Report No: 040355_02_15.209
Client: Secura Key
FCC ID: NNHETAG4-LPA1

023

Industry Canada
Industrie Canada

NVLAP LAB CODE: 200413-0

April 13, 2004

Test Record

Product Verification
According to FCC Part 15 Subpart B

for

Secura Key

MODEL: ETO-RE-AOB

TABLE OF CONTENTS

Revision History

Revision	Date	Description of Changes	Author
0.1	13 April. 2004	Initial document	S. Sohn
0.2	20 April , 2004	Correction on page 14 to 0.15 MHz	L. Kogan

Introduction – Test Plan

This report describes the results of radiated and conducted emission measurements made on an ITE which falls under the class of unintentional radiator by the FCC Rules and Regulations.

This EUT is designated: **e*Tag Quasar Reader**
Model: ETO-RE-AOB

This product is designed and manufactured by **Secura Key.**

The EUT should be in full compliance with the FCC Part 15, Class B Regulations using the methods of ANSI C63.4.

1.0 CERTIFICATION OF TEST DATA

Verification statement.

The data, data evaluation and equipment configuration represented herein are a true and accurate representation of the test sample (EUT), and EMC characteristics and measurements obtained as of the dates and the times of the test under the conditions specified and to the methods of ANSI C63.4: 2000
All measurements are traceable to the National Institute of Standards and Technology (NIST).

The test results provided with this report, indicate that the equipment tested:
e*Tag Quasar Reader. Model: ETO-RE-AOB is compliant with the following Rules and Regulations without any modifications of the design:

A. 47 Code of Federal Regulations, Part 15, Subpart B,2002. Performance Criterion: class B (15.207 and 15.209)
B. ICES-003 Interference-Causing Equipment Standard: 1997. Performance Criterion: class B
C. ANSI C63.4: 2000

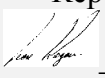
Tests performed by:

_____
Sandra Sohn
EMC Test Engineer

Report prepared by:

_____
Sandra Sohn
EMC Test Engineer

Report approved by:



_____
Leon Kogan
Technical Director,

JMR Compliance Engineering, 20400 Plummer Street, Chatsworth CA 91311.
E-mail:emc@jmr.com

2.0 General Information

2.1 Client Information

Company Name:	Secura Key.
Contact:	Charley Lee
Company Address:	20447 Nordhoff Street Chatsworth, CA 91311
Phone:	818.882-0020

2.2 Administrative Data

Device tested:	e*Tag Quasar Reader
Model:	ETO-RE-AOB
Accessories:	N/A
Expository Statement:	This device is intended for use in commercial and residential environments.
Equipment category:	Intentional Radiators, Low Power Unlicensed Transmitter
Purpose of test:	Demonstrate compliance with FCC Rules, Part 15,Subpart B, Class B.
Date of test:	April 6-12, 2004
Place of the test:	JMR Electronics, Inc. Compliance Engineering Laboratory 20400 Plummer Street Chatsworth, CA 91311 Phone: (818) 993-4801

3.0 Description of Equipment Under Test (EUT)

3.1 Brief Description of the EUT

The ETO-RE-AOB is Vicinity RFID reader/writer which is used for a wide variety of Automatic Identification and Data Collection applications. Compliant with ISO 15693 standards. The unit consists of Antenna Board and Embedded Reader Board.

Operating Frequencies:	13.56MHz
Number of Channel:	1
Type of Modulation:	FSK
Modulation depth:	100%
Antenna:	Antenna uses a unique coupling to the intentional radiator.

3.2 Test Run

The EUT exercise program was designed to generated its frequency continuously for the duration of the testing. The above mentioned set-up allowed the article to perform sufficiently for the test purposes and required time.

3.3 Support Equipment List:

Equipment	Printer, DataMax Corporation
Model No.	DMX-I-4210

Equipment	AC Adaptor, Secura Key
Model No.	4897

3.4 Cabling Configuration

Power Cords:

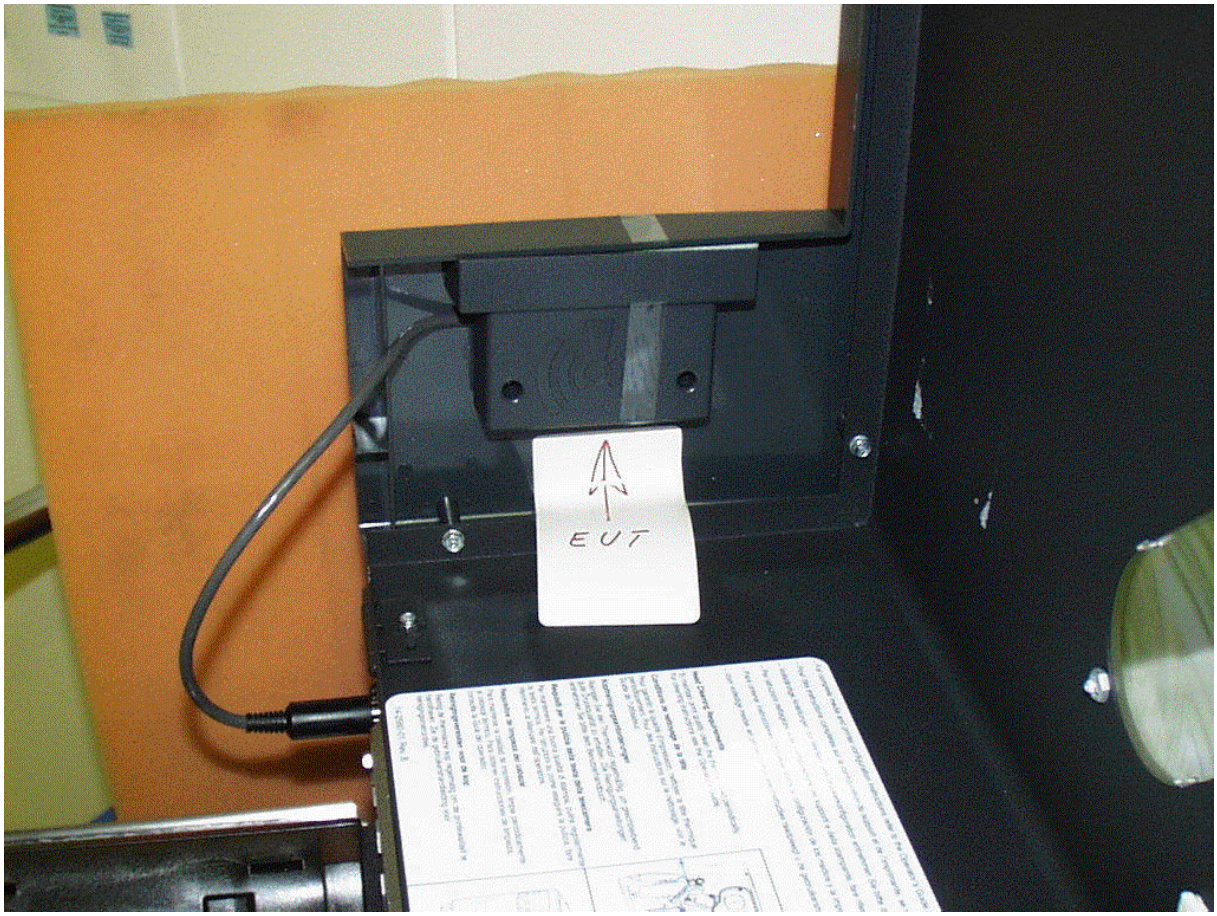
Unit	Printer
MFG	Generic
Shielded	No
Length	1.8 m

