.26	0.20	0.011	10.000	45.471	64.729	-19.258
193.01 KHz	35.15	0.20	0.011	10.000	45.361	64.771	-19.410
192.25 KHz	35.71	0.20	0.012	10.000	45.922	64.793	-18.871
190.51 KHz	35.69	0.20	0.008	10.000	45.898	64.843	-18.945
151.83 KHz	32.04	0.28	0.041	10.000	42.363	65.948	-23.585

Conducted Emissions Power Over Ethernet Option

Conducted Emissions Line 1 Neutral Peak Graph



Conducted Emissions Line 2 Neutral Peak Graph



Line 1 Neutral AVG Detector

Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L1	Limit	AVG Margin (dB)
154.72 KHz	16.17	0.25	0.039	10.000	26.465	55.865	-29.400
153.04 KHz	16.13	0.27	0.041	10.000	26.444	55.913	-29.469
152.24 KHz	15.92	0.28	0.039	10.000	26.240	55.936	-29.696
151.12 KHz	16.02	0.29	0.041	10.000	26.353	55.968	-29.615
150.24 KHz	16.24	0.30	0.039	10.000	26.573	55.993	-29.420
150.08 KHz	16.55	0.30	0.043	10.000	26.893	55.998	-29.105

Line 2 Phase AVG Detector

Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L2	Limit	AVG Margin (dB)
13.558 MHz	26.71	0.00	0.694	10.000	37.400	50.000	-12.600
2.8115 MHz	15.44	0.00	0.318	10.000	25.758	46.000	-20.242
2.7835 MHz	16.38	0.00	0.312	10.000	26.695	46.000	-19.305
2.7643 MHz	17.24	0.00	0.319	10.000	27.556	46.000	-18.444
155.12 KHz	22.58	0.25	0.042	10.000	32.874	55.854	-22.980
150.05 KHz	23.66	0.30	0.043	10.000	34.003	55.998	-21.996

Line 1 Neutral QP Detector

Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L1	Limit	QP Margin (dB)
154.72 KHz	30.930	0.253	0.039	10.000	41.222	65.865	-24.643
153.04 KHz	30.420	0.270	0.041	10.000	40.731	65.913	-25.183
152.24 KHz	30.610	0.278	0.039	10.000	40.926	65.936	-25.010
151.12 KHz	30.760	0.289	0.041	10.000	41.090	65.968	-24.878
150.24 KHz	31.010	0.298	0.039	10.000	41.347	65.993	-24.647
150.08 KHz	31.420	0.299	0.043	10.000	41.763	65.998	-24.235

Line 2 Phase QP Detector

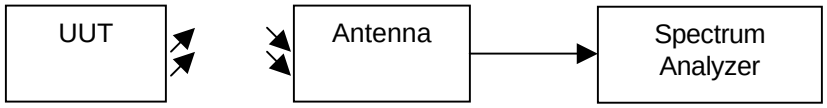
Frequency (MHz)	Uncorrected Data (dBuV)	LISN Corr Fact (dB)	Cable Loss (dB)	Attenuator (dB)	Final L2	Limit	QP Margin (dB)
13.558 MHz	34.49	0.00	0.694	10.000	45.184	60.000	-14.816
2.8115 MHz	25.01	0.00	0.318	10.000	35.328	56.000	-20.672
2.7835 MHz	25.10	0.00	0.312	10.000	35.412	56.000	-20.588
2.7643 MHz	25.23	0.00	0.319	10.000	35.549	56.000	-20.451
155.12 KHz	30.74	0.25	0.042	10.000	41.030	65.854	-24.823
150.05 KHz	30.81	0.30	0.043	10.000	41.153	65.998	-24.846

Name of Test: 99% Occupied Bandwidth
Specification: RSS 210 Industry Canada Only **Engineer: J. Erhard**
Test Equipment Utilized i00033, i00326 **Test Date: 9/24/2009**

