



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: November 4, 2009

Federal Communications Commission
Via: Electronic Filing

Attention: Authorization & Evaluation Division

Applicant: Blackboard, Inc.
Equipment: SE3-RDR100
FCC ID: TMESE3100X006
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

List Of Exhibits(FCC **Certification** (Transmitters) - Revised 9/28/98)**Applicant:** Blackboard, Inc.**FCC ID:** TMESE3100X006**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: TMESE3100X006

Model: SE3-RDR100

to

Federal Communications Commission

Rule Part(s)15.225

Date Of Report: November 4, 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

John Erhard: Engineering Manager

Supervised By:



Test Report Revision History

Revision	Date	Revised By	Reason for revision
1.0	November 4, 2009	J. Erhard	Original Document
2.0	December 11, 2009	J. Erhard	Add Receiver Spurious Emissions data



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.

A handwritten signature in black ink, appearing to read "John Erhard".

John Erhard: Engineering Manager

Certifying Engineer:



Table Of Contents

Rule	Description	Page
	Test Report	1
2.1033(c)	General Information Required	2
	Standard Test Conditions and Engineering Practices	4
	Test Results Summary	5
15.225(a)(b)(c)(d)	Field Strength	6
15.225(e)	Frequency Stability	7
15.209	Radiated Emissions	8
15.207	Powerline Conducted Emissions	9
RSS 210 99%	Occupied Bandwidth	11
RSS-GEN	Receiver Spurious Emissions	12
	Test Equipment Utilized	13



Required information per ISO 17025-2005, paragraph 5.10.2:

a) **Test Report**

b) Laboratory: Compliance Testing
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044A-1) Chandler, AZ 85225

c) Report Number: d09b0013

d) Client: Blackboard, Inc.

e) Identification: SE3-RDR100

Description: 13.56 MHz Point of Sale Device

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: November 4, 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:** TMESE100X006

Model Number: SE3-RDR100

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

Please See Attached Exhibits

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

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

(c)(6): **Power Rating, W:** N/A
 Switchable Variable N/A

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

15.203: Antenna Requirement:

- 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

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 C63.4-2009 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



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	
RSS-GEN	Receiver Spurious Emissions	Pass	



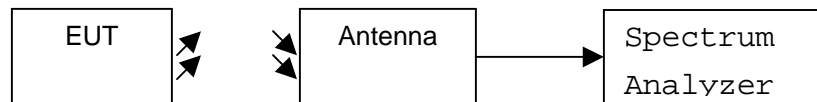
Name of Test: Field Strength
Specification: 15.225(a)(b)(c)(d)
Test Equipment Utilized: i00326, i00033

Engineer: J. Erhard
Test Date: 10/27/2009

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 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	13.3492	50.03	59.1	17.8	-26.87	40.51	Pass
13.410_13.553	13.548	53.78	59.1	17.8	-23.12	50.47	Pass
13.553_13.567	13.56	76.54	59.1	17.8	-0.36	84.00	Pass
13.567_13.710	13.5703	54.56	59.1	17.8	-22.34	50.47	Pass
13.710_14.010	13.7716	44.76	59.1	17.8	-32.14	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 is practically non-existent.



