



# Electromagnetic Compatibility Test Report

Tests Performed on a Wearable, Inc.

Wifi Transmitter Transceiver, Model A01

Radiometrics Document RP-6675



*Product Detail:*

FCC ID: XSNA01

IC: 8639A-A01

Equipment type: 2.4 GHz DTS Transmitter

*Test Standards:*

US CFR Title 47, Chapter I, FCC Part 15 Subpart C

FCC Part 15 CFR Title 47: 2008

Industry Canada RSS-210, Issue 7: 2007 as required for Category I Equipment

This report concerns: Original Grant for Certification

FCC Part 15.247

*Tests Performed For:*

**Wearable, Inc.**

3825 Charles Drive

Northbrook, IL 60062

*Test Facility:*

**Radiometrics Midwest Corporation**

12 East Devonwood

Romeoville, IL 60446

*Test Date(s): (Month-Day-Year)*

November 16 & 17, 2009

Document RP-6675 Revisions:

Rev.	Issue Date	Affected Pages	Revised By
0	12/15/2009		
1	01/4/2010	4, 21, 23, 31	Joseph Strzelecki

## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter

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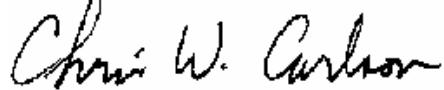
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## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

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### 1 ADMINISTRATIVE DATA

<p><i>Equipment Under Test:</i>            A Wearable, Inc., Wifi Transmitter            Model: A01 Serial Number: D0E40B000002            This will be referred to as the EUT in this Report</p>	
<i>Date EUT Received at Radiometrics: (Month-Day-Year)</i> November 16, 2009	<i>Test Date(s): (Month-Day-Year)</i> November 16 & 17, 2009
<i>Test Report Written By:</i> Joseph Strzelecki Senior EMC Engineer	<i>Test Witnessed By:</i> Matt Klapman Wearable, Inc.
<i>Radiometrics' Personnel Responsible for Test:</i>  Joseph Strzelecki Senior EMC Engineer NARTE EMC-000877-NE	<i>Test Report Approved By</i>  Chris W. Carlson Director of Engineering NARTE EMC-000921-NE

### 2 TEST SUMMARY AND RESULTS

The EUT (Equipment Under Test) is a Wifi Transmitter, Model A01, manufactured by Wearable, Inc. The detailed test results are presented in a separate section. The following is a summary of the test results.

#### Test Results

Environmental Phenomena	Frequency Range	FCC Section	RSS-210 Section	Test Result
6 dB Bandwidth Test;	2400 to 2483 MHz	15.247 a	A8.1 (4)	Pass
20 dB Bandwidth Test;	2400 to 2483 MHz	15.247 a	A8.1 (4)	Pass
Peak Output Power	2400 to 2483 MHz	15.247 b	A8.1 (1)	Pass
Band-edge Compliance of RF Conducted Emissions	2400 to 2483 MHz	15.247 d	A8.4 (2)	Pass
Spurious RF Conducted Emissions	30 MHz to 25 GHz	15.247 d	A8.5	Pass
Spurious Radiated Emissions	30 MHz to 25 GHz	15.247 d	A8.5	Pass
Power Spectral Density	2400 to 2483 MHz	15.247 e	A8.2 (1)	Pass
Conducted Emissions, AC Mains	0.15 - 30 MHz	15.207	7.2.2 of RSS-Gen	Pass
Radiated Emissions (Unintentional Radiation Receive mode)	30 MHz to 12.5 GHz	15.109	Table 2	Pass

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### 2.1 RF Exposure Compliance Requirements

Since the average power output is 24 mW, the EUT meets the FCC requirement for RF exposure for handheld devices with no SAR testing required.

Since the average power of the EUT is less than 200 mW, it is exempt from RSS-102. There are no power level adjustments and the antenna is permanently attached. The detailed calculations for RF Exposure are presented in a separate document.

## 3 EQUIPMENT UNDER TEST (EUT) DETAILS

### 3.1 EUT Description

The EUT is a Wifi Transmitter, Model A01, manufactured by Wearable, Inc. The EUT was in good working condition during the tests, with no known defects.

#### 3.1.1 FCC Section 15.203 & RSS-GEN Antenna Requirements

The antenna is permanently attached to the PCB. The antenna is internal to the EUT and it is not readily available to be modified by the end user. Therefore it meets the 15.203 Requirement.

### 3.2 Related Submittals

Wearable, Inc. is not submitting any other products simultaneously for equipment authorization related to the EUT.

## 4 TESTED SYSTEM DETAILS

### 4.1 Tested System Configuration

The system was configured for testing in a typical fashion. The EUT was placed on an 80-cm high, nonconductive test stand. The testing was performed in conditions as close as possible to installed conditions. Wiring was consistent with manufacturer's recommendations.

Since the EUT is wall mounted, it was placed in an upright configuration during the tests.

The EUT was tested as a stand-alone device. Power was supplied in two ways:

1. With an internal battery. For this test, the EUT was tested stand alone.
2. Via a USB port.

The identification for all equipment, plus descriptions of all cables used in the tested system, are:

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#### Tested System Configuration List

Item	Description	Type*	Manufacturer	Model Number	Serial Number
1	Wifi Transmitter	E	Wearable, Inc.	A01	D0E40B000002
2	Notebook Computer	S	Hewlett-Packard	Davilia DV2000	2CE7031HFP
3	Remote Ethernet Hub	S	Dynex	DX-ESW5	8E08803623
4	Ethernet Hub AC Brick	S	Leader Electronics	LEI-1	0816PL
5	Notebook AC Brick	S	Hewlett-Packard	380467-003	F306115385230C
6	USB Hub	H	Cables to Go	29563	070903970

\* Type: E = EUT, P = Peripheral, S = Support Equipment; H = Host Computer

#### List of System Cables

QTY	Length (m)	Cable Description	Connected to (Item #)	Shielded?
1	1.0	USB cable	#1 Power input	Yes
1	3.0	Ethernet cable	#1 and #2	No
1	1.8	AC Brick Notebook DC Power Cord	#2	No
1	2.0	AC Brick Notebook AC Power Cord	#2	No

#### 4.2 Special Accessories

No special accessories were used during the tests in order to achieve compliance.

#### 4.3 Equipment Modifications

No modifications were made to the EUT at Radiometrics' test facility in order to comply with the standards listed in this report.

### 5 TEST SPECIFICATIONS AND RELATED DOCUMENTS

Document	Date	Title
FCC CFR Title 47	2008	Code of Federal Regulations Title 47, Chapter 1, Federal Communications Commission, Part 15 - Radio Frequency Devices
ANSI C63.4-2003	2003	Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
IC RSS-210 Issue 7	2007	Low Power Licence-Exempt Radiocommunication Devices (All Frequency Bands) Category I Equipment
IC RSS-Gen Issue 2	2007	General Requirements and Information for the Certification of Radiocommunication Equipment (RSS-Gen)
FCC 558074	2005	Measurement of Digital Transmission Systems Operating under Section 15.247

The test procedures used are in accordance with the FCC 558074, Industry Canada RSS-212 and ANSI document C63.4-2003, "Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The specific procedures are described herein. Radiated testing was performed at an antenna to EUT distance of 3 meters. The antenna was raised and lowered from 1 to 4 meters.

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## 6 RADIOMETRICS' TEST FACILITIES

The results of these tests were obtained at Radiometrics Midwest Corp. in Romeoville, Illinois, USA. Radiometrics is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025: 2005 "General Requirements for the Competence of Calibration and Testing Laboratories". Radiometrics' Lab Code is 121191 and Certification Number is 1495.01. Radiometrics' scope of accreditation includes all of the test methods listed herein. A copy of the accreditation can be accessed on our web site ([www.radiomet.com](http://www.radiomet.com)). Radiometrics accreditation status can be verified at A2LA's web site ([www.a2la2.org](http://www.a2la2.org)).

The following is a list of shielded enclosures located in Romeoville, Illinois used during the tests:

Chamber A: Is an anechoic chamber that measures 24' L X 12' W X 12' H. The walls and ceiling are fully lined with ferrite absorber tiles. The floor has a 10' x 10' section of ferrite absorber tiles located in the center. Panashield of Rowayton, Connecticut manufactured the chamber. The enclosure is NAMAS certified.

Chamber E: Is a custom made anechoic chamber that measures 52' L X 30' W X 18' H. The walls and ceiling are fully lined with RF absorber. Pro-shield of Collinsville, Oklahoma manufactured the chamber.

Test Station F: Is an area that measures 10' D X 12' W X 10' H. The floor and back wall are metal shielded. This area is used for conducted emissions measurements.

A separate ten-foot long, brass plated, steel ground rod attached via a 6 inch copper braid grounds each of the above chambers. Each enclosure is also equipped with low-pass power line filters.

The FCC has accepted these sites as test site number US1065. The FCC test site Registration Number is 732175. Details of the site characteristics are on file with the Industry Canada as site number IC3124A-1.

A complete list of the test equipment is provided herein. The calibration due dates are indicated on the equipment list. The equipment is calibrated in accordance to ANSI/NCSL Z540-1 with traceability to the National Institute of Standards and Technology (NIST).

## 7 DEVIATIONS AND EXCLUSIONS FROM THE TEST SPECIFICATIONS

There were no deviations or exclusions from the test specifications.

## 8 CERTIFICATION

Radiometrics Midwest Corporation certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specification. The results relate only to the EUT listed herein. Any modifications made to the EUT subsequent to the indicated test date will invalidate the data and void this certification.

## 9 TEST EQUIPMENT TABLE

RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
AMP-05	RMC/Celeritek	Pre-amplifier	MW110G	1001	1.0-12GHz	12 Mo.	02/01/09
AMP-20	Avantek	Pre-amplifier	SF8-0652	15221	8-18GHz	12 Mo	02/01/09
AMP-22	Anritsu	Pre-amplifier	MH648A	M23969	0.1-1200MHz	12 Mo.	02/03/09

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RMC ID	Manufacturer	Description	Model No.	Serial No.	Frequency Range	Cal Period	Cal Date
ANT-13	EMCO	Horn Antenna	3115	2502	1.0-18GHz	24 Mo.	10/22/08
ANT-44	Impossible Machine	Super Log Antenna	SL-20M2G	1002	20-2000MHz	24 Mo.	12/26/07
HPF-03	Mini-Circuits	High Pass Filter	VHP-39	HPF-03	3-10 GHz	12 Mo.	01/30/08
LSN-01	Electrometrics	50 uH LISN	FCC/VDE 50/2	1001	0.01-30MHz	24 Mo.	06/01/09
LSN-03	Farnell	50 uH LISN	1EXLSN30B	000314	0.01-30MHz	24 Mo.	06/01/09
REC-01	Hewlett Packard	Spectrum Analyzer	8566A	2106A02115, 2209A01349	30Hz-22GHz	12 Mo.	10/23/08
REC-03	Anritsu	Spectrum Analyzer	MS2601B	MT94589	0.01-2200MHz	12 Mo.	03/09/09
REC-07	Anritsu	Spectrum Analyzer	MS2601A	MT53067	0.01-2200MHz	12 Mo.	03/09/09
REC-08	Hewlett Packard	Spectrum Analyzer	8566B	2648A13481 2209A01436	30Hz-22GHz	12 Mo.	08/21/09
THM-01	Extech Inst.	Temp/Humid Meter	4465CF	001106557	N/A	24 Mo.	01/18/08

Note: All calibrated equipment is subject to periodic checks.

## 10 TEST SECTIONS

### 10.1 AC Conducted Emissions

The tests and limits are in accordance with FCC section 15.207 and RSS Gen section 7.2.2.

A computer-controlled analyzer was used to perform the conducted emissions measurements. The frequency range was divided into 500 subranges equally spaced on a logarithmic scale. The computer recorded the peak of each subrange. This data was then plotted on semi-log graph paper generated by the computer and plotter. Adjusting the positions of the cables and orientation of the test system then maximizes the highest emissions.

Mains Conducted emission measurements were performed using a 50 Ohm/50 uH Line Impedance Stabilization Network (LISN) as the pick-up device. Measurements were repeated on both leads within the power cord. If the EUT power cord exceeded 80 cm in length, the excess length of the power cord was made into a 30 to 40 cm bundle near the center of the cord. The LISN was placed on the floor at the base of the test platform and electrically bonded to the ground plane.

Broadband conducted emissions may exceed the following limits by no more than 13 dB. An emission is defined as broadband if the average detector amplitude is 6 dB or more under the quasi-peak detector amplitude.

#### FCC Limits of Conducted Emissions at the AC Mains Ports

Frequency Range (MHz)	Class B Limits (dBuV)	
	Quasi-Peak	Average
0.150 - 0.50*	66 - 56	56 - 46
0.5 - 5.0	56	46
5.0 - 30	60	50

\* The limit decreases linearly with the logarithm of the frequency in this range.

The initial step in collecting conducted data is a peak detector scan and the plotting of the measurement range. Significant peaks are then marked as shown on the following table, and these signals are then measured with the quasi-peak detector. The following represents the worst case emissions from the USB Hub (with the EUT connected) power cord, after testing all modes of operation.

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The Amplitude is the final corrected value with cable and LISN Loss.