Test Procedure

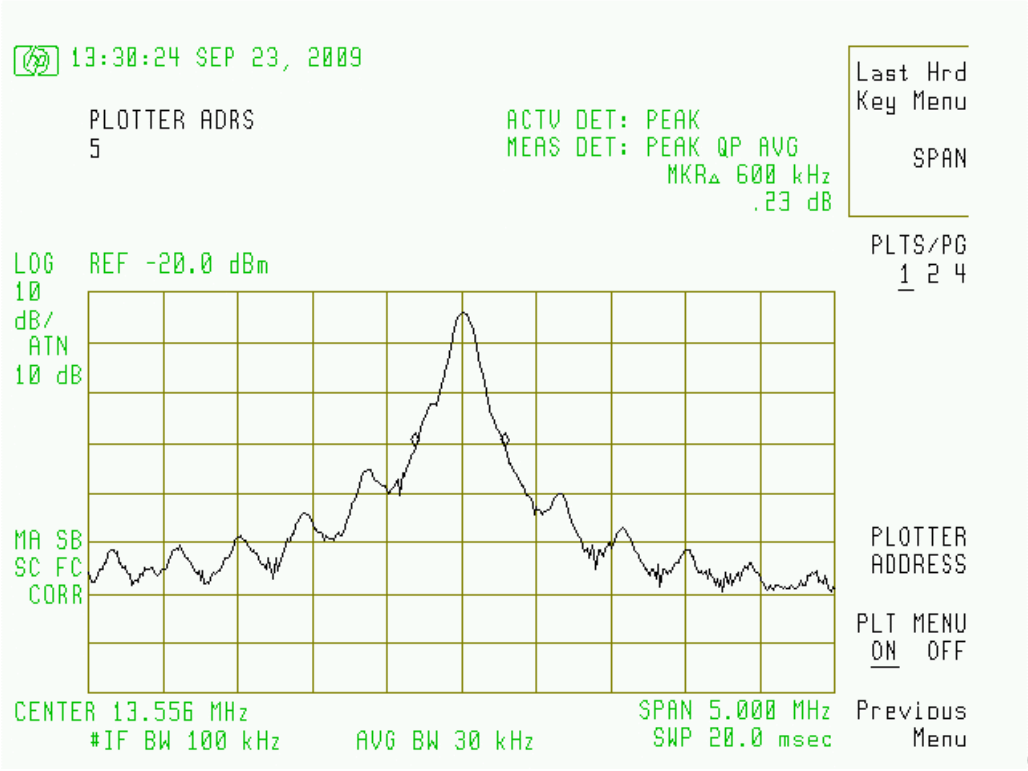
The UUT was tested on an anechoic chamber at a distance of 1 meter from the receiving loop antenna. A spectrum analyzer was used to measure the 99% occupied bandwidth.

Test Setup



99% Bandwidth Summary

Frequency MHz	Recorded Measurement	Result
13.56	600 kHz	Pass



600

Test Equipment Utilized

Description	MFG	Model Number	FTL Asset Number	Last Cal Date	Cal Due Date
Frequency Counter	HP	5334B	i00019	1/26/09	1/26/11
Temperature Chamber	Tenney	Tenney Jr	i00027	12/8/08	12/8/09
Spectrum Analyzer	HP	85462A	i00033	10/14/08	10/14/09
Spectrum Analyzer	HP	8566B	i00049	12/04/08	12/04/09
Variac	Powerstat	3PN126	i00108	NCR	NCR
Bi-Log Antenna	Schaffner	CBL6111C	i00267	11/6/07	11/6/09
LISN	FCC	FCC-LISN-50-32-2-01	i00270	9/17/08	9/17/10
DMM	Fluke	87 III	i00319	12/5/08	12/5/09
Active Loop Antenna	EMCO	6507	i00326	4/1/09	4/1/11

In addition to the above listed equipment standard RF connectors and cables were utilized in the testing of the described equipment. Prior to testing these components were tested to verify proper operation.

END OF TEST REPORT