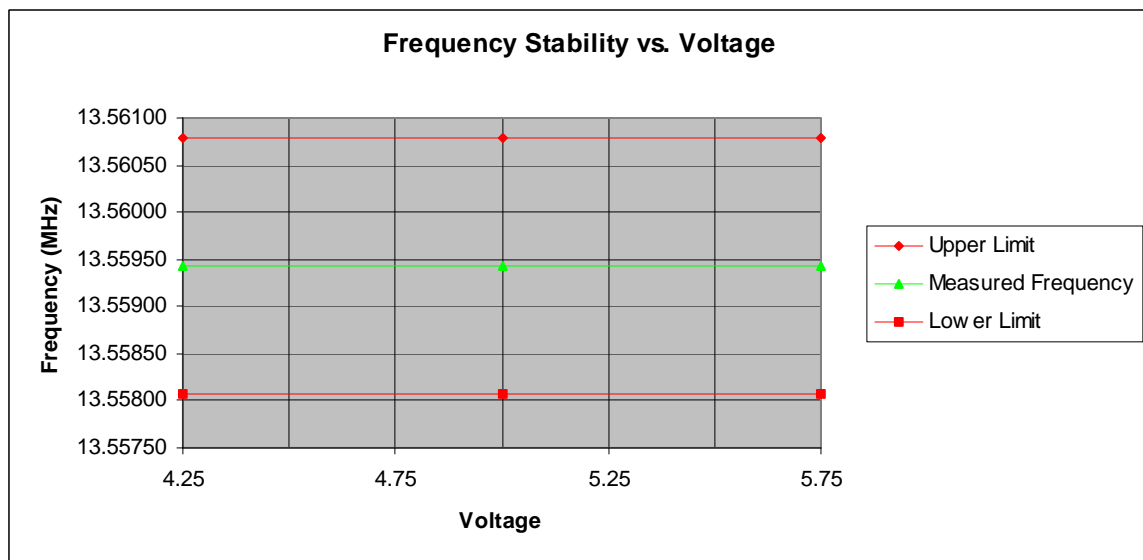
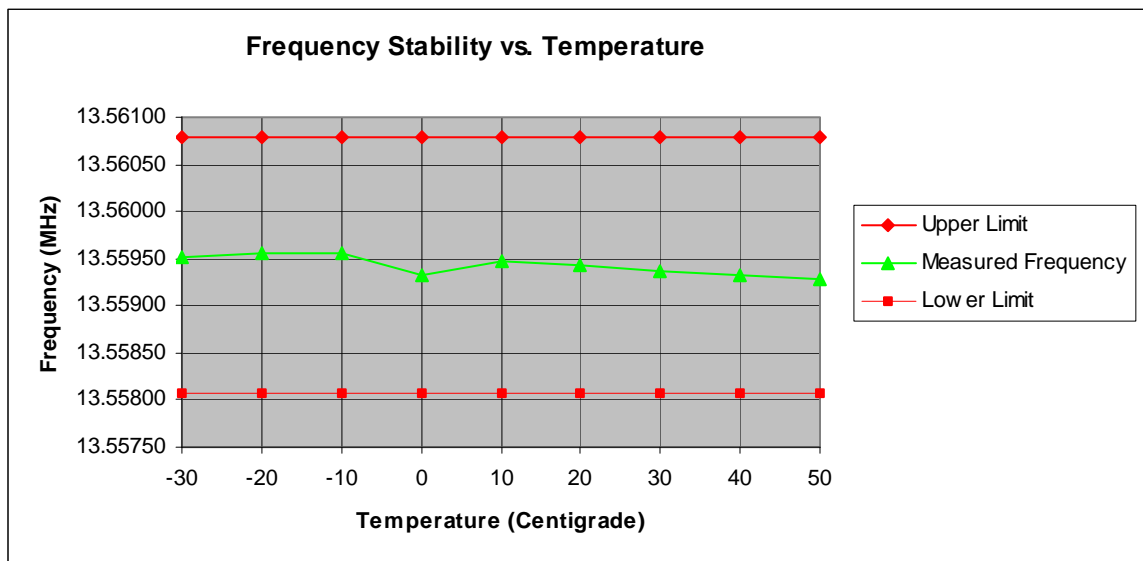
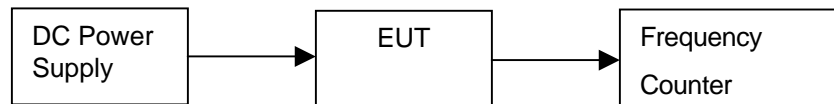
Name of Test: Frequency Stability
Specification: 15.225(e)
Test Equipment Utilized: i00019, i00027, i00054

Engineer: J. Erhard
Test Date: 10/27/2009

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 DC power supply was used to vary the voltage from 85% to 115% of the rated voltage.

Test Setup





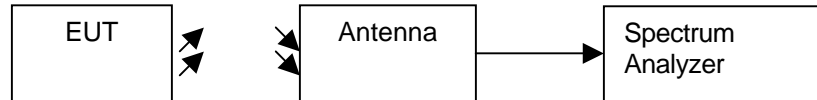
Name of Test: Radiated Emissions
Specification: 15.209
Test Equipment Utilized: i00049, i00267

Engineer: J. Erhard
Test Date: 10/28/2009

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
38.468	13.8	16.12	29.92	40	-10.08
190.872	14.5	11.23	25.73	43	-17.3
237.700	14.2	13.57	27.77	46	-18.2
323.316	13.8	16.45	30.25	46	-15.8
457.804	13.8	19.93	33.73	46	-12.3
636.808	13.8	23.1	36.93	46	-9.1