Unit	AC Adaptor
MFG	Generic
Shielded	No
Length	1.8 m

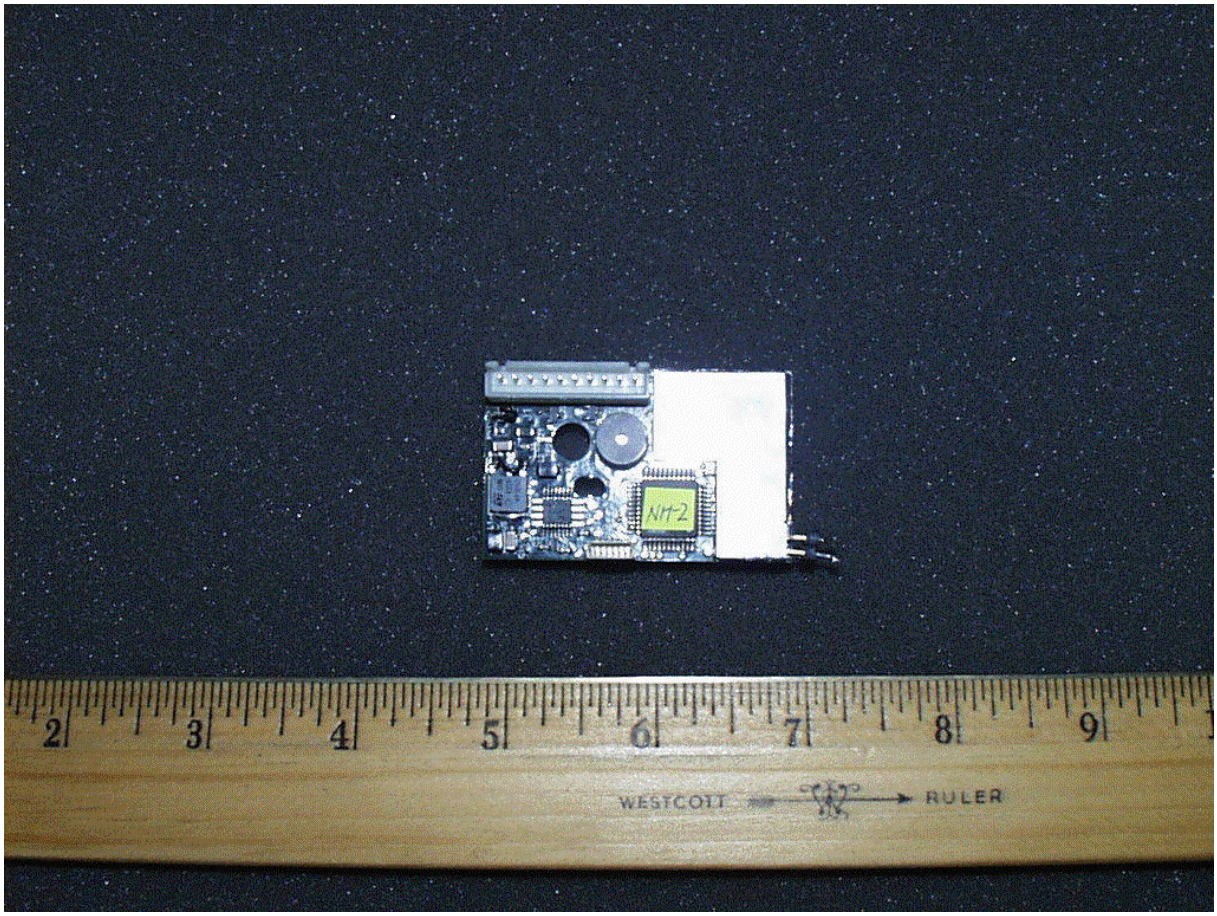
I / O Cables External:

Connection	Printer to Reader
MFG	Secura Key
Shielded?	No
Length	30 cm

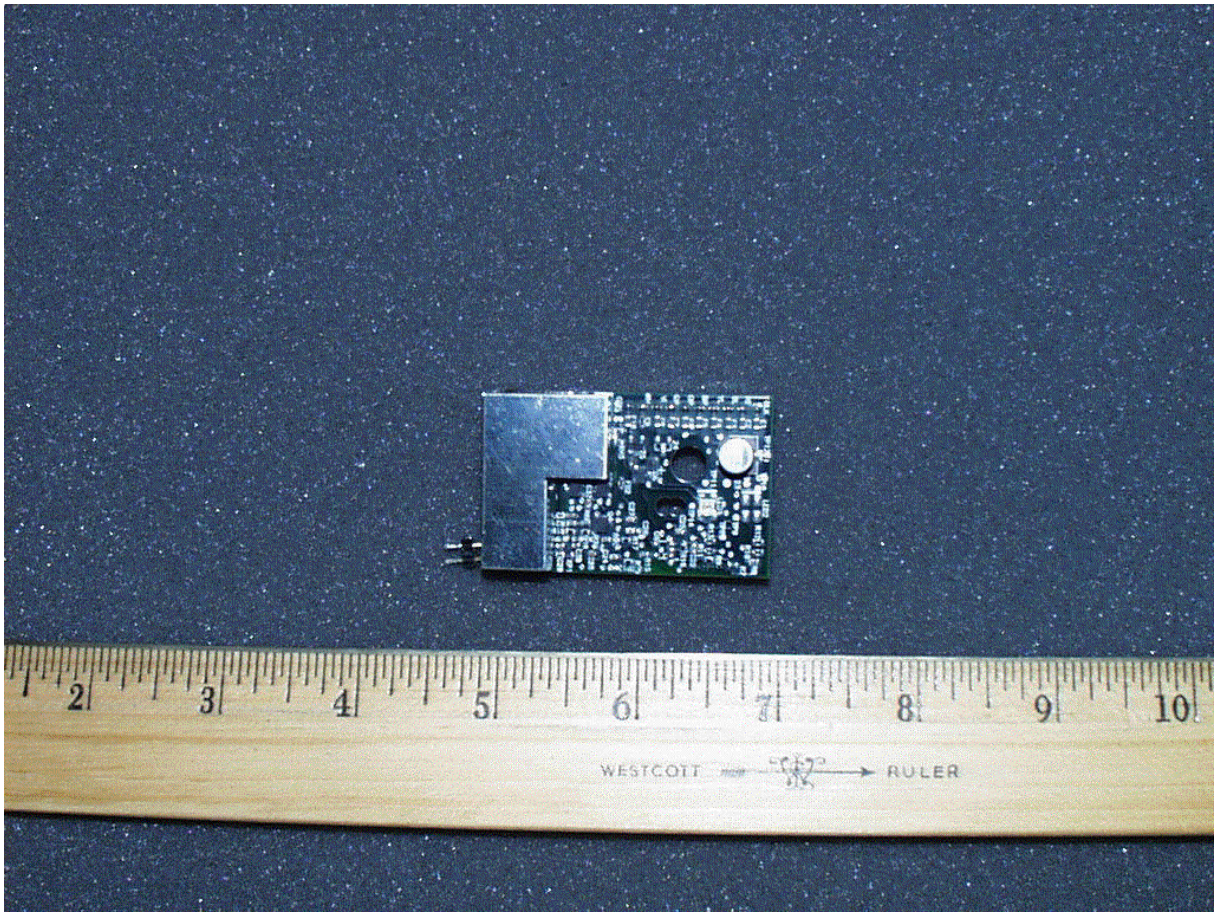
3.5 Photographs of the EUT



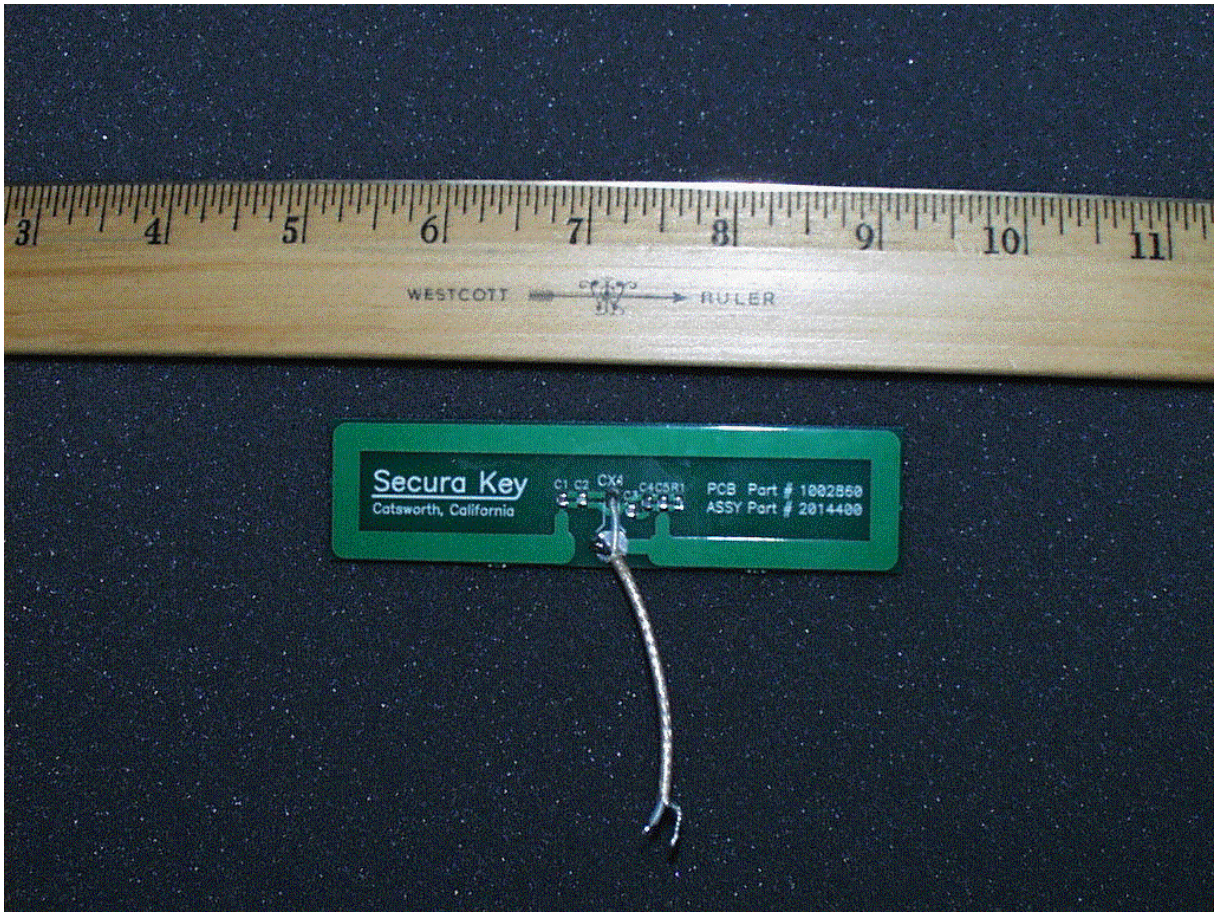
Exterior View
(EUT Location)



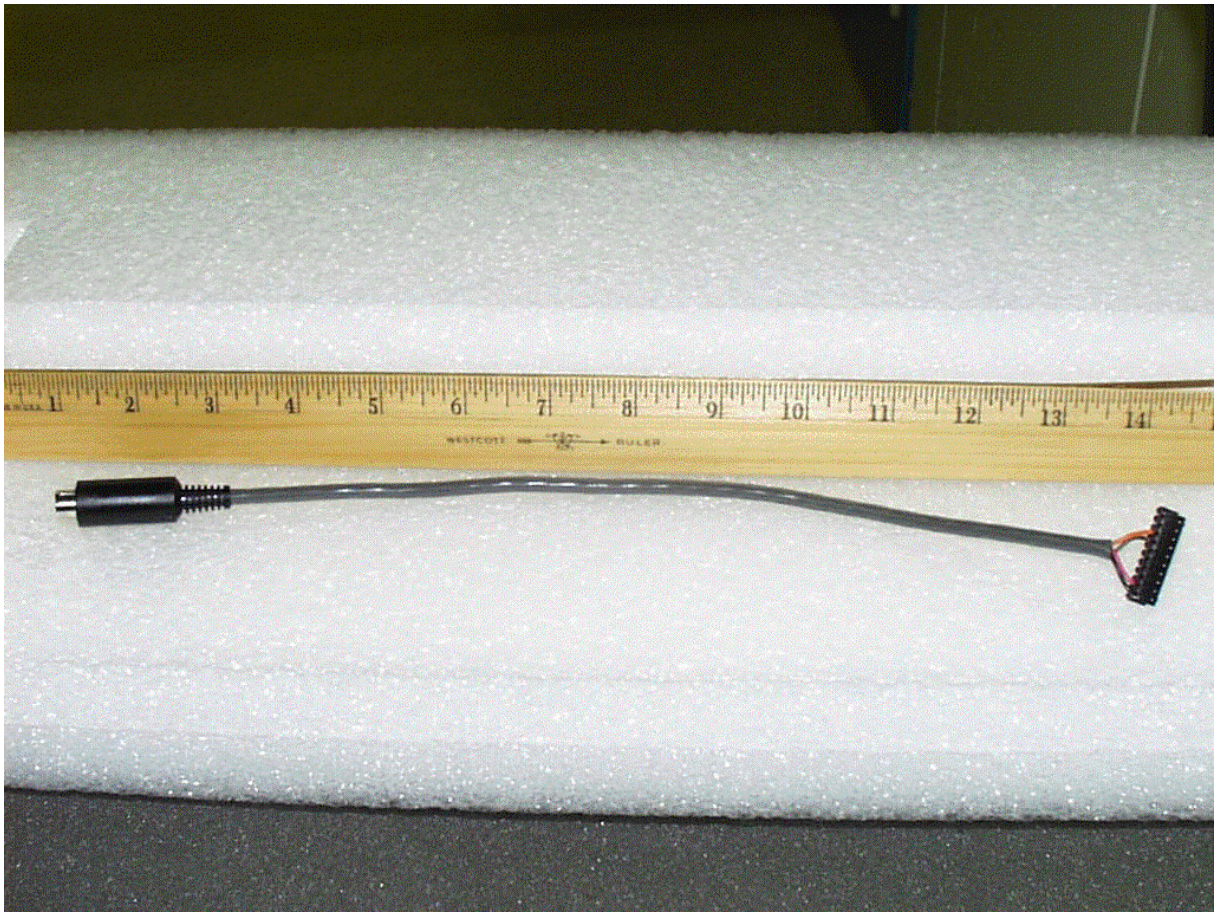
Interior View
(Reader Component Side)



Interior View
(Reader Solder Side)



Interior View
(Antenna)



Interior View
(Cable)

3.6 EUT Modifications

N/A

3.7 Photographs of EUT Modifications

N/A

4.0 Radiated and Conducted Emissions

4.1 Test Specifications

Specification:	ANSI C63.4: 2000
Title:	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.
Specification:	FCC 47 CFR, Part 15, Subpart B, Class B: 2002
Title:	Code of Federal Regulations, Telecommunication
Specification:	JMR Work Procedure W090-5205
Title:	Conducted Emission Test
Specification:	JMR Work Procedure W090-5206
Title:	Radiated Emission Test

4.1.1 Test Requirements.

The EUT must meet Performance Criterion : Class B.