EUT	Lead Tested	Frequency MHz	QP Amplitude	QP Limit	Average Amplitude	Average Limit
TX mode	AC Neutral	0.333	43.9 Q	59.4	33.6	49.4
TX mode	AC Neutral	0.433	42.7 Q	57.2	30.6	47.2
TX mode	AC Neutral	0.494	37.4 Q	56.1	26.1	46.1
TX mode	AC Neutral	0.864	37.8 Q	56.0	26.0	46.0
TX mode	AC Neutral	0.187	42.0 Q	64.2	31.7	54.2
TX mode	AC Hot	0.333	46.9 Q	59.4	36.4	49.4
TX mode	AC Hot	0.371	43.0 Q	58.5	31.2	48.5
TX mode	AC Hot	0.433	44.8 Q	57.2	32.7	47.2
TX mode	AC Hot	0.507	39.9 Q	56.0	28.6	46.0
TX mode	AC Hot	0.801	41.1 Q	56.0	27.7	46.0
TX mode	AC Hot	1.354	40.3 P	56.0	24.9	46.0
TX mode	AC Hot	0.200	46.1 P	63.6	31.6	53.6
RX mode	AC Neutral	0.333	41.1 Q	59.4	30.1	49.4
RX mode	AC Neutral	0.371	45.4 Q	58.5	34.8	48.5
RX mode	AC Neutral	0.453	38.4 Q	56.8	27.9	46.8
RX mode	AC Neutral	0.513	41.5 P	56.0	27.0	46.0
RX mode	AC Neutral	1.118	39.8 P	56.0	23.8	46.0
RX mode	AC Neutral	1.643	37.3 P	56.0	23.8	46.0
RX mode	AC Hot	0.332	44.5 Q	59.4	32.2	49.4
RX mode	AC Hot	0.371	48.6 Q	58.5	37.7	48.5
RX mode	AC Hot	0.467	41.9 Q	56.6	30.0	46.6
RX mode	AC Hot	0.533	42.4 Q	56.0	29.2	46.0
RX mode	AC Hot	0.600	41.9 Q	56.0	27.8	46.0
RX mode	AC Hot	0.338	45.2 P	59.3	32.7	49.3

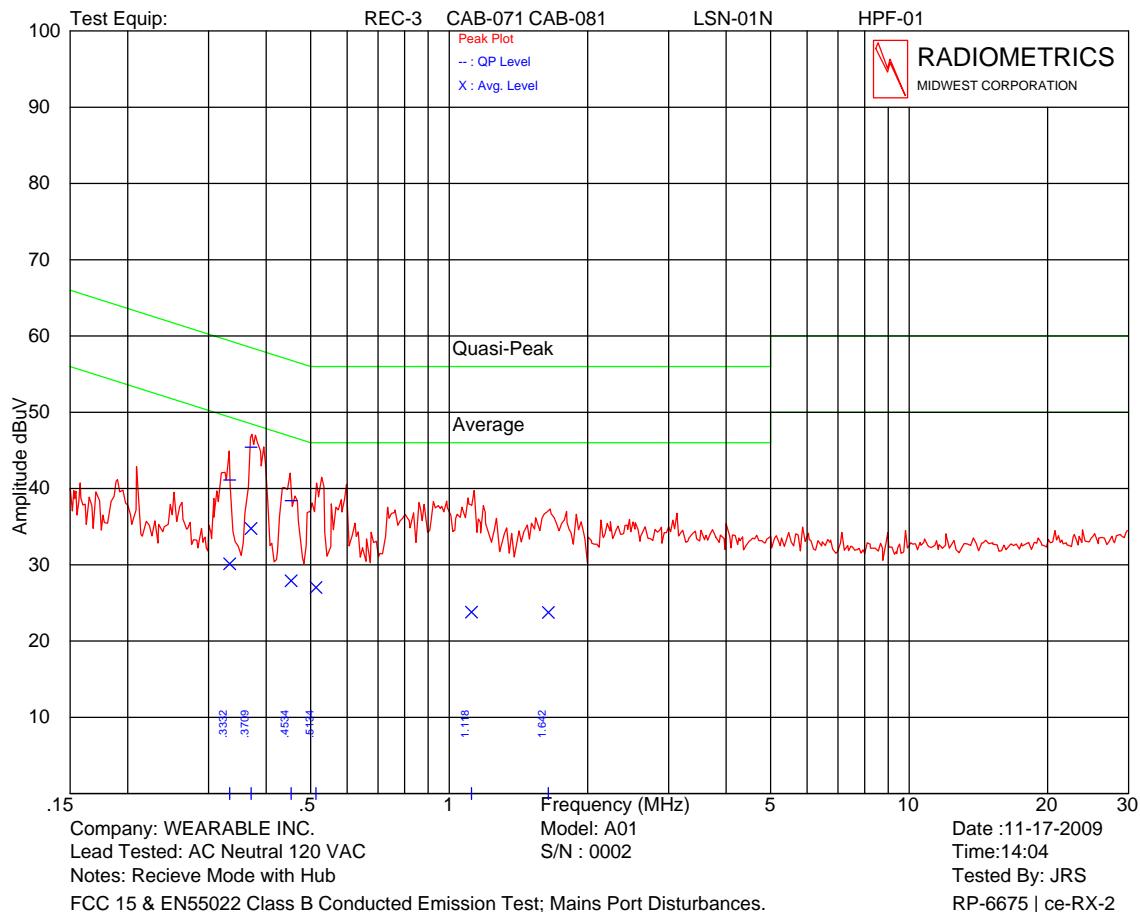
The above are the worst case results with three frequencies test for each EUT

\* QP readings are quasi-peak with a 9 kHz bandwidth and no video filter.

Judgment: Passed by 9.9 dB

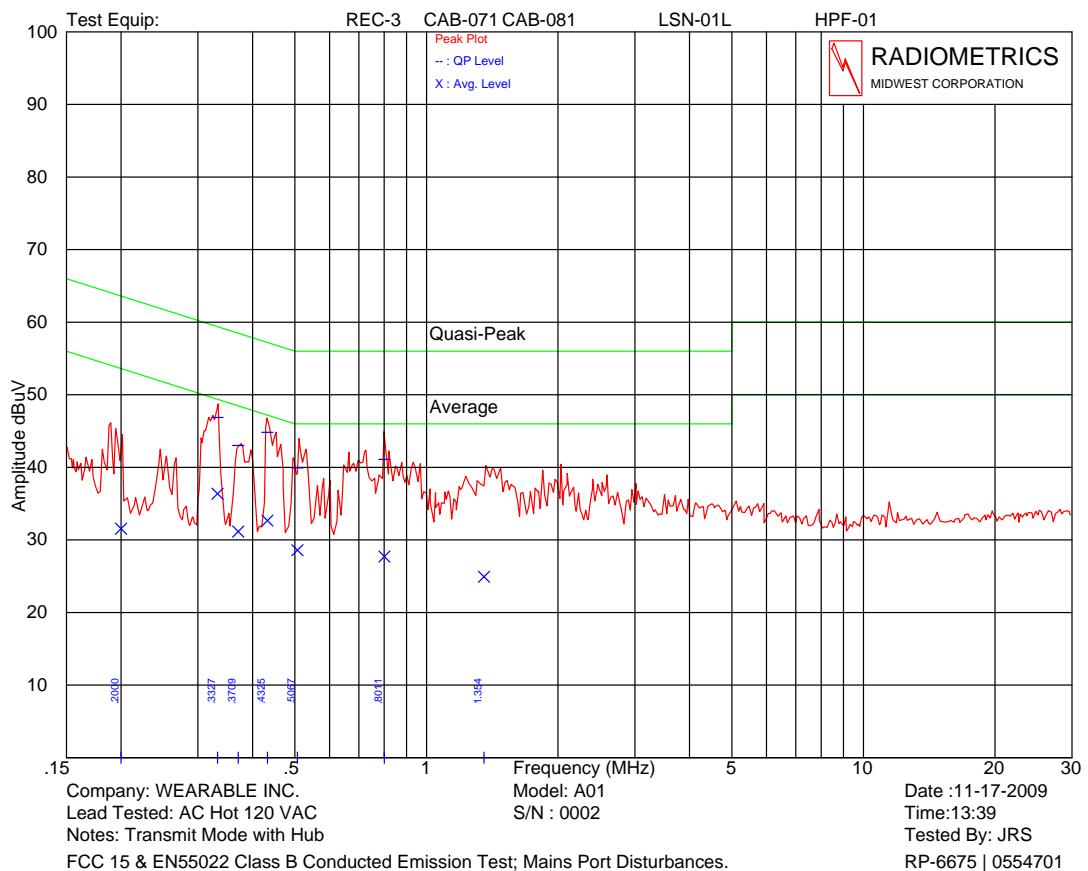
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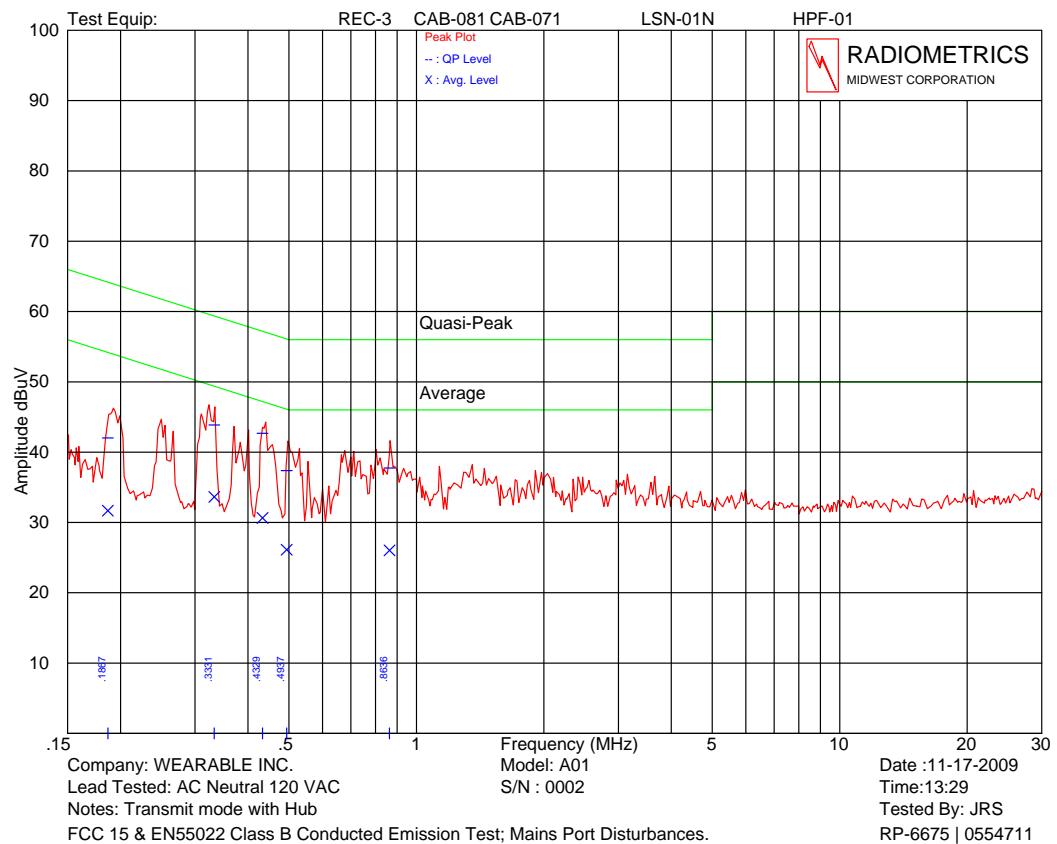
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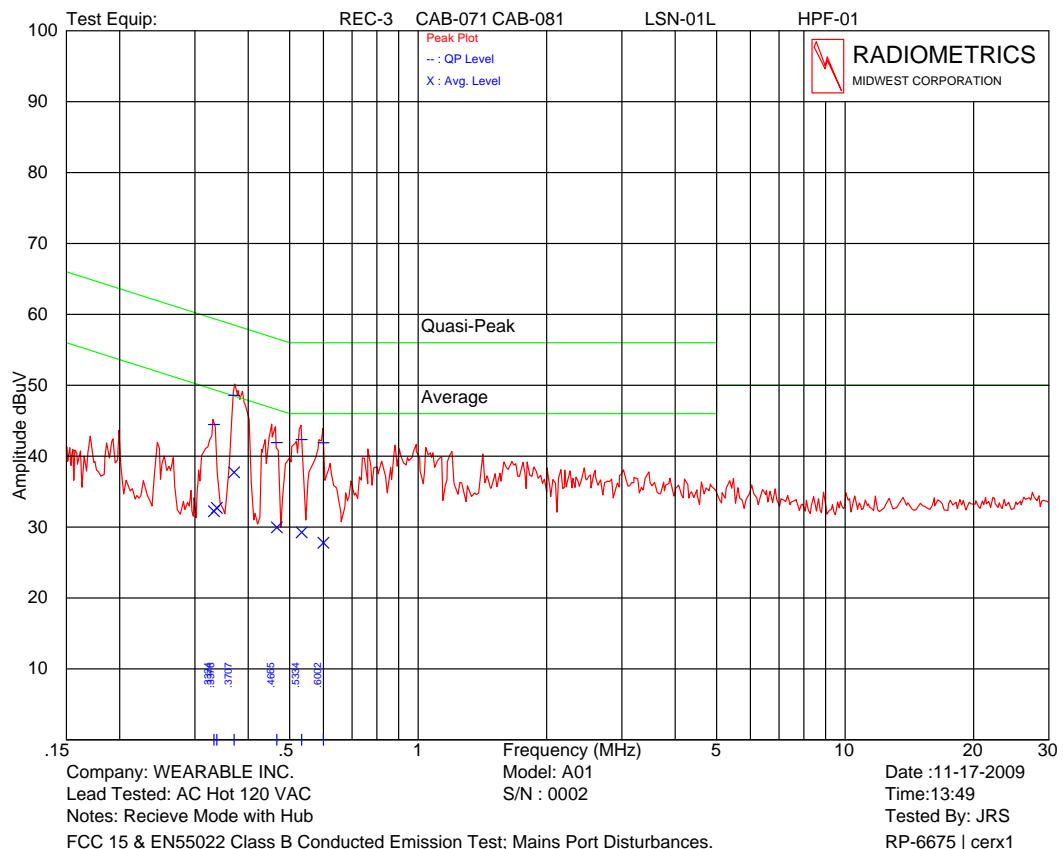
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# RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

