EMC Testing Laboratories, Inc.

Test Report
To Determine Compliance With:
FCC, Part 15.249
and RSS-210

Model number: 1101-TLHMEA1

FCC ID: UIV-TLHME

Date: May 22, 2012

Manufacturer: New Potato Technologies
5508 Business Dr
Wilmington, NC, 28405

Contents Section

Section 1

GENERAL INFORMATION

Manufacturer:	New Potato Technologies 5508 Business Dr Wilmington, NC, 28405
Manufacturer representative:	**Mr. Daniel W. Pesavento**
Equipment covered by this report:	Model no. 1101-TLHMEA1
FCC ID:	UIV-TLHME
Options covered by this report:	None
Equipment serial no.	Prototype
Test specifications:	47 CFR Part 15, Subpart C and RSS -210
Product ratings:	5Vdc
Test report number:	12-181-249
Test commenced:	April 28, 2012
Test completed:	May 22, 2012
Test engineer:	**Edward Barnes**

Test Facility: The test facility used to perform these tests is on file with the FCC under registration number 637500 and IC no. 3519A and located at:

EMC Testing Laboratories, Inc.
2100 Brandon Trail
Suite 101
Alpharetta, GA 30004

Section 2

PRODUCT DESCRIPTION and TESTS SUMMARY

Product Description:
The product uses your iPhone, iPod or iPad's A2DP Bluetooth stereo audio capability to stream high quality audio to your home entertainment system. Once paired, all music, app audio and phone messages is routed through the product and the attached audio system.

Product is provided with a power supply manufactured by Something High Electric Co. Ltd, model no. P6USB050050.

Product is intended to be used with third generation products.

Operating Temperature Range: 0°C to 50°C

Frequency range: 2402 – 2480 MHz

Transmit Power: 5dBm

Modulation Technique: FHSS

Number of Channels: 79 Channels

Antenna Type: Bluetooth, PCB Trace antenna

Critical Components:

Printed wiring boards – The following printed wiring boards are utilized:

Name	Part. no.
MAIN PCB	1101-TLHMEA1-110 rev 40
BT PCB	1101-TLHMEA1-210 rev 01

Test Operation:
For all measurements, the equipment under test was and caused to function in a continuous mode of operation for maximum electrical activity as specified by the manufacturer. Specifically, the product was caused to continuously communicate with an iPod.

Product Description and Test Summary cont…

Test Configuration:
The equipment under test (EUT) was set-up and configured as specified by the manufacturer as follows:

1- The EUT was connected to the following support peripherals:

A- An iPot, G3.

B- A power supply provided with product.

2- The EUT utilized the following cables.

A- A 1 meter long USB cable.

Modifications:
The following modifications were required to comply with the requirements.

1- None.

Tests Summary:

Table 1

Clause	**Test**	**Result**
15.249 (a)	Spurious Emission	Pass
15.249 (a)	Band Edge	Pass
15.207	Power Line Conducted Emission	Pass

The test results apply only to the products identified in this test report.

Product Description and Test Summary cont…

Engineering Statement:
All measurement data of this test report was taken in accordance with the FCC, parts 15.215, 15.249, ANSI C63.4-2003 and IC, RSS-210 by EMC Testing Laboratories, Inc. located in Alpharetta, Georgia. Although this data is taken under stringent laboratory conditions and to the best of our knowledge represents accurate data, it must be recognized that emissions from or immunity to this type equipment may be greatly affected by the final installation of the equipment. Therefore, EMC Testing Laboratories, Inc., while supporting the accuracy of the data in this report, takes no responsibility for use of equipment based on these tests. The manufacturer of this equipment must take full responsibility for any field problems which may arise, and agrees that EMC Testing Laboratories, Inc., in performing its functions in accordance with its objectives and purposes, does not assume or undertake to discharge any responsibility of the manufacturer to any other party or parties.

Conclusion:
With the above-indicated modifications, the product covered by this report has been tested and found to comply with the requirements of the above-indicated standards.

Tested by: **Edward Barnes RF Engineer**

Approved by: *Gene Bailey*
Edward Barnes, RF Engineer,
EMC Testing Laboratories, Inc.

Section 3

Test Report

INTRODUCTION:

The product covered by this report was subjected to electromagnetic interference emissions measurements to determine compliance with the FCC, Parts 15.249 requirements.