4.2 Radiated Emissions Test

4.2.1 Procedure of Radiated Emissions Test

The EMC radiated test facility consists of a shielded semi-anechoic chamber with attached shielded control room. The semi-anechoic chamber is approximately 18 feet wide by 28 feet long by 19 feet high. A hybrid absorber combines high performance anechoic polyurethane foam with a ferrite tile base to achieve high levels of absorption and power dissipation capability.

The test site is designed according to the ANSI 63.4 -2000 requirements and the anechoic treatment of the chamber is sufficient to achieve the requirements of CISPR 22 and ANSI C63.4. The test site description along with the site attenuation data has been filed with the FCC and a letter of compliance with the requirements of Section 2.948 of the FCC Rules was issued on August 20,1998 by the FCC.

The EUT was tested in compliance with Section 11 of the ANSI C63.4 standard. All data was obtained via the HP 85876A EMI measurement software package using the HP 85462A Receiver.

After determination of the maximum emissions configuration the distance of the EUT to the scanning antenna was set to 3 meters.
Radiated emissions were then monitored from the EUT over a frequency range of 30 MHz to 2000 MHz in horizontal polarization with the scanning antenna repeatedly moving from 1 to 4 meters in elevation while the turntable rotated through a 360 degree arc. This procedure was then repeated in vertical polarization to confirm the strongest signals and polarization orientation. This part of the test sequence the spectrum check is done in a manual mode.
After it is determined by the results of the spectrum check scan that the article is compliant the EUT is then measured in completely automatic mode using a Hewlett Packard 8546A EMI Receiver (9 kHz - 6.5 GHz) and HP 85876A EMI Measurement Software test system.
The HP Software, after scanning the EUT in Peak mode, automatically selects the strongest signal from the EUT and then Quasi-Peaks and Averages those strong signals to determine EUT compliance to the standards.
The measurement values are data reduced and then presented as both graphical results of the spectrum check and tabulated QP and Averages of the strongest signals in this report.

4.3 Conducted Emissions Test

4.3.1 Procedures of Conducted Emission Test

Conducted emission test is done in the "Peak Detector" mode for Line 1, which is high line to ground over a frequency range of 0.15 MHz to 30 MHz. Then the RFI emissions are measured from Line 2, or neutral to ground over the same frequency range.. When Peak amplitudes are found to be above the limits, or within 10 dB of the limits, a Quasi-Peak Detector Mode and Average Detector Mode for the line or lines with excessive RFI is then performed.

For AC power line conducted tests, the following option may be exercised if the EUT Peak Mode emissions exceed the average limit when performing the tests. If the level of the emission measured using instrumentation with Quasi-Peak detection is 6 dB, or more, higher than the level of the same emission measured with instrumentation having an Average Detector with a 9 kHz minimum bandwidth, that emission is considered to be broadband and the level obtained with the Quasi-Peak detector may be reduced by 13 dB for comparison to the limit.

The EUT is configured as a system with peripherals connected, so that at least one interface port of each type is connected to one external peripheral when tested for conducted emissions according to ANSI C63.4.

The test data was obtained using a Hewlett Packard 8546A EMI Receiver (9 kHz - 6.5 GHz) and HP 85876A EMI Measurement Software.

The conducted test for table-top configurations is performed on a 1.0 X 2.5 X 0.8 meter non-metallic test table which is set up inside a shielded test room, measuring 12 feet by 10 feet by 9 feet tall. The separation between the EUT and screen room wall is 0.4 m, according to ANSI C63.4.

The EUT is powered through an appropriate Line Impedance Stabilization Network (LISN), bonded to the ground plane as described in CISPR 16.
The power input cables to the LISN and the RFI measurement system are arranged so that they will not influence the measurement results. To ensure that RFI from the auxiliary instrumentation or support equipment does not influence the test readings, the LISN power is isolated from other power by RFI filters. Excess power cord is folded back and forth to form a non-inductive bundle.

4.4 Test Equipment Used

4.4.1 Radiated Emission Test

Table 4-1: Test Equipment Used

Device	Model No.	Serial No.	Last Cal.	Next Cal
Cable 1	8214	CBL-006	02/19/04	02/19/05
Analyzer	HP85462A	3325A00120	04/11/04	04/11/05
Cable 2	8268	CBL-002	02/19/04	02/19/05
Preselector	HP85460A	3330A00117	04/11/04	04/11/05
Qpeak Adapter	HP85462 Internal	Internal	04/11/04	04/11/05
Pre-Amplifier	None			
Tower 1	EMCO 1050	9310-1786	N/A	N/A
Turntable 1	EMCO 1060	9409-1753	N/A	N/A
Bilog Antenna	CBL6112B	2604	09/03/03	09/03/04
Shielded Semi-Anechoic Chamber	RANTEC	N/A	03/16/04	03/16/05
Temperature and Humidity Recorder	Dickson TH8-24C	5097755	09/16/03	09/186/05

4.4.2 Conducted Emission Test

Table 4-2: Test Equipment Used

Device	Model No.	Serial No.	Last Cal.	Next Cal
Cable 1	RG-214/U	CBL-001	02/19/04	02/19/05
Analyzer	HP85462A	3325A00120	04/11/04	04/11/05
Preselector	HP85460A	3330A00117	04/11/04	04/11/05
QPeak Adapter	HP85462 Internal	Internal	04/11/04	04/11/05
Pre-Amplifier	None			
LISN	3825/2 LISN	9406-2232	01/21/04	01/21/05
Switch 1	N/A	N/A	N/A	N/A
Attenuator 1	33-10-34	BA9146	02/19/04	02/19/05
Temperature and Humidity Recorder	Dickson TH8-24C	5097755	09/16/03	09/16/05

4.5 Photographs of Test Set-Up

Radiated Emission Test
(Front View)