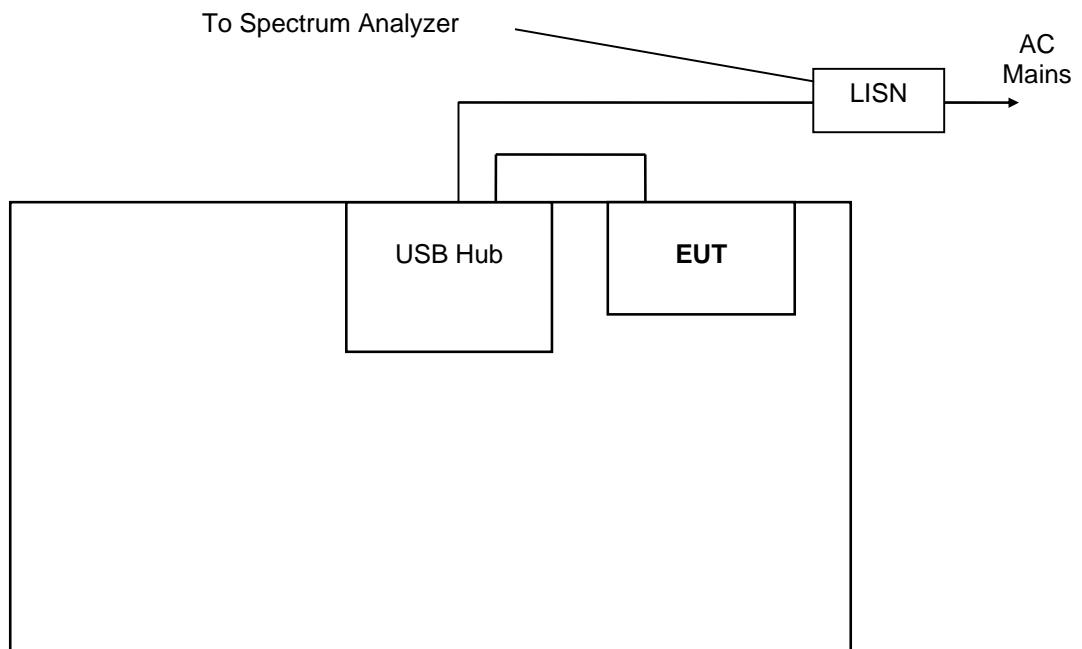
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**Figure 1. Conducted Emissions Test Setup (Stand Alone)**



**Notes:**

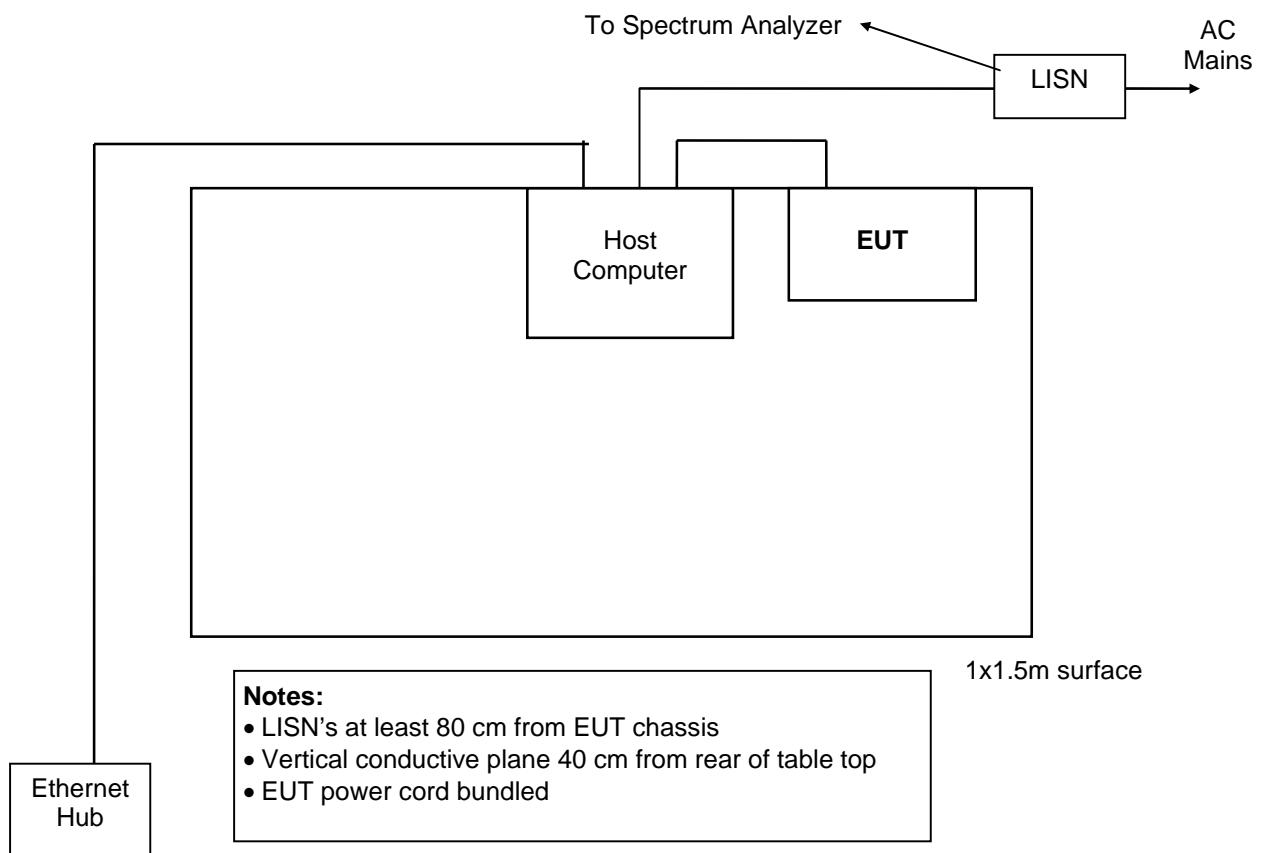
- LISN's at least 80 cm from EUT chassis
- Vertical conductive plane 40 cm from rear of table top
- EUT power cord bundled

1x1.5m surface

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**Figure 2. Conducted Emissions Test Setup (With PC as Host)**



### 10.2 Occupied Bandwidth

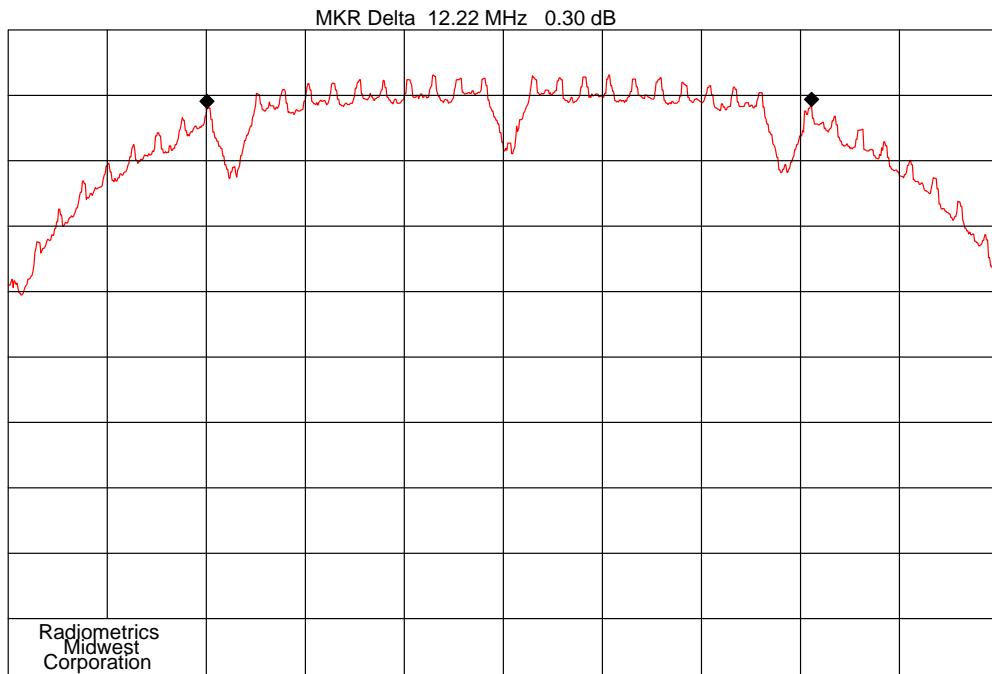
The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation. The EUT was transmitting at its maximum data rate. The trace was allowed to stabilize.

The marker-to-peak function was set to the peak of the emission. Then the marker-delta function was used to measure 20 dB down one side of the emission. The marker-delta function was reset and then moved to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

Channel	802.11b	802.11g	802.11b	802.11g
	6 dB EBW MHz	6 dB EBW MHz	20 dB EBW MHz	20 dB EBW MHz
1	12.22	16.82	18.26	18.68
6	12.22	16.82	18.22	16.76
11	12.06	16.76	18.06	18.88

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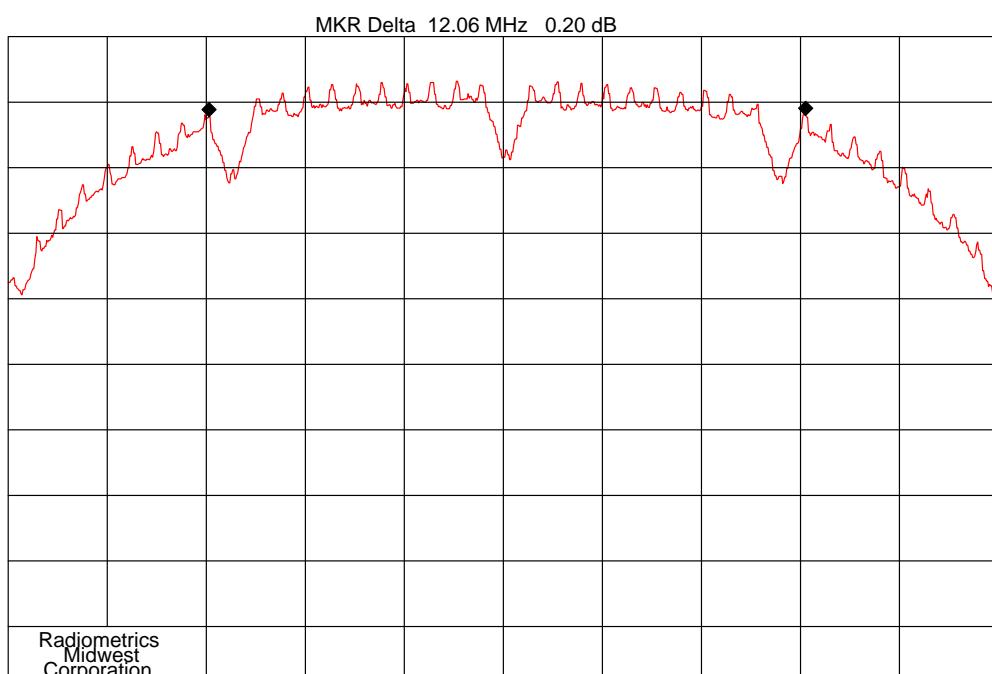
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Company: Wearable Inc.  
CENTER 2.412 0 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test, Chan. 1; 802.11b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:02

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec



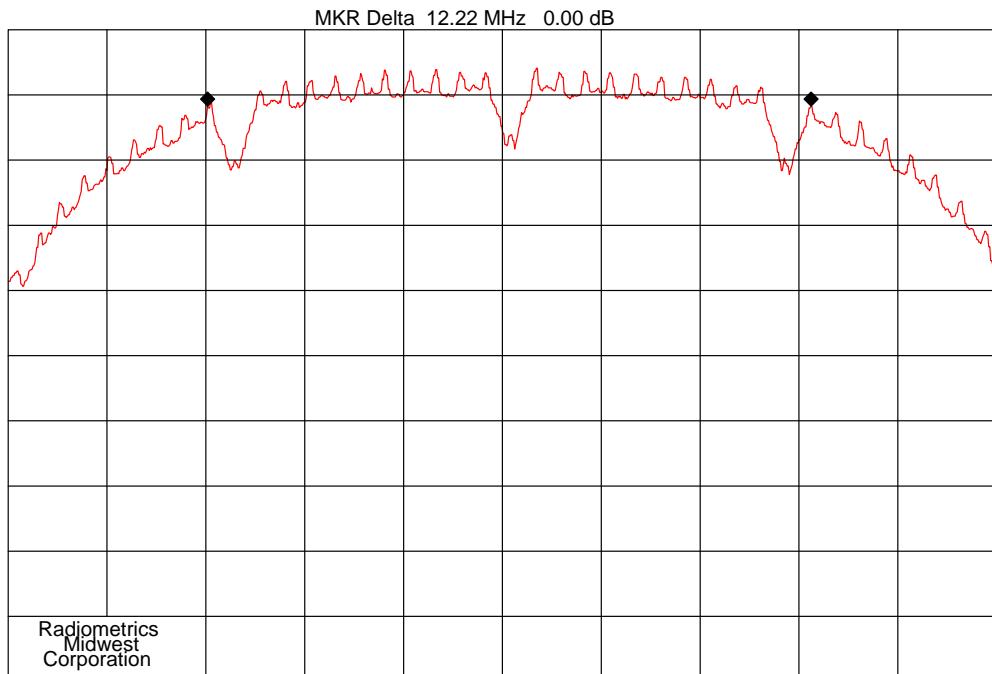
Company: Wearable Inc.  
CENTER 2.462 0 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test; 6 dB, Chan. 11; 802.1b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:34

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

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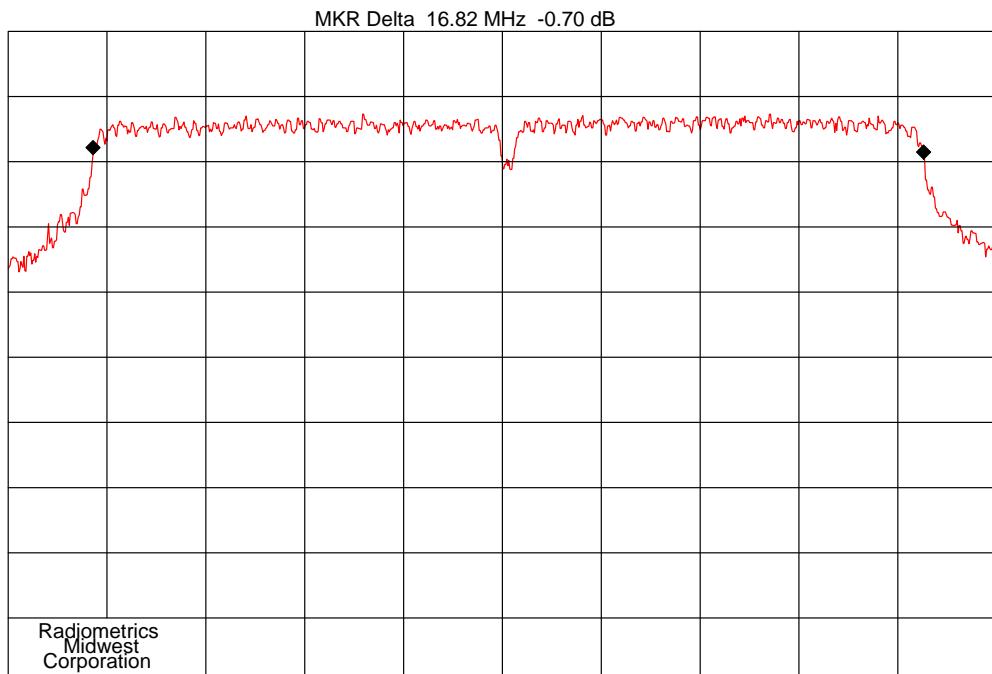