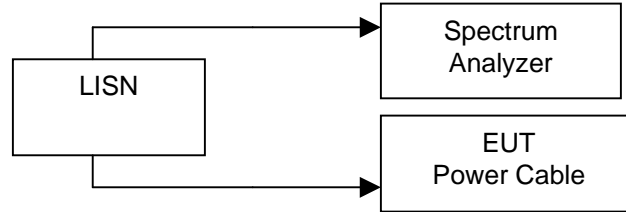
Name of Test: Powerline Conducted Emissions
 Specification: 15.207
 Test Equipment Utilized: i00033, i00270

Engineer: J. Erhard
 Test Date: 10/28/2009

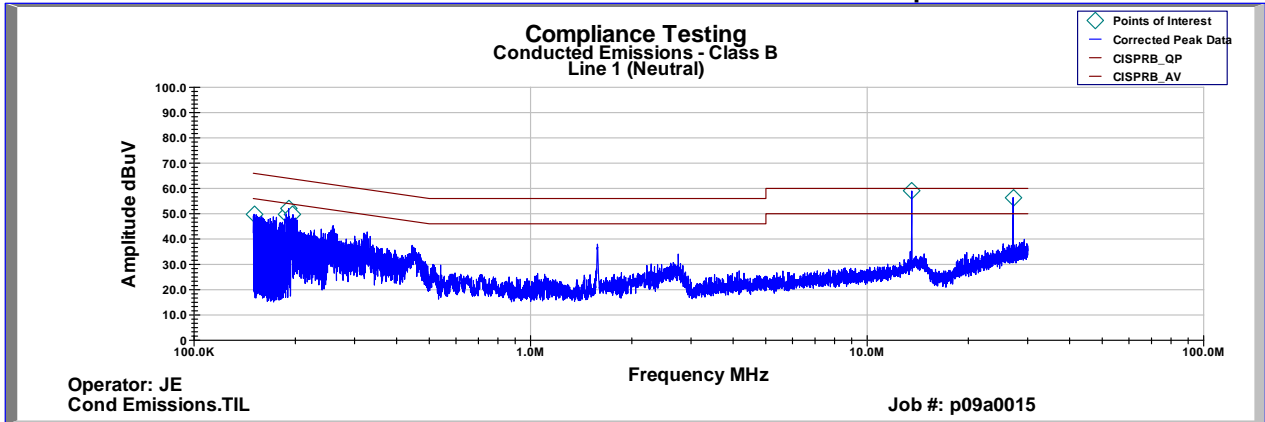
Test Procedure

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.