Radiated and conducted emissions were measured in accordance with the Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz, ANSI C63.4.

During this test, a radio was connected to the EUT.

MEASUREMENT CALCULATIONS:

Radiated Emissions:

For radiated emissions measurements, the signal attenuation due to impedance losses in the antenna and signal cable were significant and was added to the spectrum analyzer reading to give corrected signal strength reading. If a preamplifier was used, the signal gain was subtracted from the signal strength reading. Radiated emissions data was specified as decibels above 1 microvolt per meter (dBμV/m) of radiated field strength.

Radiated emissions (dBμV) = Analyzer reading (dBμV) plus
antenna factor (dB) plus cable factor (dB) minus Amplifier gain (dB)

Conducted Emissions:

For conducted emissions, the signal attenuation due to impedance losses in the LISN and signal cables was negligible and assumed to be 0dB. The conducted emissions were directly equal to the spectrum analyzer reading. Conducted emissions data was specified as decibels above 1 microvolt (dBμV) of conducted line voltage.

Conducted emissions (dBμV) = Analyzer reading (dBμV)

RADIATED EMISSIONS MEASUREMENT:

Radiated emissions measurements were performed at an open field test site. The receiving antenna was positioned 1 meter from the equipment under test along the center axis of the test site. Measurements were made with broadband antennas and if necessary, detected emissions were verified with dipole antennas. The dipole antenna was manually tuned to the signal frequency by adjusting the length of the antenna elements.

Test Method cont…

The radiated emissions were measured for both the horizontal and vertical signal planes by rotating the antennas. Additionally, the EUT was rotated by the turntable and the antenna height was raised and lowered 1 to 4 meters to locate the maximum emission strength at each frequency.

The radiated emissions were measured over the frequency span of 30 MHz to 1000 MHz. The following antennas were used to measure the radiated emissions within the specified frequency spans.

CONDUCTED EMISSIONS MEASUREMENT:

Conducted emissions measurements were performed on a ground plane that was electrically bonded to earth ground. The equipment under test was positioned 0.8 meter above the ground plane and 0.8 meter minimum from the LISN that was positioned on the ground plane. The LISN housings were electrically bonded to the ground plane. The conducted emissions for both the ungrounded supply conductor (L1) and the grounded conductor (L2) of the power supply cord were measured. The conducted emissions were measured over the frequency span of 0.15 to 30 MHz. The measurements were conducted in the quasi-peak and average detector modes.

INSTRUMENTATION:

Radiated and conducted signal strength measurements were taken with a spectrum analyzer. Radiated emissions were measured with broadband and tuned dipole antennas. Conducted emissions were measured with a 50 UH line impedance stabilization network (LISN).

DETECTOR FUNCTION:

Unless otherwise indicated in this report, all measurements were taken using a peak hold signal detector function. In this mode, the spectrum analyzer makes continuous scans across the frequency band and stores the highest emission value detected at each frequency for all scans. The peak hold integration will detect transient or low duty cycle emissions peak, which might be missed on single scan measurement. The emission value at each frequency was a true value.

SPECTRUM ANALYZER SETTING:

For all measurements, the spectrum analyzer was set for 10 dB input attenuation, 10 dB/Division vertical scale and 90 or 100 dBµV reference level. The resolution bandwidth was set at 9 KHz for the 0.15 - 30 MHz span and at 120 KHz for 30 - 1000 MHz span. The video bandwidth and sweep rate were automatically coupled by the analyzer.

Test Method cont…

Results

From 30MHz to 1000MHz

Frequency, MHz	Measurement Reading, dBµV/m	Corrected Reading, dBµV/m	EN55022 Limit, dBµV/m	Minimum Margin, dBµV/m
Horizontal and Vertical				
There were no measurable emissions From the EUT within 20 dBµV/m from the limits				

Above 1 GHz

Operation Mode: CH Low **Test date:** May 22, 2012

Temperature: 20^0C **Humidity:** 70 % RH

Freq. MHz	Ant. Pol. H/V	Peak Reading (dBµV/m)	AV Reading (dBµV/m)	Ant./CL, CF (dB)	Actual Peak	Actual AV	Peak Limit	AV Limit	Margin
2402	H	105.43	73.87	4.76	100.7	69.11	114	94	-13.3
4804	H	55.06	27.24	9.81	64.87	37.05	74	54	-9.13
2402	V	108.46	78.54	4.76	103.7	73.78	114	94	-10.3
4804	V	55.01	26.86	9.81	64.82	36.67	74	54	-9.18