Company: Wearable Inc.  
CENTER 2.436 9 GHz  
RES BW 100 kHz  
10 dB/

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:28

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 6 dB, Chan. 6; 802.11b



Company: Wearable Inc.  
CENTER 2.412 0 GHz  
RES BW 100 kHz  
10 dB/

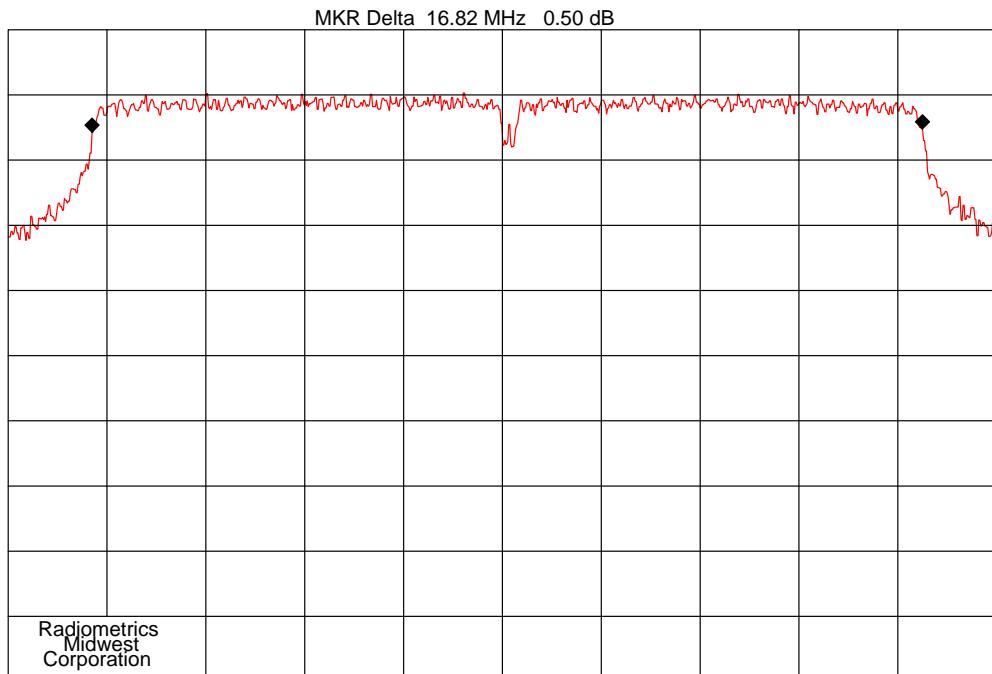
ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:18

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 6 dB, Chan. 1; 802.11g

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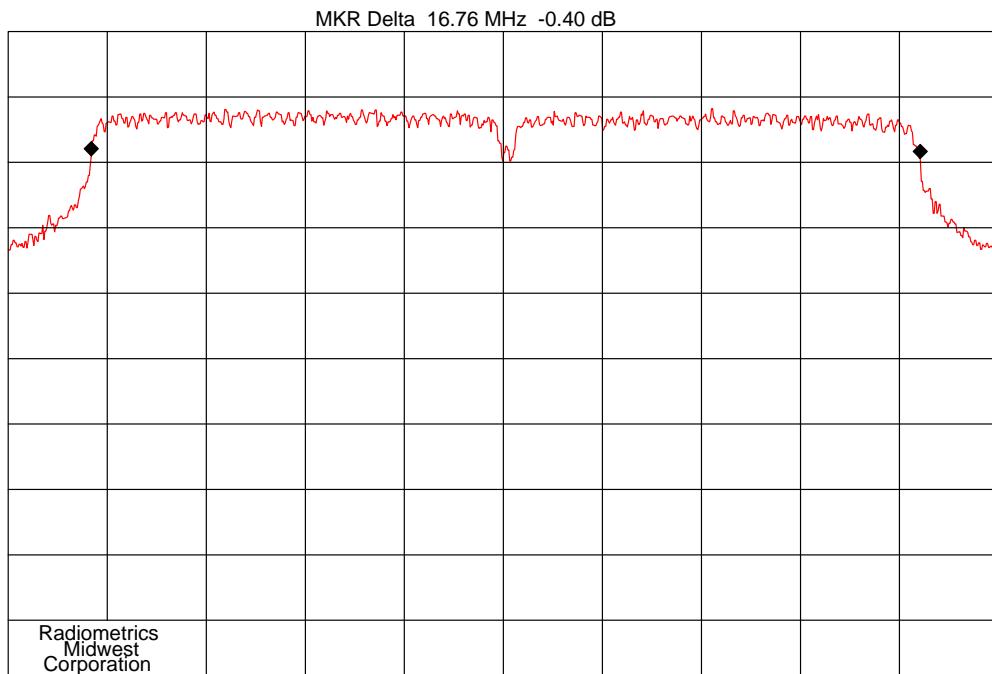


Company: Wearable Inc.  
CENTER 2.437 0 GHz  
RES BW 100 kHz  
10 dB/

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:23

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 6 dB, Chan. 6; 802.11g



Company: Wearable Inc.  
CENTER 2.462 0 GHz  
RES BW 100 kHz  
10 dB/

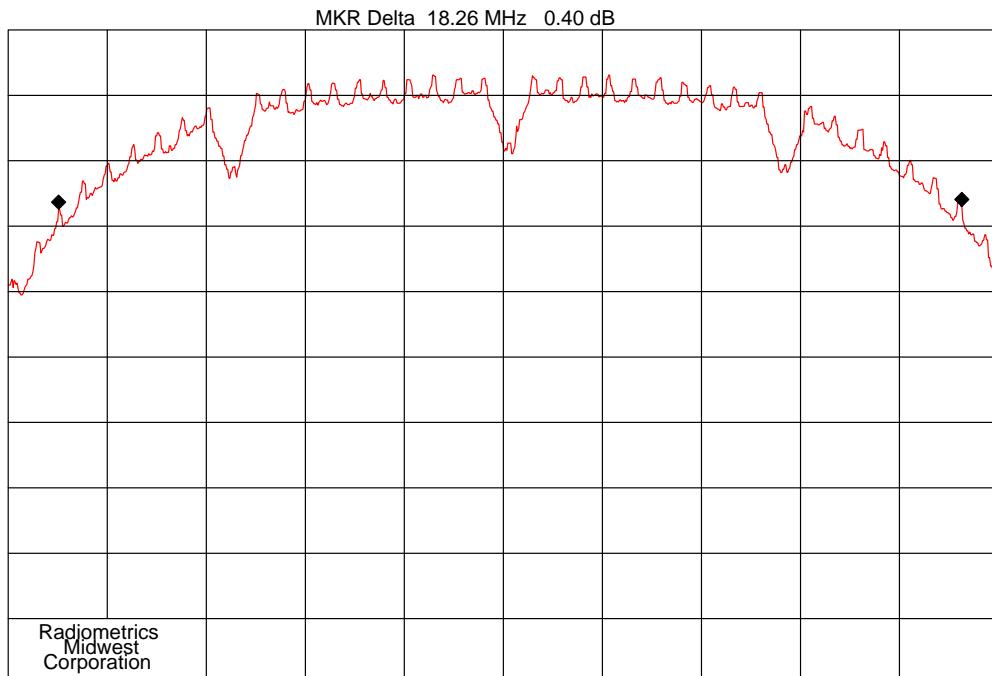
ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:45

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 6 dB, Chan. 11; 802.11g

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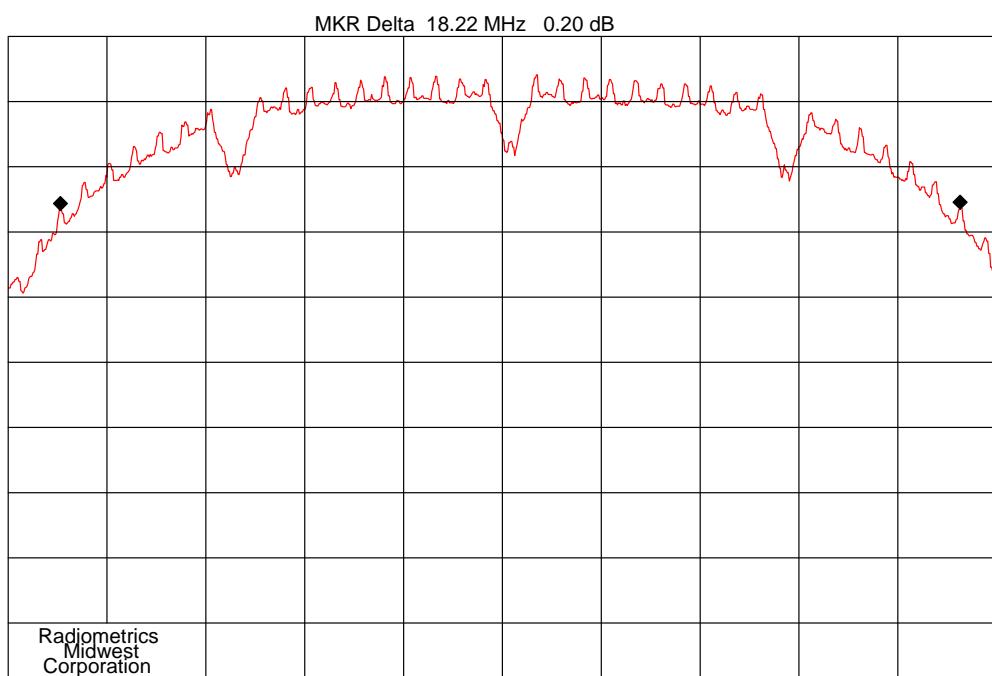
Testing of the Wearable, Inc., Model A01, Wifi Transmitter



Company: Wearable Inc.  
CENTER 2.412 0 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test; 20 dB, Chan. 1; 802.11b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:04

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec



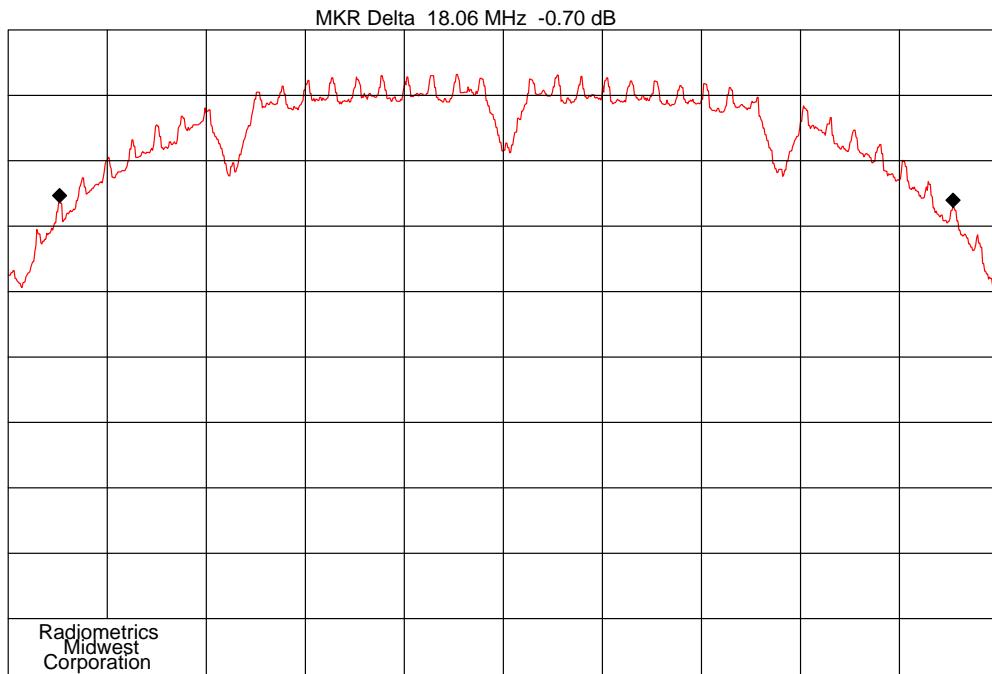
Company: Wearable Inc.  
CENTER 2.436 9 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test; 20 dB, Chan. 6; 802.11b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:30

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

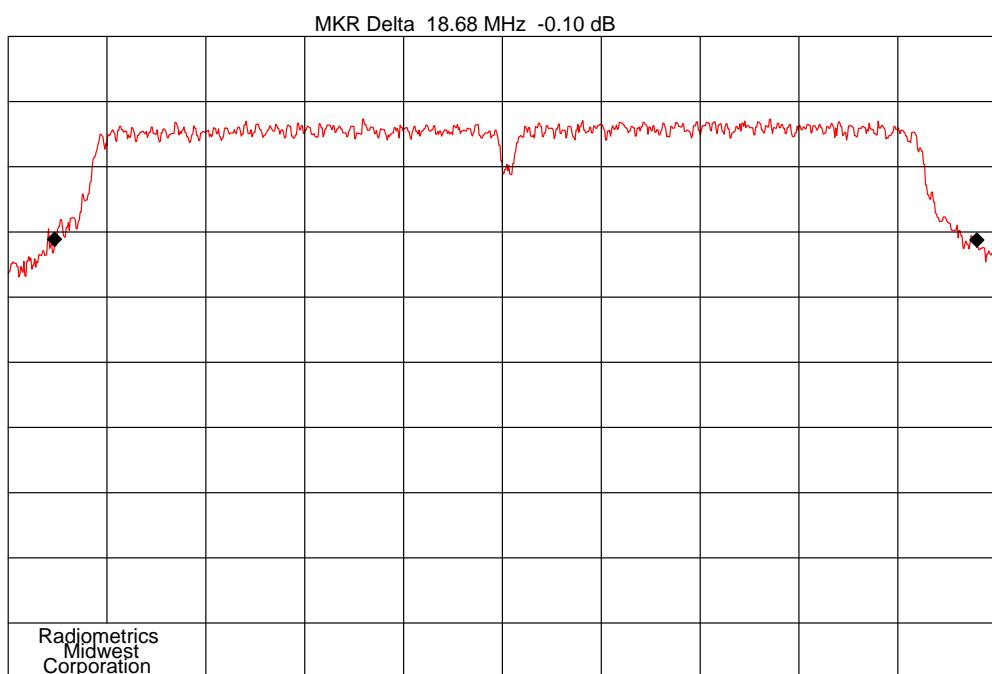
Testing of the Wearable, Inc., Model A01, Wifi Transmitter