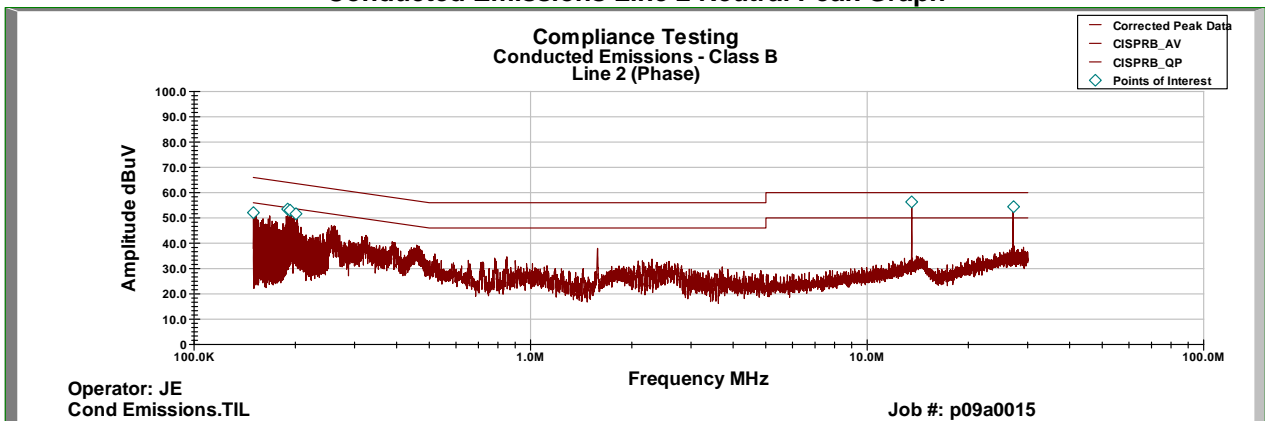
Test Setup



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)
27.12 MHz	33.36	0.20	1.044	10.000	44.604	50.000	-5.396
13.562 MHz	34.31	0.00	0.689	10.000	44.999	50.000	-5.001
198.5 KHz	11.45	0.20	0.022	10.000	21.668	54.614	-32.946
195.74 KHz	11.57	0.20	0.017	10.000	21.790	54.693	-32.903
191.1 KHz	11.16	0.20	0.010	10.000	21.370	54.826	-33.456
151.33 KHz	9.83	0.29	0.044	10.000	20.157	55.962	-35.805

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)
27.121 MHz	31.84	0.20	1.043	10.000	43.087	50.000	-6.913
13.56 MHz	36.66	0.00	0.691	10.000	47.348	50.000	-2.652
199.12 KHz	15.04	0.20	0.024	10.000	25.264	54.597	-29.333
194.84 KHz	15.73	0.20	0.015	10.000	25.948	54.719	-28.771
194.55 KHz	15.45	0.20	0.013	10.000	25.660	54.727	-29.067
150.72 KHz	10.15	0.29	0.039	10.000	20.485	55.979	-35.494

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)
27.12 MHz	44.110	0.200	1.044	10.000	55.354	60.000	-4.646
13.562 MHz	45.280	0.000	0.689	10.000	55.969	60.000	-4.031
198.5 KHz	32.400	0.200	0.022	10.000	42.622	64.614	-21.993
195.74 KHz	32.770	0.200	0.017	10.000	42.987	64.693	-21.707
191.1 KHz	33.100	0.200	0.010	10.000	43.310	64.826	-21.516
151.33 KHz	33.210	0.287	0.044	10.000	43.540	65.962	-22.422

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)
27.121 MHz	42.83	0.20	1.043	10.000	54.073	60.000	-5.927
13.56 MHz	47.25	0.00	0.691	10.000	57.941	60.000	-2.059
199.12 KHz	33.61	0.20	0.024	10.000	43.834	64.597	-20.763
194.84 KHz	34.67	0.20	0.015	10.000	44.885	64.719	-19.834
194.55 KHz	34.32	0.20	0.013	10.000	44.533	64.727	-20.194
150.72 KHz	33.67	0.29	0.039	10.000	44.002	65.979	-21.977



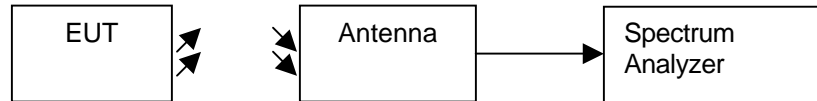
Name of Test: 99% Occupied Bandwidth
Specification: RSS 210 Industry Canada Only
Test Equipment Utilized: i00326, i00033