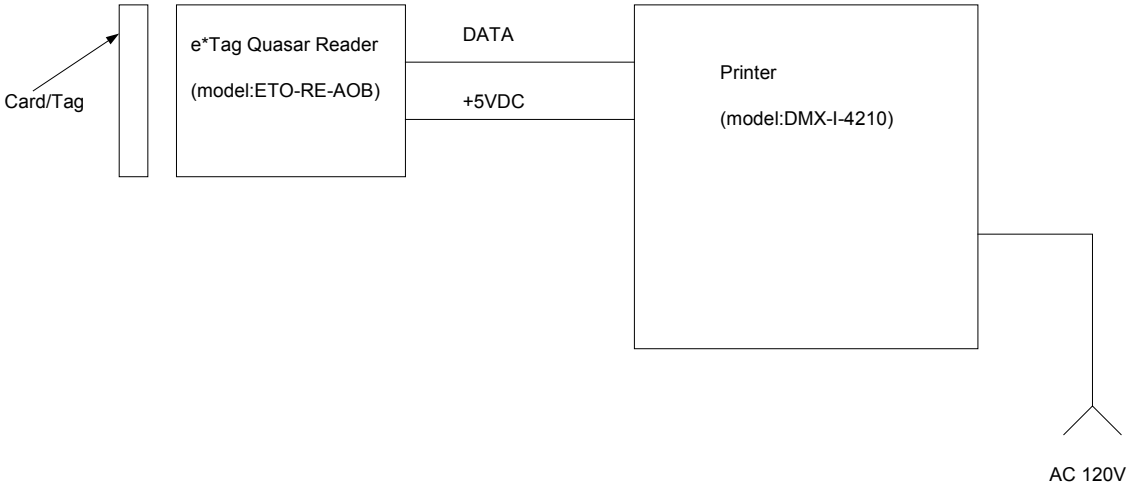
Radiated Emission Test
(Rear View)

Conducted Emission Test
(Front View)

Conducted Emission Test
(Rear View)

4.6 Test Results

4.6.1 Block Diagram of the Radiation Emissions Test Setup



4.6.2 Radiated Emissions Test Results

Measurements expanded uncertainty equals 3.26 dB with 95% confidence level.

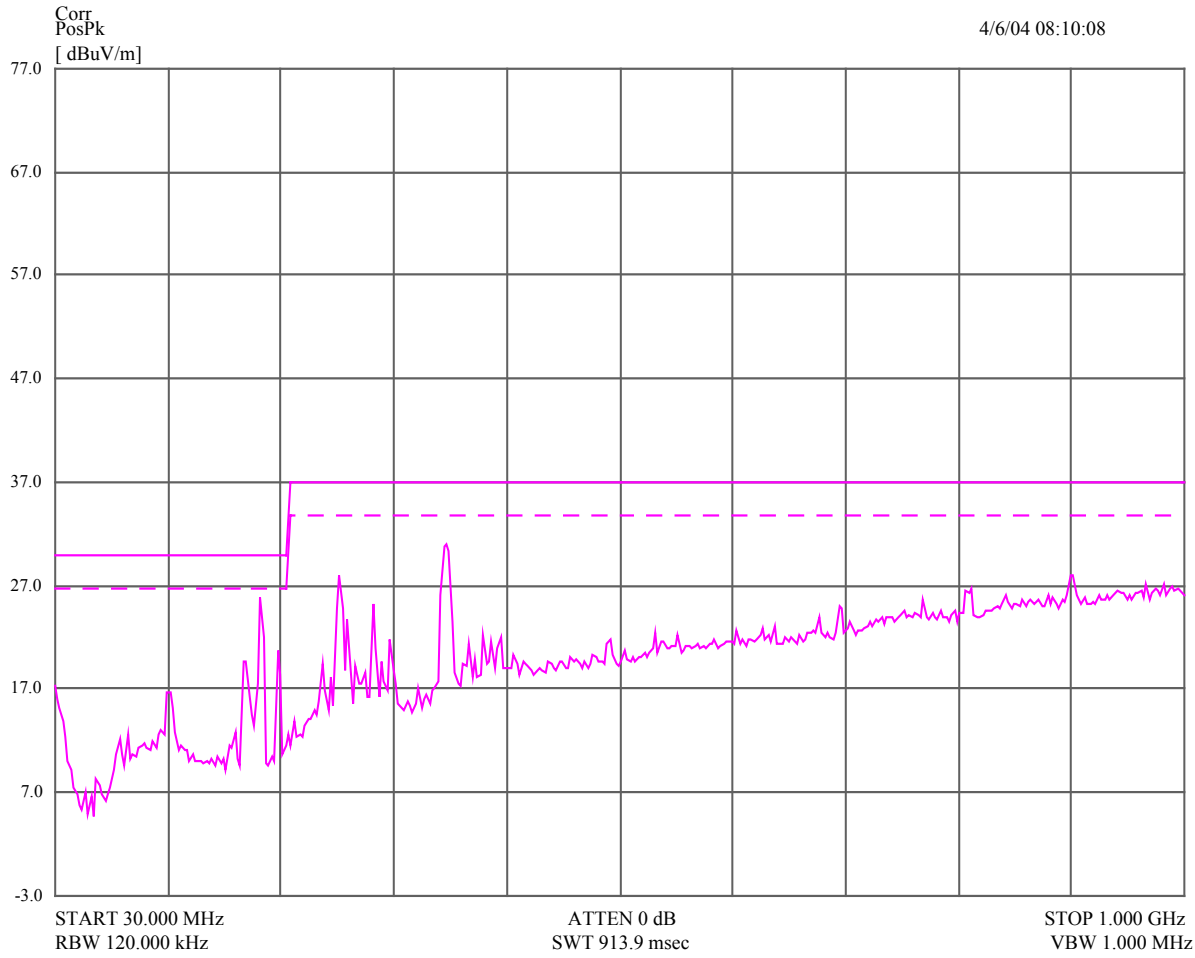
Room Ambient Temperature: 20°C±1°C
Relative Humidity: 31%±5%

Below are the Quasi-Peak and Average readings of the highest value signals observed throughout the 30 MHz to 1000 MHz frequency range.