Company: Wearable Inc.  
CENTER 2.462 0 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test; 20 dB, Chan. 11; 802.11b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:33

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec



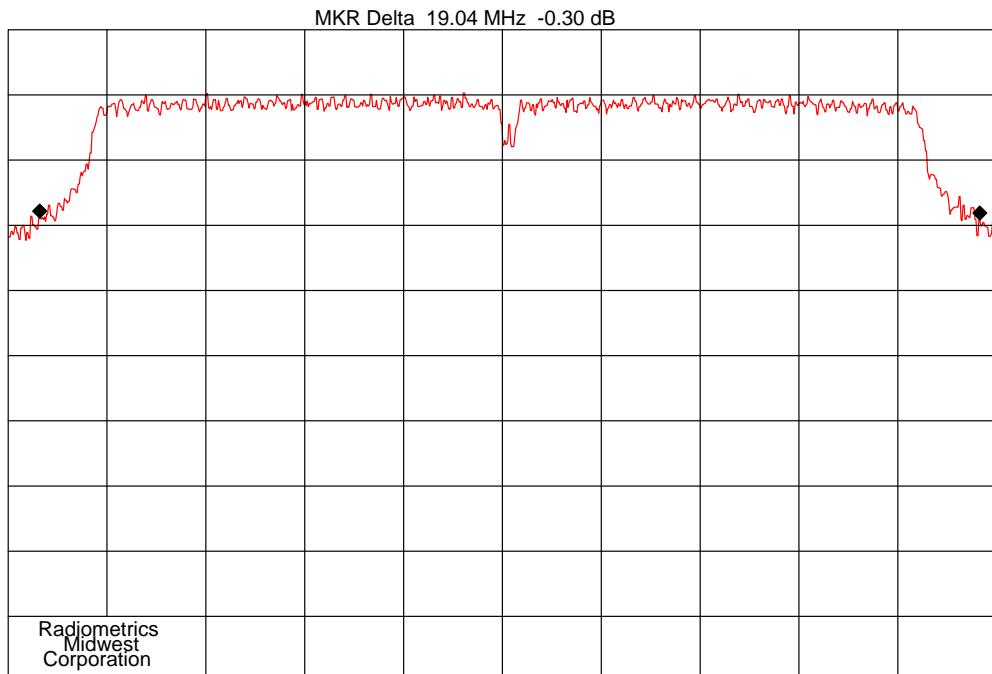
Company: Wearable Inc.  
CENTER 2.412 0 GHz  
RES BW 100 kHz  
10 dB/  
Notes: Bandwidth Test; 20 dB, Chan. 1; 802.11g

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:19

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

# RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

## Testing of the Wearable, Inc., Model A01, Wifi Transmitter

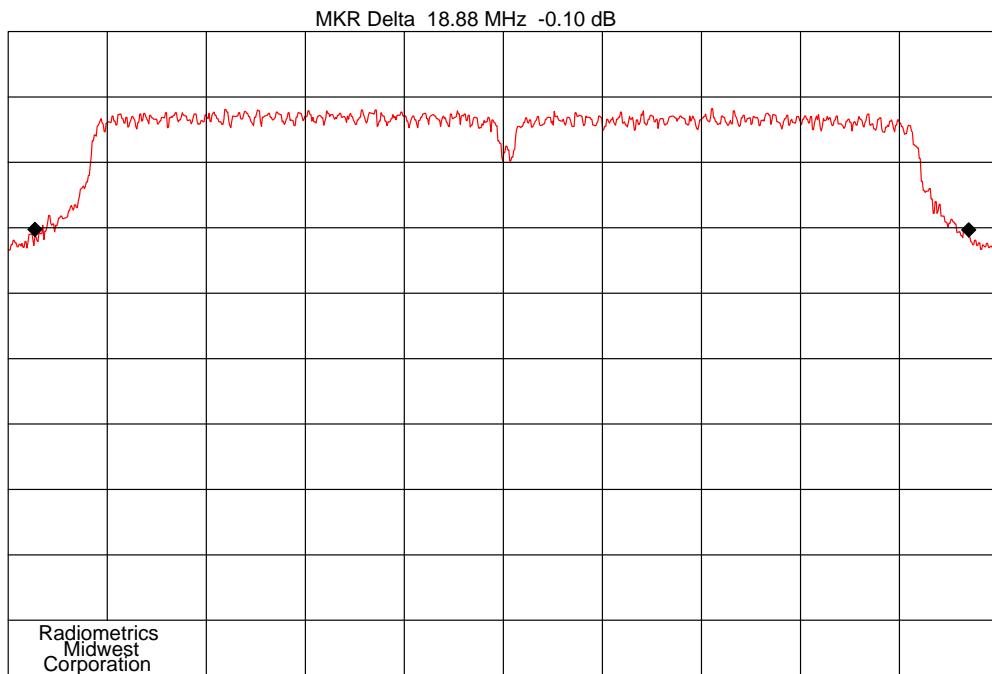


Company: Wearable Inc.  
CENTER 2.437 0 GHz  
RES BW 100 kHz  
10 dB/

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:22

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 20 dB, Chan. 6; 802.11g



Company: Wearable Inc.  
CENTER 2.462 0 GHz  
RES BW 100 kHz  
10 dB/

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:47

Date : 11-17-2009  
SPAN 20.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Bandwidth Test; 20 dB, Chan. 11; 802.11g

## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter

### 10.3 Peak Output Power

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement. The FCC procedures from power output option 2, Method #3 were used.

The transmitter's peak power was calculated using the following equation:

$$P = (E \times d)^2 / (30)$$

Where: E = the measured maximum peak field strength in V/m.

d = Distance in meters from which the field strength was measured. (3 meters)

P = The EUT power in watts

The Field Strength was measured using the procedures described in section 10.9, with the exception of the resolution and video bandwidths. The spectrum analyzer was set to the following settings:

Span = 3 MHz ; RBW = 1 MHz (> the 20 dB bandwidth of the emission being measured)

VBW = 3 MHz; Sweep = auto; Detector function = peak; Trace = max hold

Since the gain of the antenna is always less than 6dB, the limit is not reduced.  
Battery Powered

Function	MHz	dBuV/m pk	Watts	V/m	Test Dist meters	BW Corr Fact	Peak EUT dBm
802.11b	2412	102.2	0.0050	0.1288	3	10.9	7.0
802.11b	2437	105.3	0.0102	0.1841	3	10.9	10.1
802.11b	2462	103.0	0.0060	0.1413	3	10.8	7.8
802.11g	2412	104.1	0.0077	0.1603	3	12.3	21.1
802.11g	2437	107.1	0.0154	0.2265	3	12.3	24.1
802.11g	2462	105.1	0.0097	0.1799	3	12.3	22.1

#### Hub Powered

802.11b	2412	102.5	0.0053	0.1679	3	10.9	7.3
802.11b	2437	105.5	0.0106	0.2371	3	10.9	10.3
802.11b	2462	102.9	0.0058	0.1758	3	10.8	7.7
802.11g	2412	104.9	0.0093	0.2213	3	12.3	21.9
802.11g	2437	106.3	0.0128	0.2600	3	12.3	23.3
802.11g	2462	104.5	0.0085	0.2113	3	12.3	21.5

Overall Test result: Pass by 5.9 dB

### 10.4 Power Spectral Density

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement. The FCC procedures from PSD option 1 was used. The power spectral density was measured as follows.

The field strength was measured using the procedures described in section 10.9, with the following exceptions: The analyzer was tuned to the highest point of the maximized fundamental emission. The analyzer was set to RBW = 3 kHz, VBW > RBW, span = 300 kHz and a sweep = 100 Sec. Using this peak level, the transmitter's power spectral density was calculated using the following equation:

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report							
Testing of the Wearable, Inc., Model A01, Wifi Transmitter							

$$P = (E \times d)^2 / (30)$$

Where: E = the measured maximum peak field strength in V/m, using the bandwidths in this section.

d = Distance in meters from which the field strength was measured. (3 meters)

P = The EUT power in watts

#### Battery Powered

	Freq	3kHz PSD Field Strength		Test Distance	3 kHz Spectral Density from EUT		Limit		
		EUT	MHz	dBuV/m	V/m	Meters	Watts	dBm	
802.11b	2412	85.4		0.0186		3	0.000104	-9.8	8
802.11b	2437	88.4		0.0263		3	0.000208	-6.8	8
802.11b	2462	85.9		0.0197		3	0.000117	-9.3	8
802.11g	2412	82.3		0.0130		3	0.000051	-12.9	8
802.11g	2437	86.6		0.0214		3	0.000137	-8.6	8
802.11g	2462	84.0		0.0158		3	0.000075	-11.2	8

#### Hub Powered

802.11b	2412	85.7	0.0243	3	0.000177	-9.5	8
802.11b	2437	88.6	0.0339	3	0.000344	-6.6	8
802.11b	2462	85.8	0.0245	3	0.000181	-9.4	8
802.11g	2412	83.1	0.0180	3	0.000097	-12.1	8
802.11g	2437	85.8	0.0245	3	0.000181	-9.4	8
802.11g	2462	83.4	0.0186	3	0.000104	-11.8	8

Overall Test result: Pass by 14.6 dB

#### 10.5 Average power

These measurements were made with an 18 GHz crystal RF detector. FCC part 15 and RSS-210 do not have limits on average power. The purpose of this is for RF Exposure Compliance requirements.

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement.

The average voltage level from the crystal detector. Using this level, the transmitter's power spectral density was calculated using the following equation:

$$P = (E \times d)^2 / (30)$$

Where: E = the measured maximum Average field strength in V/m.

d = Distance in meters from which the field strength was measured. (3 meters)

P = The EUT power in watts

The battery powered EUT Can be hand held, so it needs to be under 24.6mW in order to be exempt from SAR testing.

		Freq	Average Reading at Detector	Atten Loss	Ant, Amp & cable	Field Strength		Test Distance	Equivalent Power
--	--	------	-----------------------------	------------	------------------	----------------	--	---------------	------------------

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report									
Testing of the Wearable, Inc., Model A01, Wifi Transmitter									

EUT	Mode	MHz	dBuV	dB	dB/m	dBuV/m	V/m	meters	mW
Battery	802.11 b	2412	94.4	10.0	3.8	108.2	0.2570	3.0	19.8
Battery	802.11 b	2437	94.2	10.0	4	108.2	0.2570	3.0	19.8
Battery	802.11 b	2462	94.5	10.0	4.3	108.8	0.2754	3.0	22.8
Battery	802.11 g	2412	94	10.0	3.8	107.8	0.2455	3.0	18.1
Battery	802.11 g	2437	95	10.0	4	109.0	0.2818	3.0	23.8
Battery	802.11 g	2462	94.2	10.0	4.3	108.5	0.2661	3.0	21.2
USB Powered	802.11 b	2412	94.7	10.0	3.8	108.5	0.2661	3.0	21.2
USB Powered	802.11 b	2437	94.4	10.0	4	108.4	0.2630	3.0	20.8
USB Powered	802.11 b	2462	94.4	10.0	4.3	108.7	0.2723	3.0	22.2
USB Powered	802.11 g	2412	94.8	10.0	3.8	108.6	0.2692	3.0	21.7
USB Powered	802.11 g	2437	94.2	10.0	4	108.2	0.2570	3.0	19.8
USB Powered	802.11 g	2462	93.6	10.0	4.3	107.9	0.2483	3.0	18.5

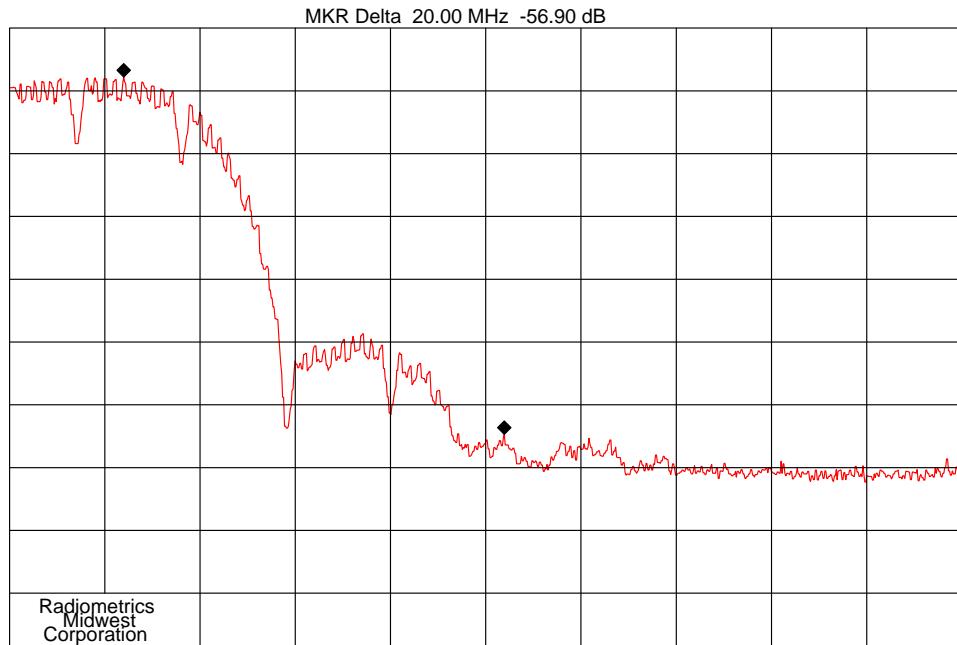
Since the average power output is 24 mW, The EUT meets the FCC requirement for RF exposure for handheld devices with no SAR testing required.