Engineer: J. Erhard
Test Date: 10/28/2009

Test Procedure

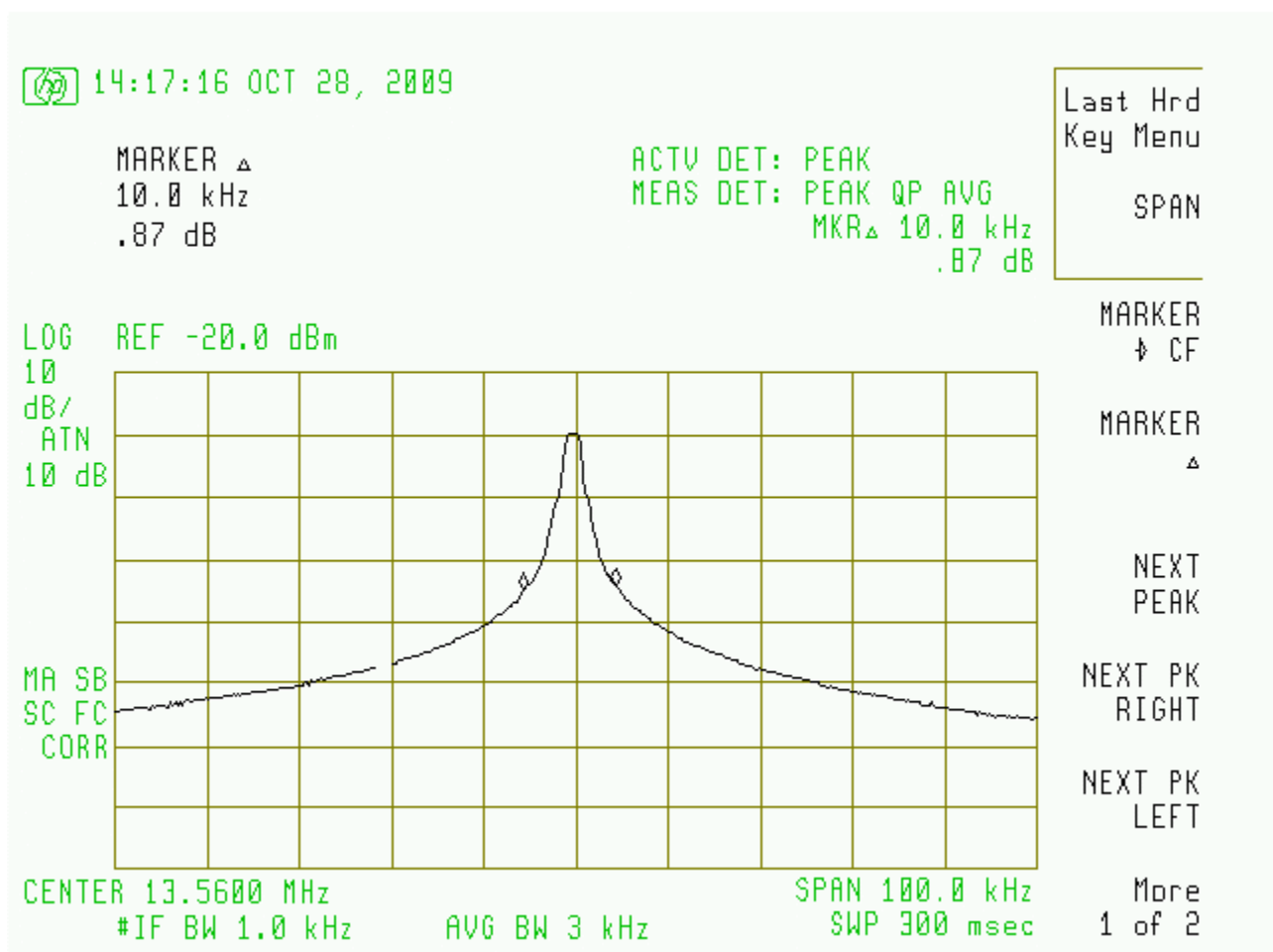
The UUT was tested on an anechoic chamber at a distance of 1 meter from the receiving loop antenna. A spectrum analyzer was used to measure the 99% occupied bandwidth.

Test Setup



99% Bandwidth Summary

Frequency MHz	Recorded Measurement	Result
13.56	10.0 kHz	Pass





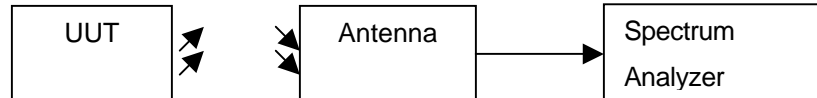
Name of Test: Receiver Spurious Emissions
Specification: RSS-GEN 6(a)
Test Equipment Utilized i00049, i00267

Engineer: J. Erhard
Test Date: 10/28/2009

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 from 30 MHz to 1 GHz.

Test Setup



Radiated Emissions

Emission Freq (MHz)	Measured Value (dBuV/m)	Correction Factor (dB)	Corrected Value (dBuV/m)	Limit (dBuV/m)	Margin dB
65.230000	22.0	-3.7	18.3	39.1	-20.8
242.653000	22.0	3.4	25.4	46.4	-21.0
386.120000	22.0	7.5	29.5	46.4	-16.9
493.891000	22.1	10.0	32.1	46.4	-14.3
621.453000	22.1	12.5	34.6	46.4	-11.8
761.832000	22.1	15.1	37.2	46.4	-9.2

**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	12/3/08	12/3/09
Power Supply	HP	6286A	i00054	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

* 30 Day calibration extension.

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