Test Method cont…

Above 1 GHz

Operation Mode: CH Mid **Test date:** May 22, 2012

Temperature: 20^0C **Humidity:** 70 % RH

Freq. MHz	Ant. Pol. H/V	Peak Reading (dBµV/m)	AV Reading (dBµV/m)	Ant./CL, CF (dB)	Actual Peak	Actual AV	Peak Limit	AV Limit	Margin
2441	H	104.54	72.59	4.42	99.87	64.82	114	94	-10.13
4882	H	55.89	27.85	9.81	65.7	37.66	74	54	-8.30
2441	V	107.56	78.02	4.76	102.8	73.26	114	94	-11.2
4882	V	54.75	25.81	9.81	64.56	35.62	74	54	-9.44

Operation Mode: CH High **Test date:** May 22, 2012

Temperature: 20^0C **Humidity:** 70 % RH

Freq. MHz	Ant. Pol. H/V	Peak Reading (dBµV/m)	AV Reading (dBµV/m)	Ant./CL, CF (dB)	Actual Peak	Actual AV	Peak Limit	AV Limit	Margin
2480	H	104.02	72.14	4.86	99.16	67.28	114	94	-14.84
4960	H	57.59	29.45	9.52	67.11	38.97	74	54	-6.89
2480	V	107.27	78.72	4.86	102.7	73.86	114	94	-11.3
4960	V	54.04	25.11	9.52	63.56	34.63	74	54	-10.44

Notes:

1- Measuring frequencies from 1 GHz to the 10^{th} harmonic of fundamental frequency.

2- Measurements above show only up to 1 maximum emissions noted or would be lesser if no specific emissions from the EUT are recorded (ie: margin >20dB from the applicable limit) and considered that's already beyond the background noise floor.

3- Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detection mode and average detection mode Limits.

Test Method cont…

4- Spectrum Setting:

A- Peak Setting 9 KHz – 18 GHz, RBW = 1 MHz, VBW = 1MHz, Sweep time: Auto

B- AV Setting 9 KHz – 18 GHz, RBW = 1MHz, VBW = 10 Hz, Sweep time: Auto

Band Edge

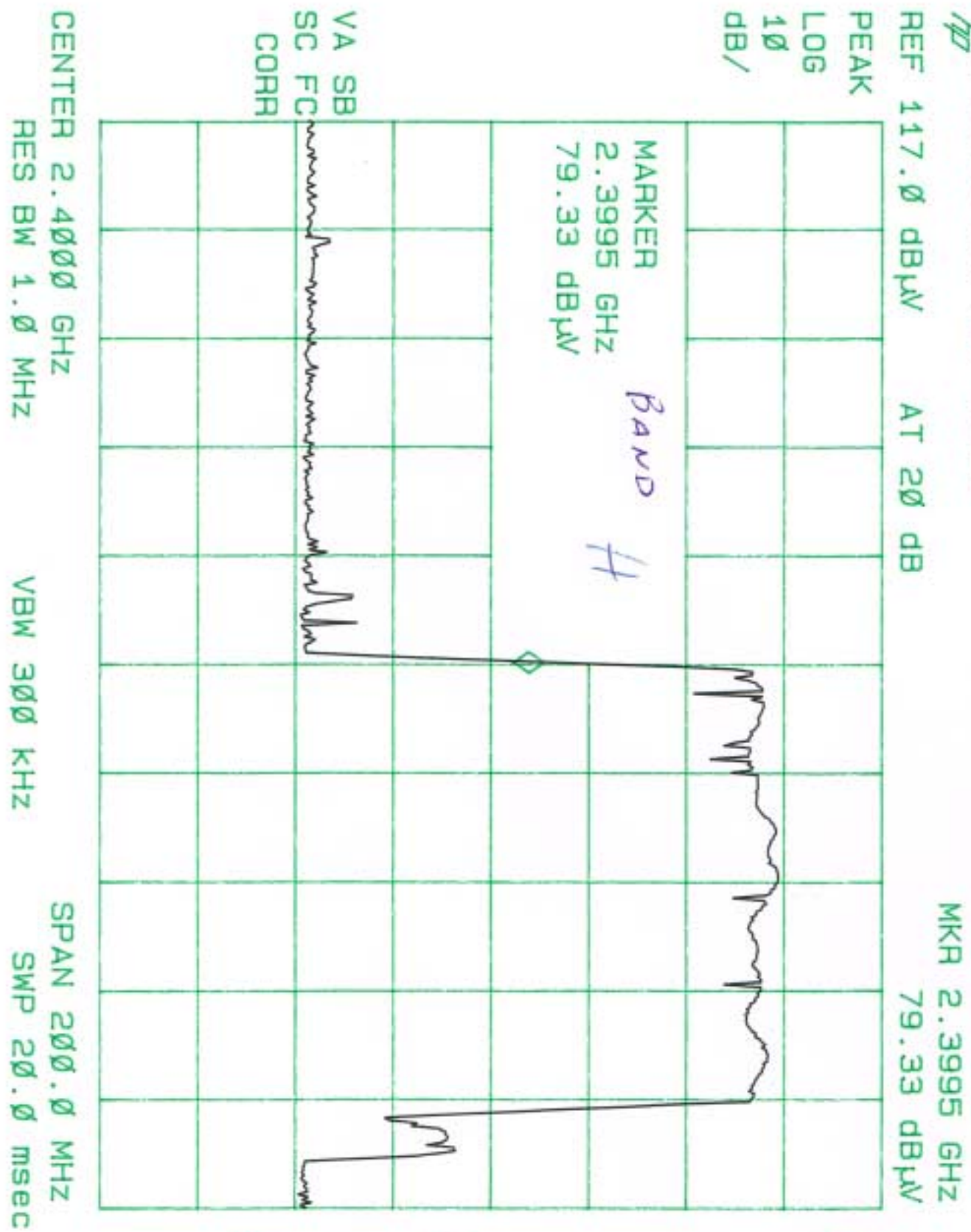
Requirement

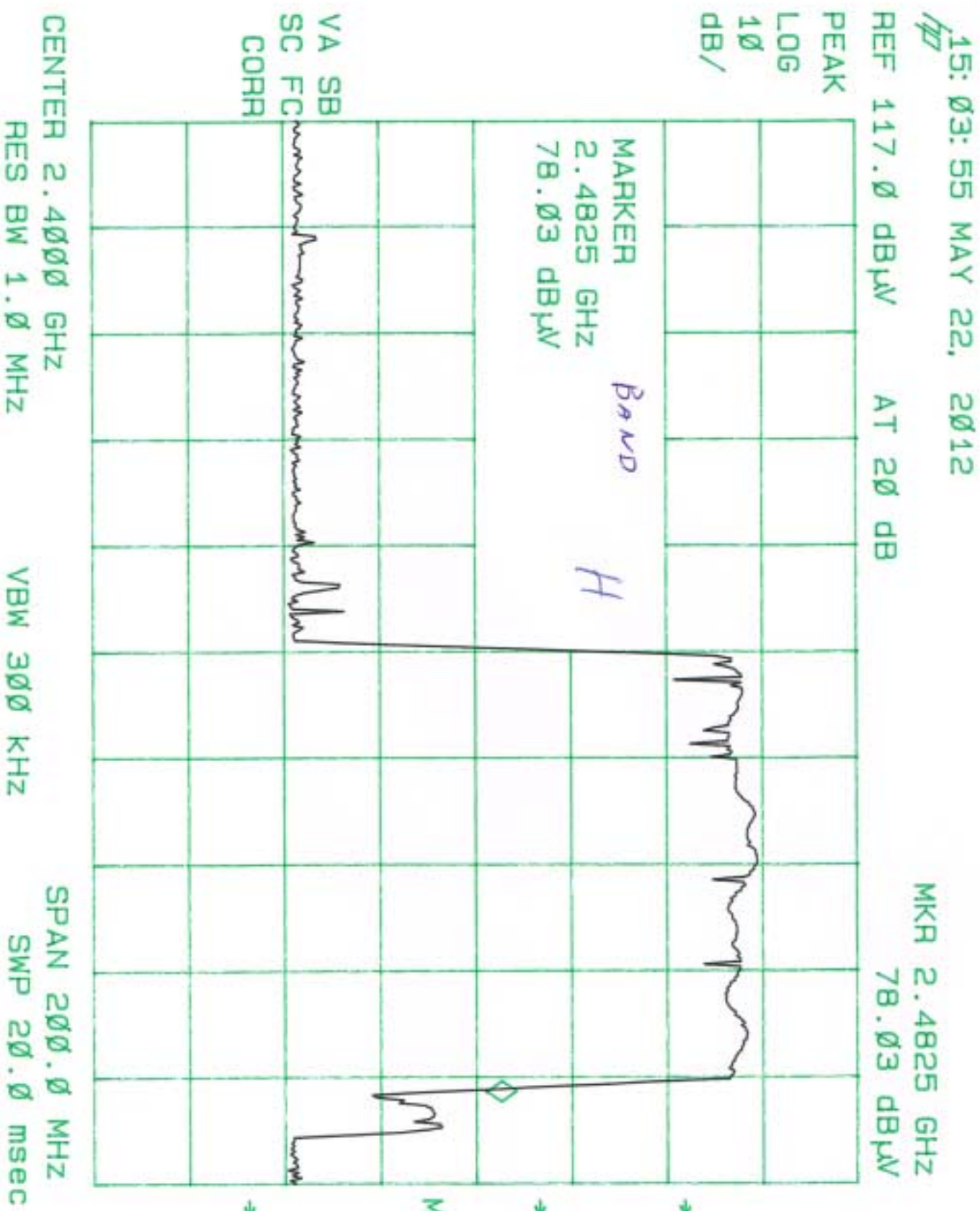
According to FCC section 15.249(a) in any 100KHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100KHz bandwidth within the band that contains the highest level of the desired power based on either an RF conducted or a radiated measurement.