## 10.6 Band-edge Compliance of RF Conducted Emissions

The spectrum analyzer was set to the MAX HOLD mode to record the worst case of the modulation at the band-edge, with the EUT set to the lowest frequency. The trace was allowed to stabilize.

# RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

## Testing of the Wearable, Inc., Model A01, Wifi Transmitter

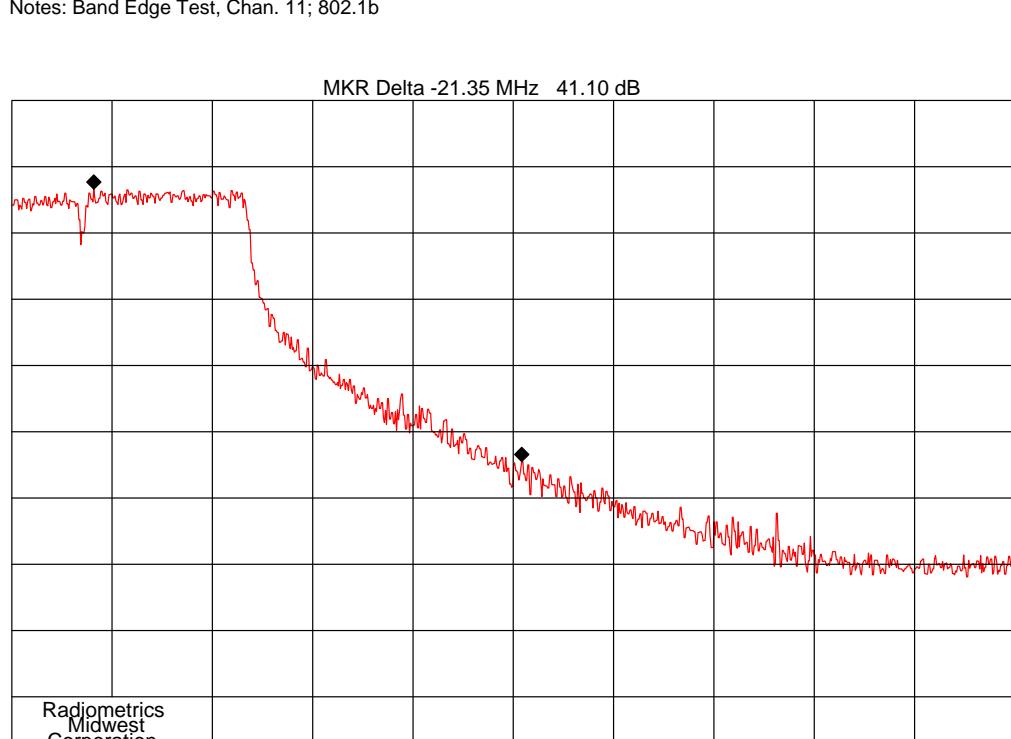


Company: Wearable Inc.  
CENTER 2.483 5 GHz  
RES BW 100 kHz  
10 dB/

Notes: Band Edge Test, Chan. 11; 802.1b

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:36

Date : 11-17-2009  
SPAN 50.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec



Company: Wearable Inc.  
CENTER 2.483 5 GHz  
RES BW 100 kHz  
10 dB/

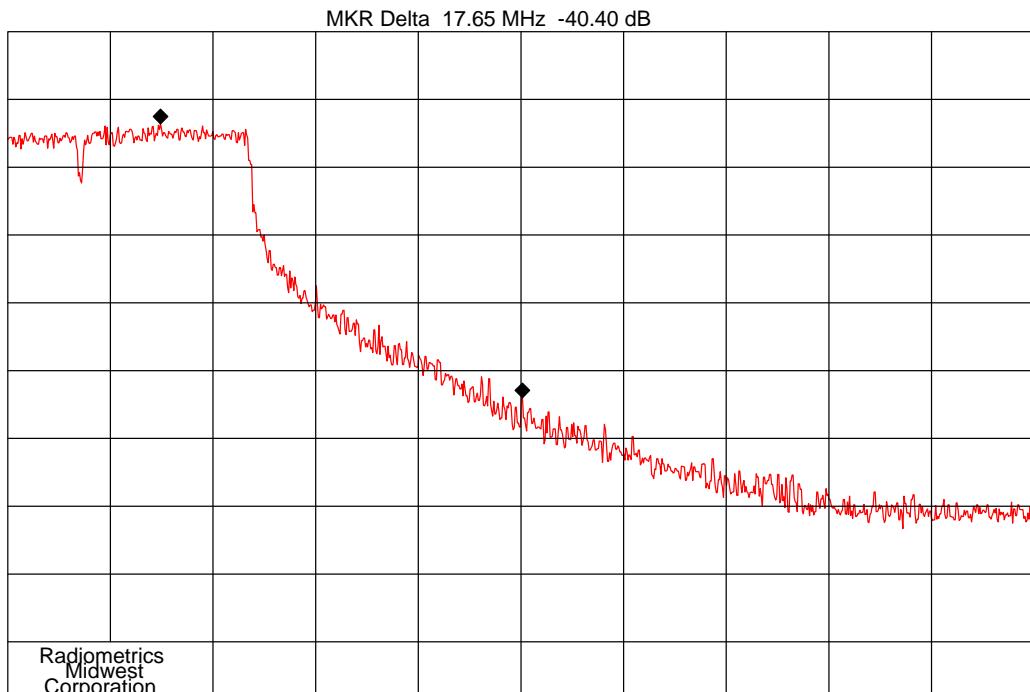
Notes: Band Edge Test, Chan. 11; 802.1g

ITEM : A01  
REF 97.0 dBuV  
VBW 300 kHz  
Time: 10:42

Date : 11-17-2009  
SPAN 50.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter



Company: Wearable Inc.  
CENTER 2.483 5 GHz  
RES BW 100 kHz  
10 dB/

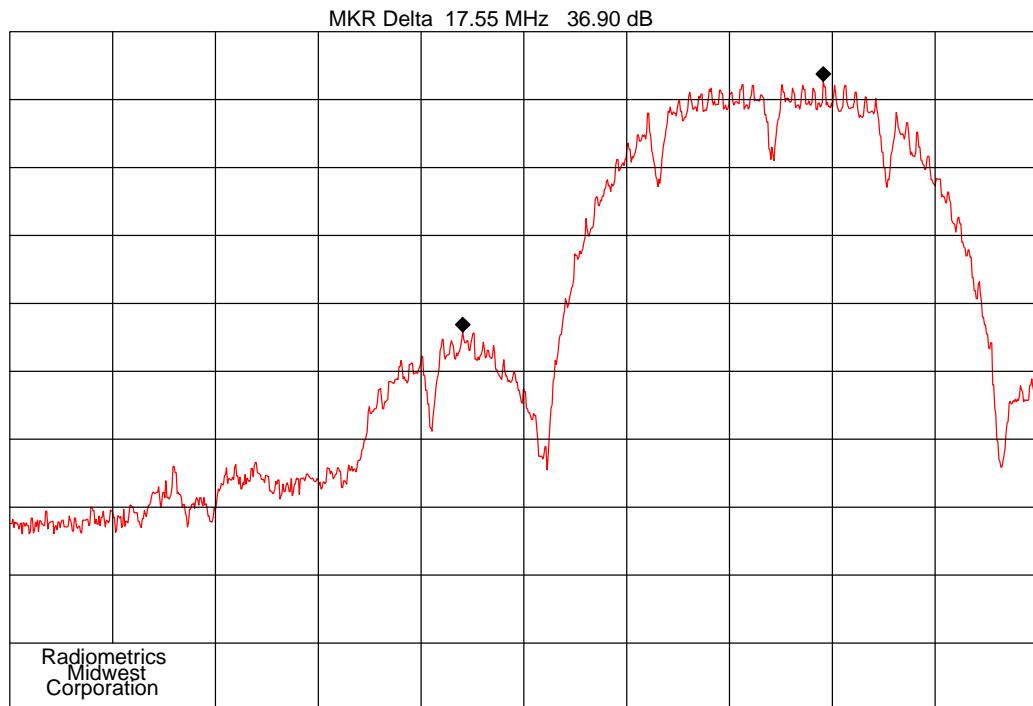
Notes: Band Edge Test, Chan. 11; 802.11g

ITEM : A01  
REF 97.0 dBuV  
VBW 100 kHz  
Time: 10:43

Date : 11-17-2009  
SPAN 50.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

# RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter

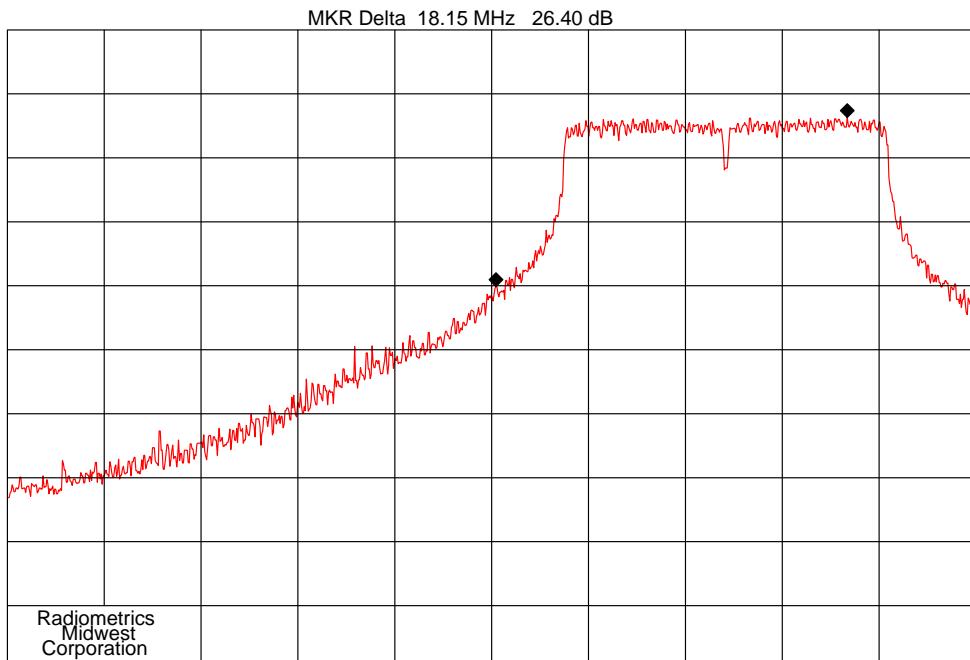


Company: Wearable Inc.  
CENTER 2.400 0 GHz  
RES BW 100 kHz  
10 dB/  
Time: 10:00

ITEM : A01  
REF 97.0 dBuV  
VBW 100 kHz  
Time: 10:00

Date : 11-17-2009  
SPAN 50.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Lower Band edge, Chan. 1; 802.11b



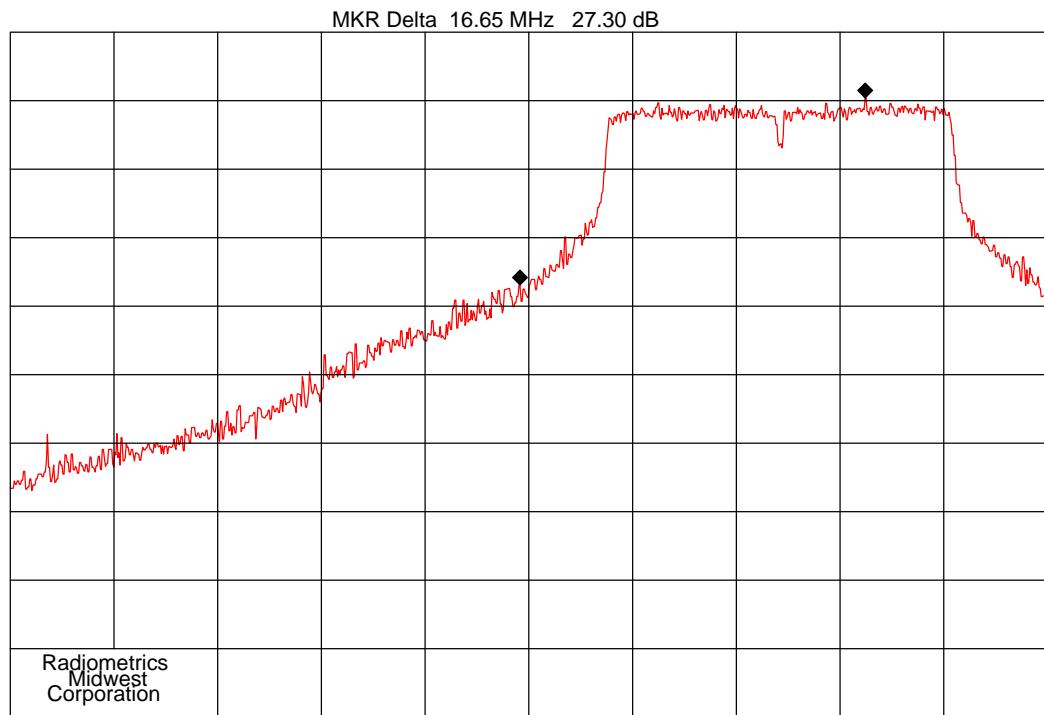
Company: Wearable Inc.  
CENTER 2.400 0 GHz  
RES BW 100 kHz  
10 dB/  
Time: 10:16

ITEM : A01  
REF 97.0 dBuV  
VBW 100 kHz  
Time: 10:16

Date : 11-17-2009  
SPAN 50.0 MHz  
ATTEN 0 dB  
SWP 20.0 msec

Notes: Band Edge Test, Chan. 1; 802.11g

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report									
Testing of the Wearable, Inc., Model A01, Wifi Transmitter									



Company: Wearable Inc.  
 CENTER 2.400 0 GHz  
 RES BW 100 kHz  
 10 dB/  
 Notes: Band Edge Test, Chan. 1; 802.11g; Battery