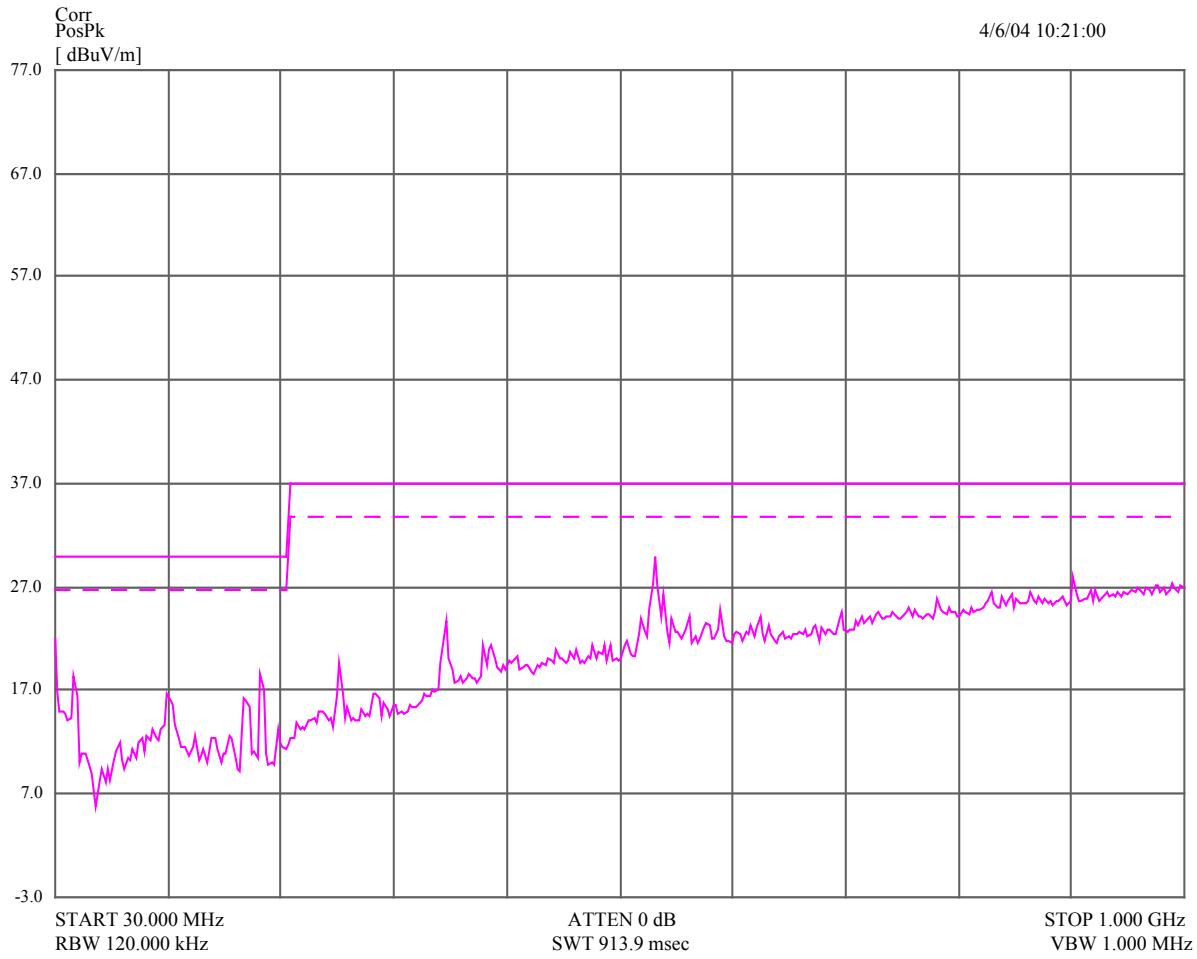
Frequency MHz	QP dBuV/m	QP Lmt dBuV/m	DelLim-QP dB	Pol	Hgt cm	Angle deg	Status
44.983752	12.58	30.00	-17.42	Vert	95	113	PASS
124.366248	13.38	30.00	-16.62	Vert	147	314	PASS
124.374248	13.05	30.00	-16.95	Horz	180	330	PASS
175.233744	10.19	30.00	-19.81	Horz	215	342	PASS
187.223008	13.52	30.00	-16.48	Horz	222	99	PASS
189.829248	12.99	30.00	-17.01	Vert	95	204	PASS
189.836256	16.91	30.00	-13.09	Horz	179	72	PASS
203.395008	15.73	30.00	-14.27	Vert	95	175	PASS
203.398752	25.42	30.00	-4.58	Horz	127	64	PASS
216.956256	18.83	30.00	-11.17	Horz	153	54	PASS
270.161248	24.86	37.00	-12.14	Horz	95	335	PASS
277.587488	13.84	37.00	-23.16	Horz	95	338	PASS
300.000000	15.95	37.00	-21.05	Horz	100	50	PASS
360.215488	27.98	37.00	-9.02	Horz	95	133	PASS
360.227488	17.66	37.00	-19.34	Vert	95	311	PASS
540.396224	23.84	37.00	-13.16	Vert	95	181	PASS

A horizontal and vertical polarization spectrum traces of the magnitude of all the signals throughout the band may be seen below. In this graph the magnitude of the largest signal is plotted for the configuration that produced the largest signal.

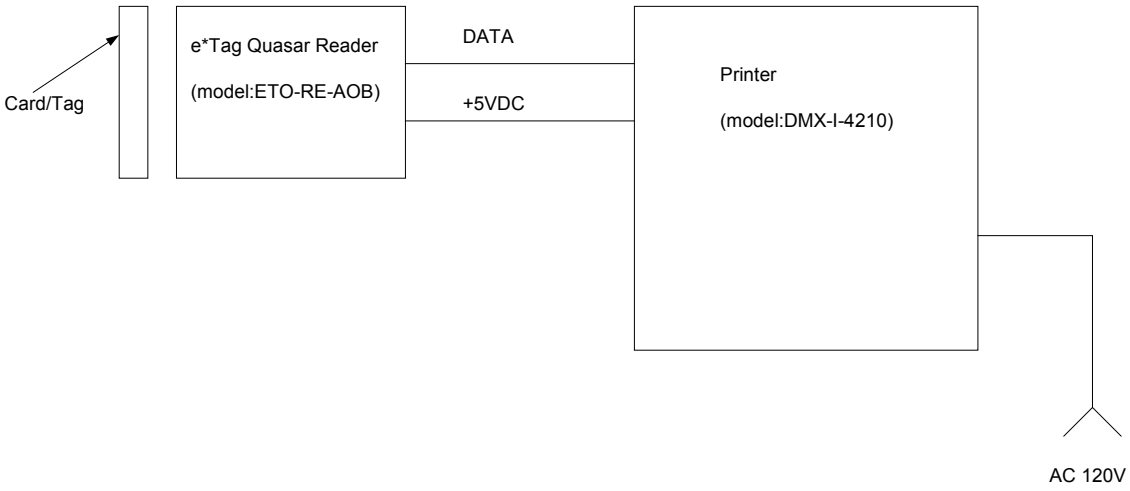
Horizontal:


Corr
PosPk
[dBuV/m]
4/6/04 08:10:08
77.0
67.0
57.0
47.0
37.0
27.0
17.0
7.0
-3.0
START 30.000 MHz
RBW 120.000 kHz
ATTEN 0 dB
SWT 913.9 msec
STOP 1.000 GHz
VBW 1.000 MHz

Vertical:


Corr
PosPk
[dBuV/m]
4/6/04 10:21:00
77.0
67.0
57.0
47.0
37.0
27.0
17.0
7.0
-3.0
START 30.000 MHz
RBW 120.000 kHz
ATTEN 0 dB
SWT 913.9 msec
STOP 1.000 GHz
VBW 1.000 MHz

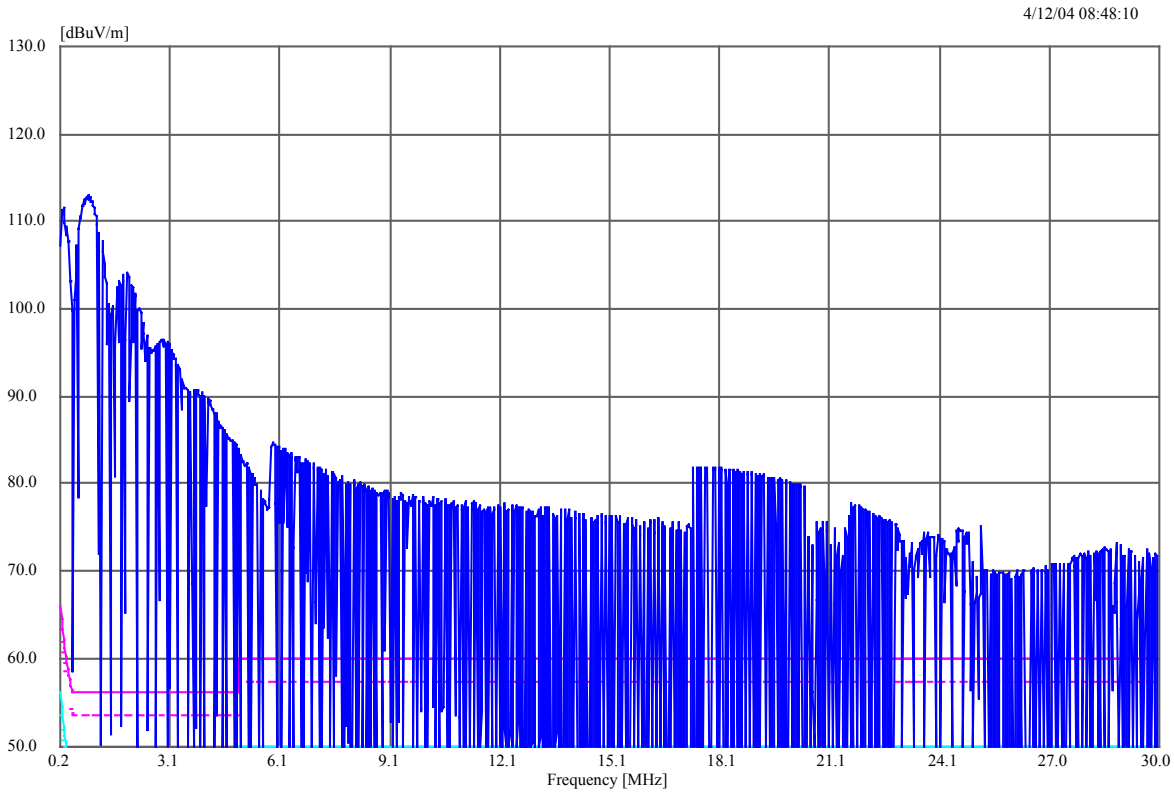
4.6.3 Block Diagram of the Conducted Emissions Test Setup w/Printer Power Supply