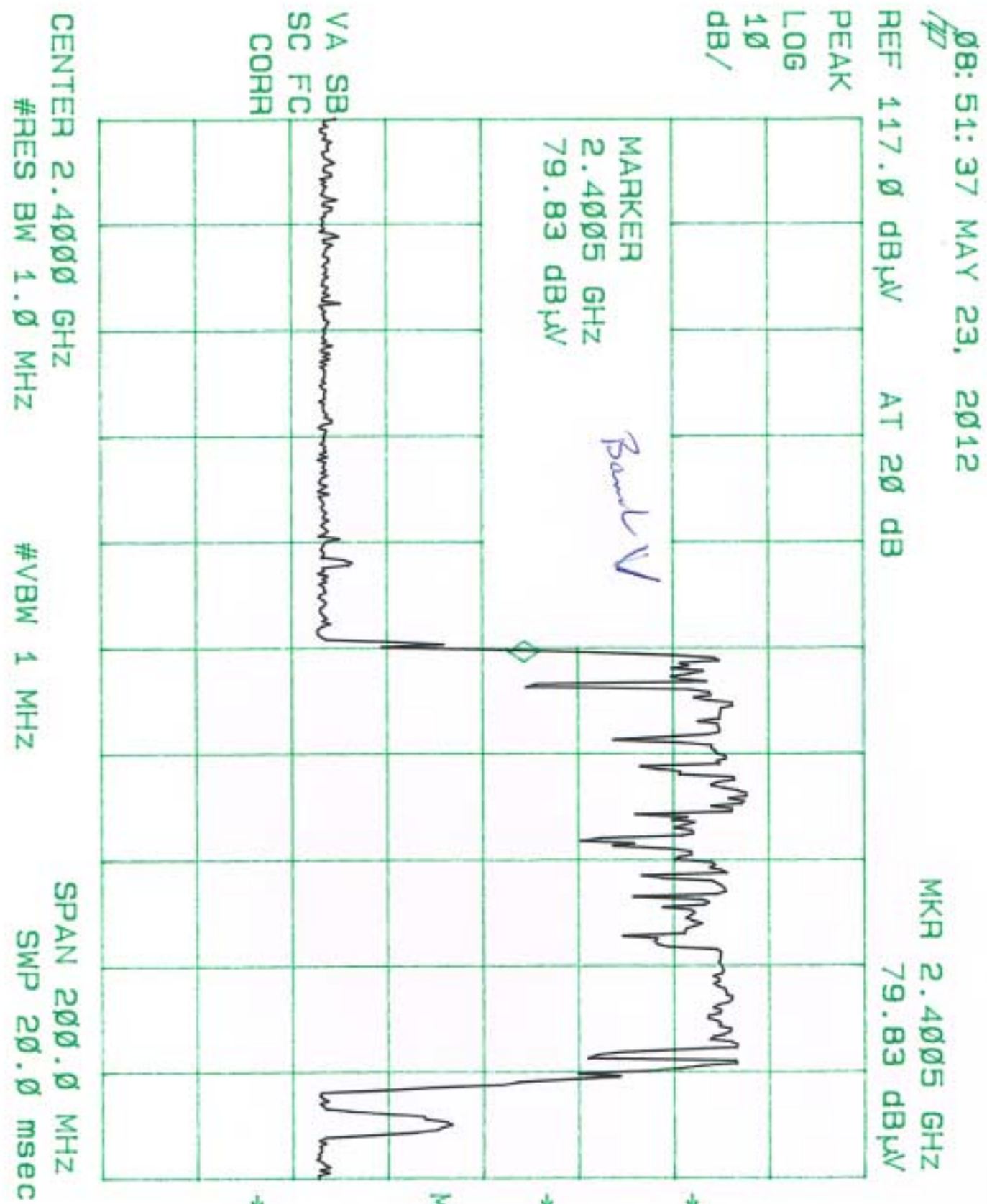
Test Results

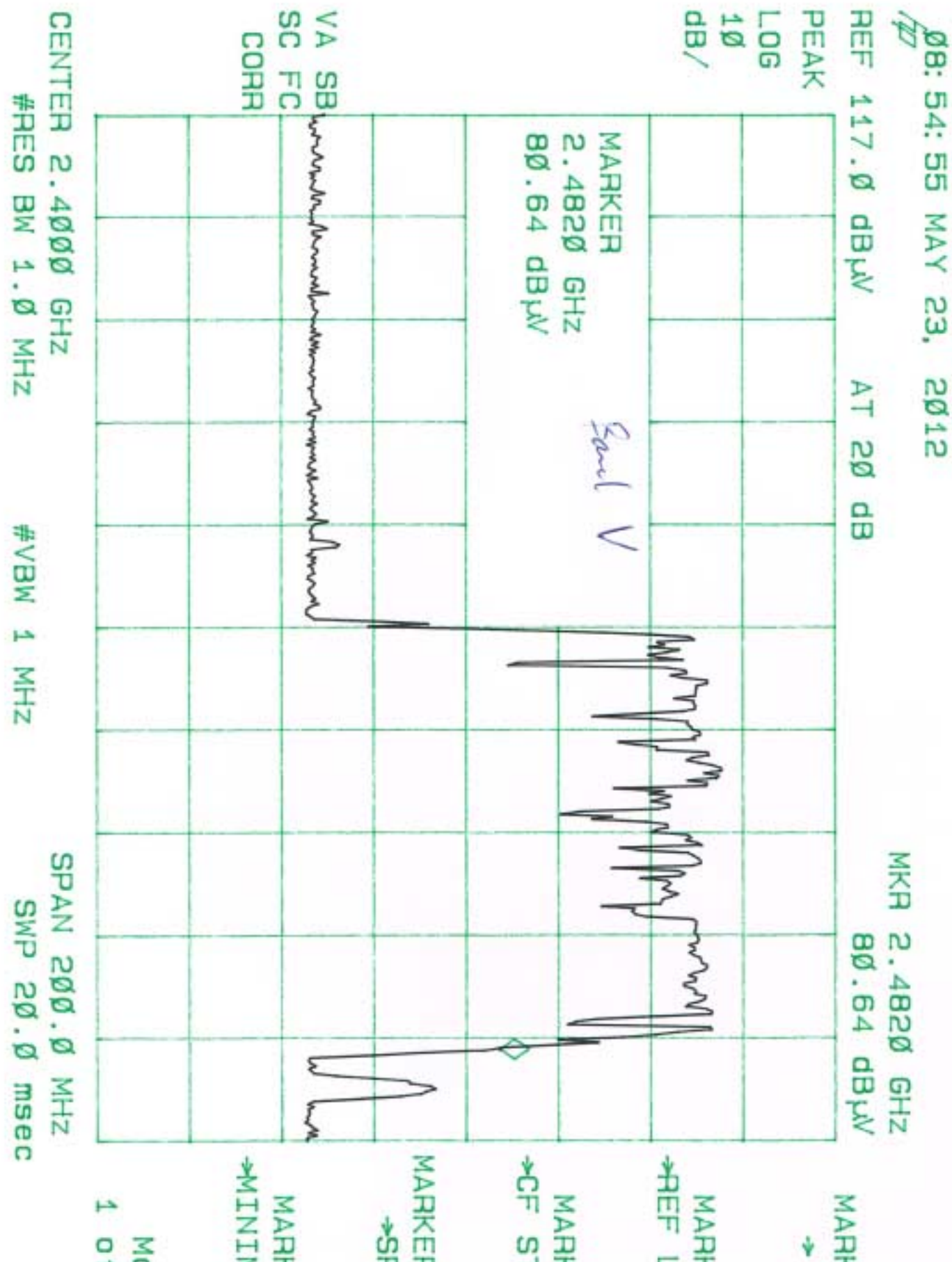
The EUT operates at hopping-off test mode. The lowest and highest channels are tested to verify the band edge emissions.