ITEM : A01  
 REF 97.0 dBuV  
 VBW 300 kHz  
 Time: 11:03

Date : 11-17-2009  
 SPAN 50.0 MHz  
 ATTEN 0 dB  
 SWP 20.0 msec

Judgement: Pass by 6.4 dB

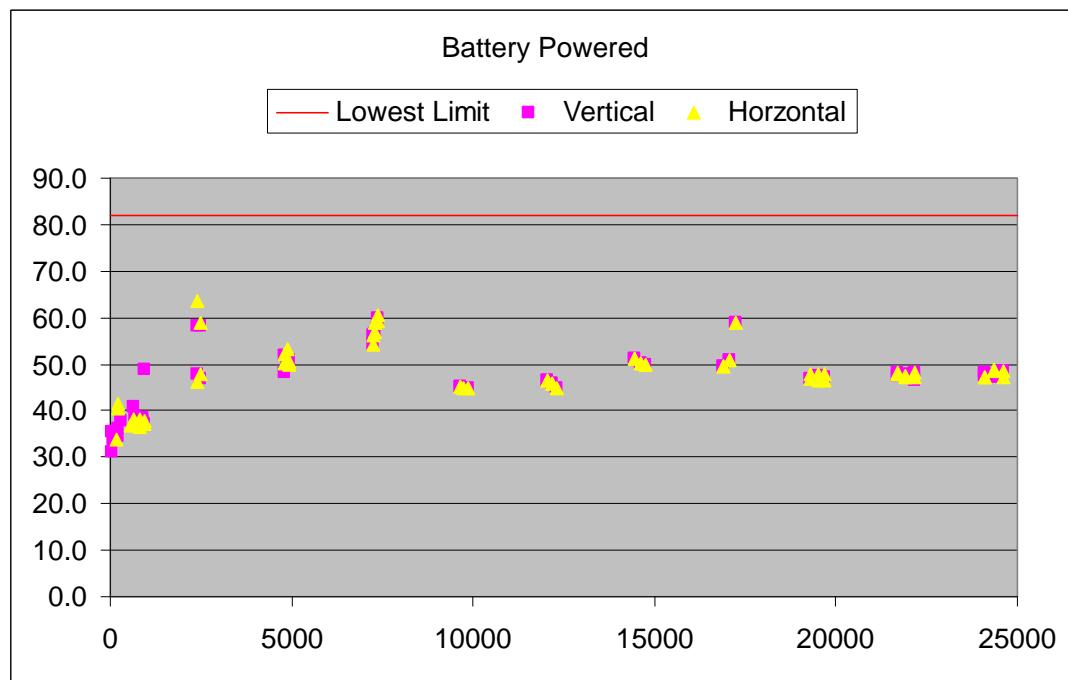
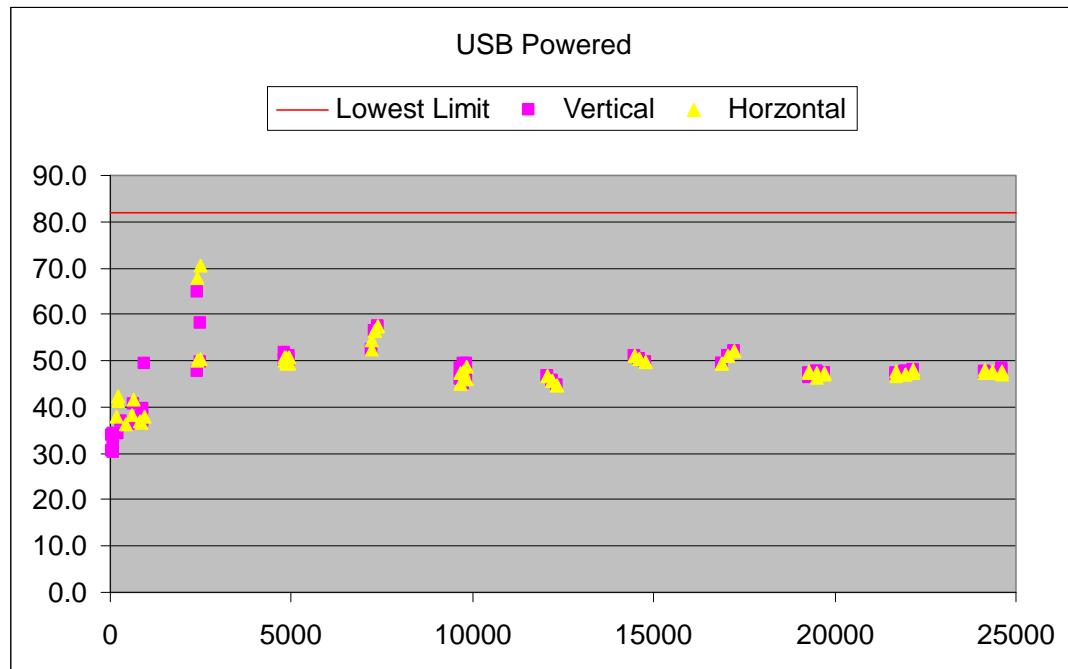
## 10.7 Spurious RF Conducted Emissions

Since antenna conducted tests cannot be performed on the EUT, radiated tests were performed to show compliance with this requirement.

The EUT was tested in continuous mode and peak readings were made from the lowest frequency generated in the EUT up through the 10<sup>th</sup> harmonic. The limit is 20 dB lower than the peak of the lowest fundamental. The data is shown graphically.

# RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter



Judgement: Pass by 11.5 dB

## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter

### 10.8 Spurious Radiated Emissions (Restricted Band)

Radiated emission measurements were performed with linearly polarized broadband antennas. The results obtained with these antennas can be correlated with results obtained with a tuned dipole antenna. The radiated emission measurements were performed with a spectrum analyzer. The bandwidth used from 150 kHz to 30 MHz is 9 or 10 kHz and the bandwidth from 30 MHz to 1000 MHz is 100 or 120 kHz. Above 1 GHz, a 1 MHz bandwidth is used. A 10 dB linearity check is performed prior to start of testing in order to determine if an overload condition exists.

From 30 to 1000 MHz, an Anritsu spectrum analyzer was used. For tests from 1 to 25 GHz, an HP 8566 spectrum analyzer was used. For tests from 1 to 10 GHz, a high pass filter was used to reduce the fundamental emission. A harmonic mixer was used from 18 to 25 GHz. Figure 4 herein lists the details of the test equipment used during radiated emissions tests.

In addition, a high pass filter was used to reduce the fundamental emission.

The device was rotated through three orthogonal axis as per 13.1.4.1 of ANSI C63.4 during the prescans and during final radiated tests.

Final radiated emissions measurements were performed inside of an anechoic chamber at a test distance of 3 meters. The anechoic chamber is designated as Chamber E. This Chamber meets the Site Attenuation requirements of ANSI C63.4 and CISPR 16-1. Chamber E is located at 12 East Devonwood Ave. Romeoville, Illinois EMI test lab.

The entire frequency range from 30 to 25000 MHz was slowly scanned with particular attention paid to those frequency ranges which appeared high. Measurements were performed using two antenna polarizations, (vertical and horizontal). The worst case emissions were recorded. All measurements may be performed using either the peak, average or quasi-peak detector functions. If the peak detector data exceeds or is marginally close to the limits, the measurements are repeated using a quasi-peak detector or average function as required by the specification for final determination of compliance.

The detected emission levels were maximized by rotating the EUT, adjusting the positions of all cables, and by scanning the measurement antenna from 1 to 4 meters above the ground.

#### 10.8.1 Radiated Emissions Field Strength Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Loss, and by subtracting the Amplifier Gain from the measured reading. The basic equation is as follows:

$$FS = RA + AF + CF - AG$$

Where: FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

AG = Amplifier Gain

HPF = High pass Filter Loss

## RADIOMETRICS MIDWEST CORPORATION - EMC Test Report

Testing of the Wearable, Inc., Model A01, Wifi Transmitter

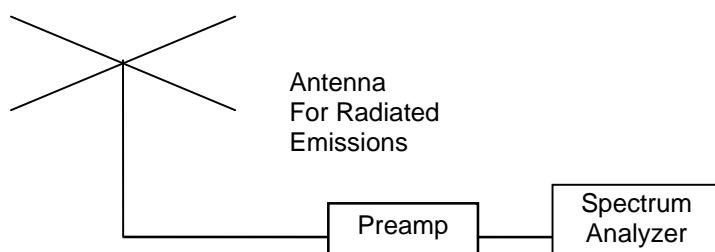
**Figure 3. Drawing of Radiated Emissions Setup**



1x1.5m surface 80 cm above  
Flush-mount Turntable

**Notes:**

- AC outlet with low-pass filter at the base of the turntable
- Antenna height varied from 1 to 4 meters
- Distance from antenna to tested system is 3 meters
- Not to Scale



### 10.8.2 Spurious Radiated Emissions Test Results

The following spectrum analyzer settings were used.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz

$VBW \geq RBW$

Sweep = auto

Detector function = peak

Trace = max hold

A Video Bandwidth of 10 Hz was used for Average measurements above 1 GHz.

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report															
Testing of the Wearable, Inc., Model A01, Wifi Transmitter															

### 10.8.2.1 Emissions Above 1 GHz

USB powered

hrm	Tx	802.11b		802.11g		802.11b		802.11g		Corr.	EUT	Peak	Ave	Peak	Ave	Margin
		Peak	Ave	Peak	Ave	Peak	Ave	Peak	Ave			Tot. FS	Limit	Under		
#	Freq	Vertical Polarization				Horizontal Polarization				Fact.	Freq MHz	dBuV/m		dBuV/m		Limit
1	2412	90.1	86.2	91.7	83.7	92.7	90.5	95.1	86.7	9.8	2412	104.9	100.3	125	125	20.1
be	2412	37.8	33.6	54.9	41.3	40.2	34.1	58.0	42.0	9.8	2390	67.8	51.8	74	54	2.2
2	2412	37.5	33.9	39.1	30.2	38.1	34.1	37.5	29.4	12.6	4824	51.7	46.7	74	54	7.3
3	2412	36.2	25.3	36.0	26.0	36.2	26.0	38.3	29.0	16.1	7236	54.4	45.1	94	74	28.9
4	2412	38.4	33.2	36.0	26.0	37.4	30.6	35.0	26.0	10.1	9648	48.5	43.3	74	54	10.7
5	2412	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	11.6	12060	46.6	37.6	94	74	36.4
1	2437	93.3	N/A	95.5	N/A	95.5	N/A	96.3	N/A	10	2437	106.3	N/A	125	125	18.7
2	2437	37.5	33.6	38.5	29.6	36.6	31.4	38.0	29.0	12.6	4874	51.1	46.2	74	54	7.8
3	2437	36.0	26.0	36.0	26.0	36.0	26.0	36.0	26.0	20.5	7311	56.5	46.5	74	54	7.5
4	2437	39.4	33.7	35.0	26.0	37.7	33.4	36.0	26.0	9.9	9748	49.3	43.6	74	54	10.4
5	2437	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	10.8	12185	45.8	36.8	74	54	17.2
1	2462	90.2	87.0	91.7	83.4	92.6	90.4	94.2	81.5	10.3	2462	104.5	91.7	125	125	20.5
be	2462	39.5	34.2	47.9	33.5	40.1	34.9	60.2	37.8	10.3	2483.5	70.5	48.1	74	54	3.5
2	2462	37.3	34.7	38.2	27.5	38.1	35.2	36.5	26.9	12.7	4924	50.9	47.9	74	54	6.1
3	2462	36.0	26.0	36.0	26.0	36.0	26.0	36.0	26.0	21.3	7386	57.3	47.3	74	54	6.7
4	2462	39.4	34.1	36.0	26.0	38.6	34.5	36.0	26.0	10	9848	49.4	44.5	74	54	9.5
5	2462	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	9.7	12310	44.7	35.7	74	54	18.3
Column numbers (see below for explanations)																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Column #1. Frequency of Transmitter.

Column #2. Columns 3 to 10 are the uncorrected readings from the spectrum analyzer

Column #11. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor + High pass filter (for harmonics only)

Column #12. Frequency of Tested Emission

Column #13. Highest peak field strength at listed frequency.

Column #14. Highest Average field strength at listed frequency.

Column #15. Peak Limit. Non restricted bands limits set to 94 dBuV/m. The fundamental was tested with a direct connect so there is no radiated emissions limit.

Column #16. Average Limit. Non restricted bands limits set to 74 dBuV/m. There is no fundamental average limit.

Column #17. The margin (last column) is the worst case margin under the peak or average limits for that row.

RADIOMETRICS MIDWEST CORPORATION - EMC Test Report															
Testing of the Wearable, Inc., Model A01, Wifi Transmitter															

Battery powered

		802.11b		802.11g		802.11b		802.11g			EUT	Peak	Ave	Peak	Ave	Margin
hrm	Tx	Peak	Ave	Peak	Ave	Peak	Ave	Peak	Ave	Corr.	Emission	Tot. FS		Limit		
#	Freq	Vertical Polarization				Horizontal Polarization				Fact.	Freq MHz	dBuV/m		dBuV/m		Under
1	2412	92.4	88.4	94.3	84.7	90.6	88.5	93.6	85.6	9.8	2412	104.1	98.3	125	125	20.9
be	2412	37.9	34.5	48.5	41.9	36.4	31.9	53.8	40.5	9.8	2390	63.6	51.7	74	54	2.3
2	2412	39.3	33.0	35.6	29.2	39.6	31.2	37.5	29.0	12.6	4824	52.2	45.6	74	54	8.4
3	2412	40.0	26.5	38.0	30.1	40.2	26.3	38.0	29.4	16.1	7236	56.3	46.2	94	74	27.8
4	2412	35.0	28.5	35.0	26.0	35.0	28.5	35.0	26.0	10.1	9648	45.1	38.6	74	54	15.4
5	2412	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	11.6	12060	46.6	37.6	94	74	36.4
1	2437	93.3	N/A	97.1	N/A	95.3	N/A	94.6	N/A	10	2437	107.1	10.0	125	125	17.9
2	2437	38.2	33.8	38.4	27.1	37.8	32.9	40.5	27.9	12.6	4874	53.1	46.4	74	54	7.6
3	2437	35.9	27.1	36.0	26.0	36.5	25.6	38.5	25.8	20.5	7311	59.0	47.6	74	54	6.4
4	2437	35.0	28.5	35.0	26.0	35.0	28.5	35.0	26.0	9.9	9748	44.9	38.4	74	54	15.6
5	2437	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	10.8	12185	45.8	36.8	74	54	17.2
1	2462	92.7	88.4	94.6	85.3	92.3	89.3	94.8	86.1	10.3	2462	105.1	99.6	125	125	19.9
be	2462	36.7	32.1	48.0	38.2	37.7	33.4	48.6	39.1	10.3	2483.5	58.9	49.4	74	54	4.6
2	2462	38.2	32.5	38.1	24.9	37.1	32.0	37.8	27.3	12.7	4924	50.9	45.2	74	54	8.8
3	2462	38.4	26.5	38.6	26.8	37.9	26.7	39.1	26.5	21.3	7386	60.4	48.1	74	54	5.9
4	2462	35.0	28.5	35.0	26.0	35.0	28.5	35.0	26.0	10	9848	45.0	38.5	74	54	15.5
5	2462	35.0	26.0	35.0	26.0	35.0	26.0	35.0	26.0	9.7	12310	44.7	35.7	74	54	18.3
Column numbers (see below for explanations)																
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

Column #3. Frequency of Transmitter.