4.6.4 Conducted Emissions Test Results w/Printer Power Supply

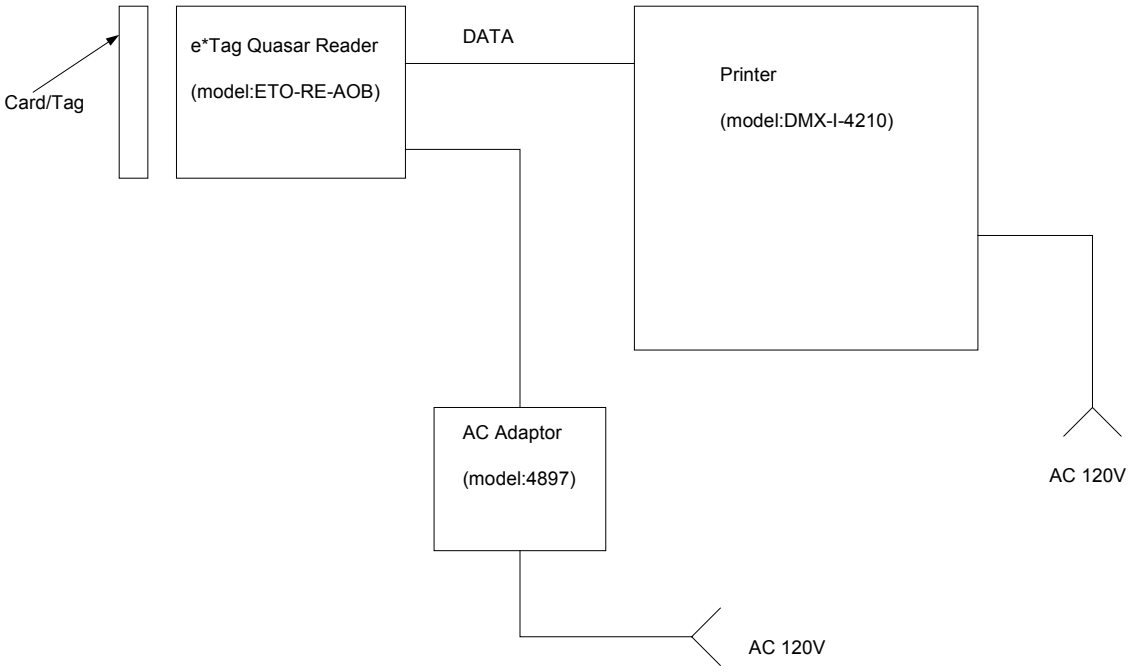
Measurements expanded uncertainty equals 2.62 dB with 95% confidence level.
Room Ambient Temperature: 20°C±1°C
Relative Humidity: 31%±5%

Composite Trace



<u>Status : Test failed due to Printer.</u>

4.6.5 Block Diagram of the Conducted Emissions Test Setup w/External Power Supply



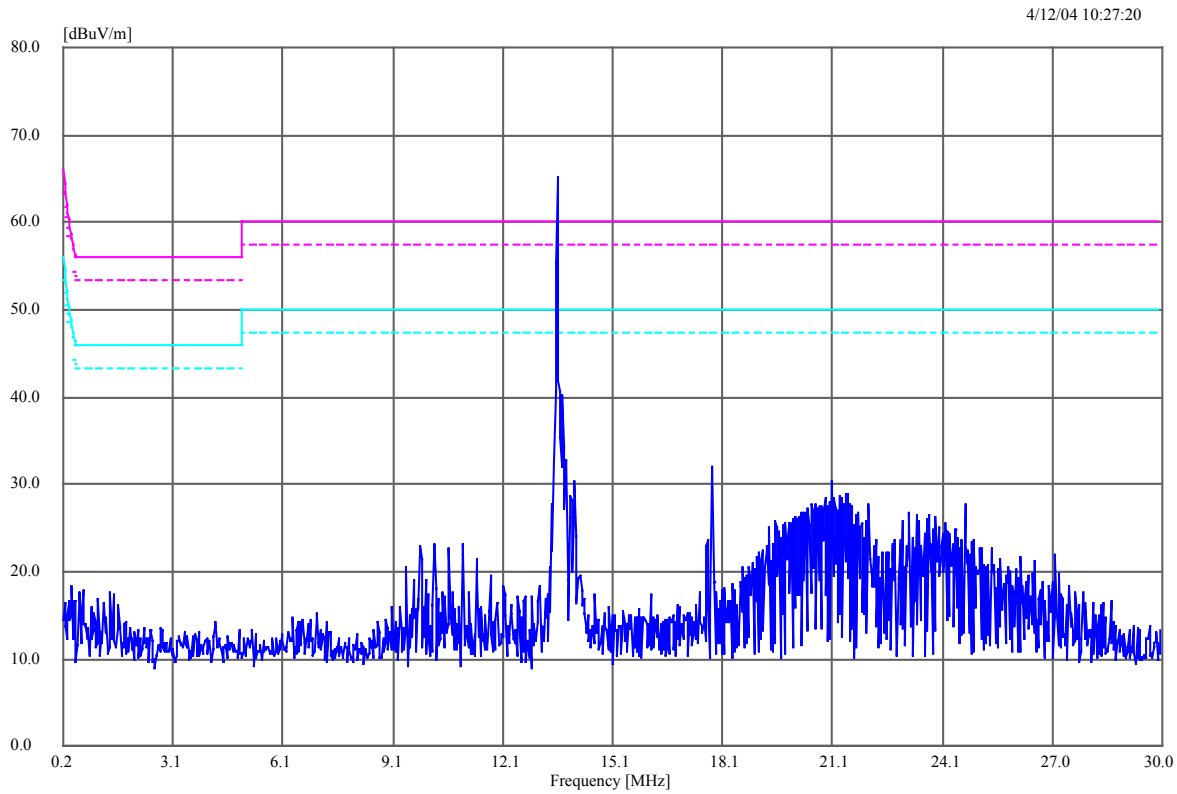
4.6.6 Conducted Emissions Test Results w/External Power Supply