Test Mode	Channel Marked Freq.	Vertical Peak	Vertical AV	Horizontal Peak	Horizontal AV	Minimum Margin
Low Channel	2390	60.95	48.61	60.13	48.54	-5.39
Low Channel	2400	63.46	48.50	64.25	48.52	-9.75
High Channel	2480	64.79	48.23	69.61	48.21	-4.39
High Channel	2490	59.85	48.21	60.10	48.26	-5.74


14: 59: 58 MAY 22, 2012
REF 117.0 dBµV
AT 20 dB
PEAK
LOG
10
dB/
MARKER
2.3995 GHz
79.33 dBµV
Band 4
MKR 2.3995 GHz
79.33 dBµV
VA SB
SC FC
CORR
CENTER 2.4000 GHz
RES BW 1.0 MHz
VBW 300 kHz
SPAN 200.0 MHz
SWP 20.0 msec


15: Ø3: 55 MAY 22, 2Ø12
REF 117.Ø dBµV
AT 2Ø dB
PEAK
LOG
1Ø
dB/
MARKER
2.4825 GHz
78.Ø3 dBµV
Band H
MKR 2.4825 GHz
78.Ø3 dBµV
VA SB
SC FC
CORR
CENTER 2.4ØØØ GHz
RES BW 1.Ø MHz
VBW 3ØØ kHz
SPAN 2ØØ.Ø MHz
SWP 2Ø.Ø msec


08: 51: 37 MAY 23, 2012
REF 117.0 dBµV
AT 20 dB
PEAK
LOG
10
dB/
MARKER
2.4005 GHz
79.83 dBµV
Band V
MKR 2.4005 GHz
79.83 dBµV
VA SB
SC FC
CORR
CENTER 2.4000 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SPAN 200.0 MHz
SWP 20.0 msec


08: 54: 55 MAY 23, 2012
REF 117.0 dBµV
AT 20 dB
PEAK
LOG
10
dB/
MARKER
2.4820 GHz
80.64 dBµV
Earl V
VA SB
SC FC
CORR
CENTER 2.4000 GHz
#RES BW 1.0 MHz
#VBW 1 MHz
SPAN 200.0 MHz
SWP 20.0 msec
MKR 2.4820 GHz
80.64 dBµV

Test Method cont…

Line Conducted Emission Test

The EUT was setup as described above.

Test voltage: 120Vac **Test date:** May 22, 2012

Frequency, MHz	**Reading dBuV, L1**	**Frequency, MHz**	**Reading dBuV, L2**	**EN55022 Limit, dBuV**	**Margin, dBuV**
.156	48.2	.156	47.5	55.8	-7.6
.188	45.4	.188	44.9	54.4	-9.0
.220	43.0	.220	42.5	52.9	-9.9
.341	37.8	.344	38.8	49.1	-10.3

***** - Measurement in the QP detection mode
****** - Limit for the Average detection mode