Column #4. Columns 3 to 10 are the uncorrected readings from the spectrum analyzer

Column #18. Corr. Factors = Cable Loss – Preamp Gain + Antenna Factor + High pass filter (for harmonics only)

Column #19. Frequency of Tested Emission

Column #20. Highest peak field strength at listed frequency.

Column #21. Highest Average field strength at listed frequency.

Column #22. Peak Limit. Non restricted bands limits set to 94 dBuV/m. The fundamental was tested with a direct connect so there is no radiated emissions limit.

Column #23. Average Limit. Non restricted bands limits set to 74 dBuV/m. There is no fundamental average limit.

Column #24. The margin (last column) is the worst case margin under the peak or average limits for that row.

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### 10.8.2.2 Emissions Below 1 GHz

Manufacturer	Wearable, Inc.	Specification	FCC Part 15 Subpart C & RSS-210							
Model	A01	Test Date	11/17/09							
Serial Number	D0E40B000002	Test Distance	3 Meters							
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; BC = Biconical (ANT-3); LP = Log-Periodic (ANT-6); HN = Horn (ANT-13) P = peak; Q = QP									
Notes	Corr. Factors = Cable Loss – Preamp Gain – Duty Cycle Factor + HP Filter Loss									
Configuration	COMPUTER AND EUT; NO BATTERY (SD CARD-11-TX MODE)									

Freq. MHz	Meter Reading dBuV	Antenna		Corr. Factors dB	Field Strength dBuV/m		Margin Under Limit dB
		Factor dB	Pol/Type		EUT	Limit	
171.2	55.3 P	9.1	H/25	-26.2	38.1	43.5	5.4
215.2	55.2 P	12.1	H/25	-26.0	41.3	43.5	2.3
220.0	55.5 P	12.9	H/25	-25.9	42.4	46.0	3.6
441.8	45.1 P	15.8	H/25	-24.7	36.2	46.0	9.8
590.0	43.1 P	18.7	H/25	-23.4	38.4	46.0	7.6
663.0	45.1 P	19.6	H/25	-23.2	41.5	46.0	4.5
811.0	36.4 P	22.5	H/25	-21.9	37.1	46.0	8.9
860.0	36.8 P	21.5	H/25	-21.5	36.7	46.0	9.3
960.0	35.2 P	23.2	H/25	-20.4	38.0	46.0	8.0
49.2	46.7 P	14.9	V/25	-27.6	34.0	40.0	6.0
61.6	47.8 P	10.1	V/25	-27.4	30.5	40.0	9.5
67.6	51.1 P	8.0	V/25	-27.3	31.8	40.0	8.2
77.2	50.3 P	7.0	V/25	-27.2	30.2	40.0	9.8
86.0	53.5 P	7.8	V/25	-27.1	34.2	40.0	5.8
213.6	48.5 P	11.8	V/25	-26.0	34.4	43.5	9.1
319.7	48.2 P	14.2	V/25	-25.3	37.1	46.0	8.9
639.0	40.7 P	19.1	V/25	-23.5	36.3	46.0	9.7
663.0	44.1 P	19.6	V/25	-23.2	40.5	46.0	5.5
688.0	40.1 P	19.9	V/25	-23.1	36.9	46.0	9.1
811.0	35.8 P	22.5	V/25	-21.9	36.4	46.0	9.6
860.0	38.0 P	21.5	V/25	-21.5	38.0	46.0	8.0
884.0	36.1 P	22.2	V/25	-21.3	37.0	46.0	9.0
898.0	38.0 P	22.6	V/25	-21.1	39.5	46.0	6.5
960.0	35.9 P	23.2	V/25	-9.9	49.2	54.0	4.8
Configuration	COMPUTER AND EUT WITH BATTERY ATTACHED(SD CARD-11-TX MODE)						
171.2	50.9 P	9.1	H/25	-26.2	33.7	43.5	9.8
216.0	55.3 P	12.3	H/25	-25.9	41.6	43.5	1.9
221.1	53.6 P	12.9	H/25	-25.9	40.5	46.0	5.5
541.0	43.5 P	17.5	H/25	-24.2	36.9	46.0	9.1
590.0	41.9 P	18.7	H/25	-23.4	37.2	46.0	8.8
663.0	41.6 P	19.6	H/25	-23.2	38.0	46.0	8.0
688.0	40.6 P	19.9	H/25	-23.1	37.4	46.0	8.6
811.0	37.4 P	22.5	H/25	-21.9	38.0	46.0	8.0
835.0	36.7 P	21.5	H/25	-21.7	36.6	46.0	9.4
934.0	35.3 P	22.6	H/25	-20.7	37.2	46.0	8.8
960.0	35.0 P	23.2	H/25	-20.4	37.8	46.0	8.2

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Freq. MHz	Meter Reading dBuV	Antenna		Corr. Factors dB	Field Strength dBuV/m		Margin Under Limit dB
		Factor dB	Pol/Type		EUT	Limit	
50.0	48.4 P	14.6	V/25	-27.6	35.4	40.0	4.6
61.6	48.5 P	10.1	V/25	-27.4	31.2	40.0	8.8
86.0	53.1 P	7.8	V/25	-27.1	33.8	40.0	6.2
171.2	51.4 P	9.1	V/25	-26.2	34.3	43.5	9.2
210.8	49.1 P	11.3	V/25	-26.0	34.4	43.5	9.1
217.2	49.6 P	12.5	V/25	-25.9	36.2	46.0	9.8
319.7	48.9 P	14.2	V/25	-25.3	37.8	46.0	8.2
663.0	44.5 P	19.6	V/25	-23.2	40.9	46.0	5.1
688.0	42.1 P	19.9	V/25	-23.1	38.9	46.0	7.1
884.0	36.9 P	22.2	V/25	-21.3	37.9	46.0	8.1
898.0	36.9 P	22.6	V/25	-21.1	38.4	46.0	7.6
934.0	35.1 P	22.6	V/25	-20.7	37.0	46.0	9.0
960.0	35.7 P	23.2	V/25	-9.9	49.0	54.0	5.0

Judgment: Passed by **2.3 dB**

No other emissions were detected in the restricted bands.

## 10.9 Unintentional Emissions (Receive Mode)

Manufacturer	Wearable, Inc.	Specification	FCC Part 15 Subpart C & RSS-210
Model	A01	Test Date	11/17/09
Serial Number	D0E40B000002	Test Distance	3 Meters
Abbreviations	Pol = Antenna Polarization; V = Vertical; H = Horizontal; BC = Biconical (ANT-3); LP = Log-Periodic (ANT-6); HN = Horn (ANT-13) P = peak; Q = QP		
Notes	Corr. Factors = Cable Loss – Preamp Gain – Duty Cycle Factor + HP Filter Loss		

### 10.9.1.1 Emissions Above 1 GHz

Emissions above 1 GHz

Tx Freq	Ant Pol.	Detector Function	Emission Freq. MHz	Corr. Factors dB	dBuV/m	Limit	Margin under limit
1011.0	V	P	42.0	-2.5	39.5	54.0	14.5
1023.5	V	P	40.8	-2.4	38.4	54.0	15.6
1056.5	V	P	41.4	-2.1	39.3	54.0	14.7
1080.0	V	P	43.5	-1.8	41.7	54.0	12.3
1425.0	V	P	39.4	-0.8	38.6	54.0	15.4
1572.0	V	P	38.4	-0.2	38.2	54.0	15.8
2435.0	V	P	39.6	4.0	43.6	54.0	11.4
2454.5	V	P	38.1	4.2	42.3	54.0	12.7
1011.0	H	P	39.7	-2.5	37.2	54.0	16.8
1056.5	H	P	38.2	-2.1	36.1	54.0	17.9
1081.5	H	P	39.1	-1.8	37.3	54.0	16.7
1228.5	H	P	38.3	-1.0	37.3	54.0	16.7
1874.5	H	P	37.1	2.1	39.2	54.0	15.8

All peak emissions above 1 GHz met the average limits.

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**10.9.1.2 Emissions Below 1 GHz**

Configuration : COMPUTER AND EUT NO BATTERY (SD CARD-13-RX MODE)

Freq. MHz	Meter Reading dBuV	Antenna		Corr. Factors dB	Field Strength dBuV/m		Margin Under Limit dB
		Factor dB	Pol/ Type		EUT	Limit	
34.4	40.8 P	18.0	H/25	-27.9	30.9	40.0	9.1
71.6	51.0 P	7.3	H/25	-27.3	31.0	40.0	9.0
216.4	51.6 Q	12.3	H/25	-25.9	38.0	46.0	8.0
224.4	50.5 P	12.8	H/25	-25.9	37.3	46.0	8.7
295.0	53.7 P	13.3	H/25	-25.5	41.5	46.0	4.5
319.7	53.0 P	14.2	H/25	-25.3	41.9	46.0	4.1
590.0	41.7 P	18.7	H/25	-23.4	37.0	46.0	9.0
663.0	42.6 P	19.6	H/25	-23.2	39.0	46.0	7.0
713.0	40.4 P	20.4	H/25	-23.1	37.7	46.0	8.3
737.0	41.8 P	20.8	H/25	-22.7	39.9	46.0	6.1
786.0	39.8 P	21.4	H/25	-22.2	39.0	46.0	7.0
811.0	38.7 P	22.5	H/25	-21.9	39.3	46.0	6.7
934.0	38.2 P	22.6	H/25	-20.7	40.1	46.0	5.9
958.0	34.9 P	23.1	H/25	-20.4	37.6	46.0	8.4
50.8	46.8 P	14.4	V/25	-27.6	33.6	40.0	6.4
64.8	52.8 P	8.9	V/25	-27.4	34.4	40.0	5.6
71.2	51.6 P	7.4	V/25	-27.3	31.8	40.0	8.2
214.0	51.7 P	11.9	V/25	-26.0	37.6	43.5	5.9
295.0	49.7 P	13.3	V/25	-25.5	37.5	46.0	8.5
319.7	52.2 P	14.2	V/25	-25.3	41.1	46.0	4.9
663.0	42.1 P	19.6	V/25	-23.2	38.5	46.0	7.5
712.0	39.8 P	20.3	V/25	-23.1	37.0	46.0	9.0
737.0	40.3 P	20.8	V/25	-22.7	38.4	46.0	7.6
786.0	39.1 P	21.4	V/25	-22.2	38.3	46.0	7.7
811.0	38.6 P	22.5	V/25	-21.9	39.2	46.0	6.8
860.0	39.1 P	21.5	V/25	-21.5	39.1	46.0	6.9
884.0	37.9 P	22.2	V/25	-21.3	38.8	46.0	7.2
898.0	37.2 P	22.6	V/25	-21.1	38.7	46.0	7.3
934.0	39.4 P	22.6	V/25	-20.7	41.3	46.0	4.7
958.0	35.7 P	23.1	V/25	-20.4	38.4	46.0	7.6

Configuration : COMPUTER AND EUT WITH BATTERY ATTACHED(SD CARD-13-RX MODE)

71.2	51.0 P	7.4	H/25	-27.3	31.1	40.0	8.9
212.0	55.4 P	11.5	H/25	-26.0	40.9	43.5	2.6
219.6	50.1 P	12.8	H/25	-25.9	37.0	46.0	9.0
221.1	53.9 P	12.9	H/25	-25.9	40.9	46.0	5.1
319.7	51.6 P	14.2	H/25	-25.3	40.5	46.0	5.5
541.0	43.0 P	17.5	H/25	-24.2	36.3	46.0	9.7
663.0	39.7 P	19.6	H/25	-23.2	36.1	46.0	9.9
737.0	40.1 P	20.8	H/25	-22.7	38.2	46.0	7.8
803.0	35.7 P	22.7	H/25	-22.0	36.4	46.0	9.6
811.0	37.3 P	22.5	H/25	-21.9	37.9	46.0	8.1

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Freq. MHz	Meter Reading dBuV	Antenna		Corr. Factors dB	Field Strength dBuV/m		Margin Under Limit dB
		Factor dB	Pol/Type		EUT	Limit	
958.0	36.9 P	23.1	H/25	-20.4	39.5	46.0	6.5
50.8	46.8 P	14.4	V/25	-27.6	33.6	40.0	6.4
106.8	50.5 P	11.5	V/25	-26.8	35.1	43.5	8.4
319.7	49.2 P	14.2	V/25	-25.3	38.1	46.0	7.9
663.0	40.2 P	19.6	V/25	-23.2	36.6	46.0	9.4
737.0	38.5 P	20.8	V/25	-22.7	36.6	46.0	9.4
811.0	36.5 P	22.5	V/25	-21.9	37.1	46.0	8.9
884.0	38.4 P	22.2	V/25	-21.3	39.4	46.0	6.6
898.0	36.5 P	22.6	V/25	-21.1	38.0	46.0	8.0
958.0	36.4 P	23.1	V/25	-20.4	39.0	46.0	7.0