Measurements expanded uncertainty equals 2.62 dB with 95% confidence level.
Room Ambient Temperature: 20°C±1°C
Relative Humidity: 31%±5%

Line 1

Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Status
13.561000	43.93	50.00	-6.07	PASS
14.002500	11.31	50.00	-38.69	PASS
17.773250	27.38	50.00	-22.62	PASS
21.430250	26.47	50.00	-23.53	PASS

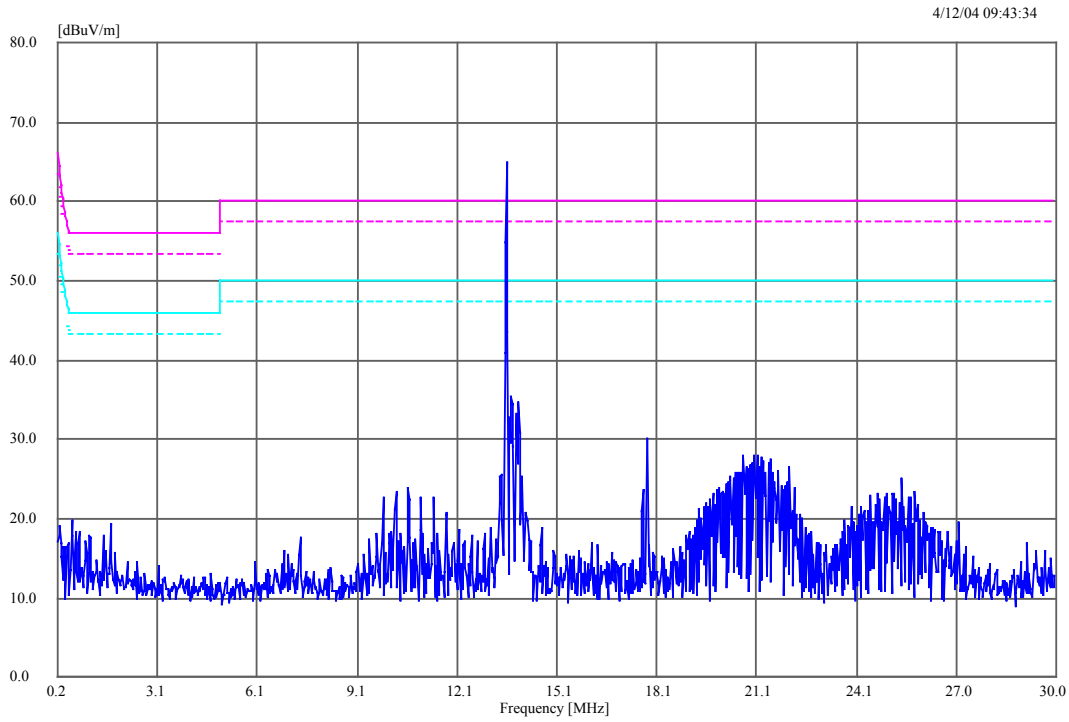
Composite Trace



Line 2

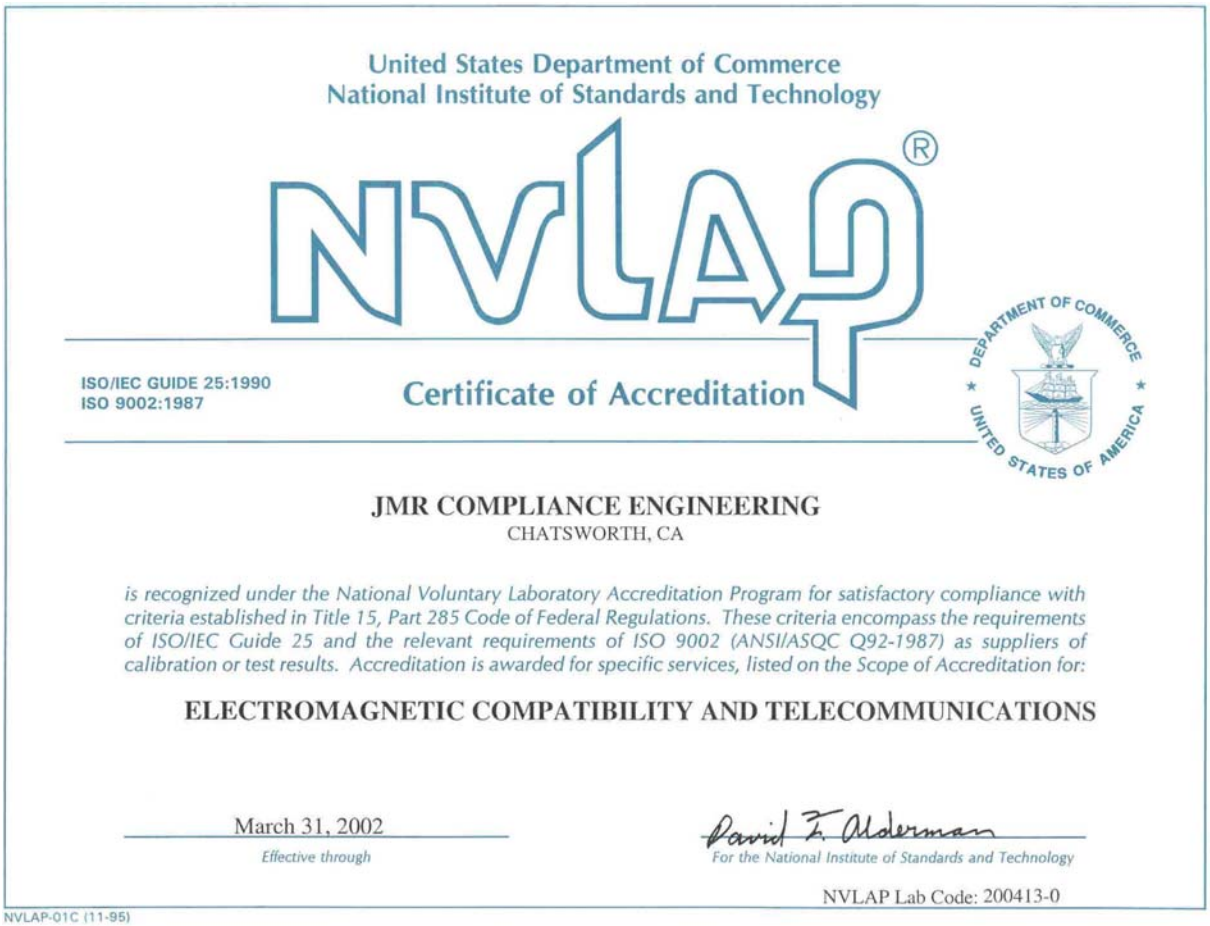
Frequency MHz	Avg dBuV/m	Avg Lmt dBuV/m	DelLim-Avg dB	Status
13.556250	30.63	50.00	-19.37	PASS
13.562000	43.93	50.00	-6.07	PASS
13.854000	16.77	50.00	-33.23	PASS
17.775250	31.73	50.00	-18.27	PASS
21.258000	29.87	50.00	-20.13	PASS

Composite Trace



Status : Test passed w/External Power Supply

Appendix A.



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ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

March 31, 2002
Effective through

David F. Alderman
For the National Institute of Standards and Technology

NVLAP Lab Code: 200413-0

NVLAP-01C (11-95)