



## **Care Innovations**

**PIR**

**FCC 15.247:2013**

**Report #: CARE0015**



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – [www.nwemc.com](http://www.nwemc.com)

California – Minnesota – Oregon – New York – Washington

# CERTIFICATE OF TEST

Last Date of Test: April 22, 2013  
 Care Innovations  
 Model: PIR

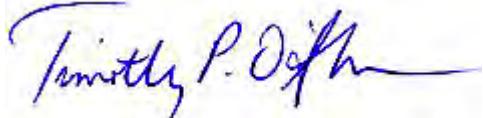
## Emissions

Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2013	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2013	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2013	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass

## Deviations From Test Standards

None

## Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200630-0

## Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.  
 22975 NW Evergreen Parkway, Suite 400  
 Hillsboro, OR 97124

Phone: (503) 844-4066      Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-1).

*This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.*

*Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.*

## REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

### **Barometric Pressure**

The recorded barometric pressure has been normalized to sea level.

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## United States

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**FCC** - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

**NVLAP** - Each laboratory is accredited by NVLAP to ISO 17025

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## Canada

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**IC** - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

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## European Union

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**European Commission** – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

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## Australia/New Zealand

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**ACMA** - Recognized by ACMA as a CAB for the acceptance of test data.

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## Korea

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**KCC / RRA** - Recognized by KCC's RRA as a CAB for the acceptance of test data.

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## Japan

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**VCCI** - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

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## Taiwan

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**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

**NCC** - Recognized by NCC as a CAB for the acceptance of test data.

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## Singapore

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**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

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## Hong Kong

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**OFTA** – Recognized by OFTA as a CAB for the acceptance of test data.

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## Vietnam

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**MIC** – Recognized by MIC as a CAB for the acceptance of test data.

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## Russia

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**GOST** – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

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## SCOPE

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For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>

## Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty ( $K=2$ ) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

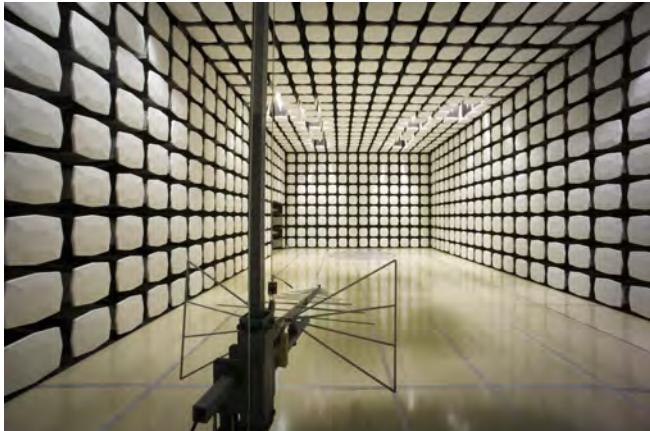
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94

# LOCATIONS



<b>Oregon</b> Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	<b>California</b> Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	<b>New York</b> Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	<b>Minnesota</b> Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	<b>Washington</b> Labs NC01-05, SU02, SU07 19201 120 <sup>th</sup> Ave. NE Bothell, WA 98011 (425) 984-6600
<b>VCCI</b>				
A-0108	A-0029		A-0109	A-0110
<b>Industry Canada</b>				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1
<b>NVLAP</b>				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0





# PRODUCT DESCRIPTION

## Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	Care Innovations
<b>Address:</b>	20270 NW Amberglen Court
<b>City, State, Zip:</b>	Beaverton, OR 97006
<b>Test Requested By:</b>	Bill Morse
<b>Model:</b>	PIR
<b>First Date of Test:</b>	April 19, 2013
<b>Last Date of Test:</b>	April 22, 2013
<b>Receipt Date of Samples:</b>	April 17, 2013
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

## Information Provided by the Party Requesting the Test

### **Functional Description of the EUT (Equipment Under Test):**

Wireless monitoring technology that uses a 2.4 GHz ISM radio module, 802.15.4 complaint with 1 antenna. In actual use it is powered by a removable battery.

### **Testing Objective:**

To demonstrate compliance to FCC 15.247 requirements.

## Configuration CARE0015- 4

<b>EUT</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>	
PIR	Care Innovations	QC1010000-01	001D4000000103C2	

<b>Peripherals in test setup boundary</b>				
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>	
Laptop	Dell	Latitude 2100	00196-063-869-320	

<b>Cables</b>					
<b>Cable Type</b>	<b>Shield</b>	<b>Length (m)</b>	<b>Ferrite</b>	<b>Connection 1</b>	<b>Connection 2</b>
USB to Radio Programmer	No	.5	No	Laptop	Coor/Router/Door
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

## Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/19/2013	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	4/19/2013	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	4/22/2013	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	4/22/2013	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	4/22/2013	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

## Duty Cycle

### TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. The duty cycle was measured radiated in the RF chamber.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

## Occupied Bandwidth

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

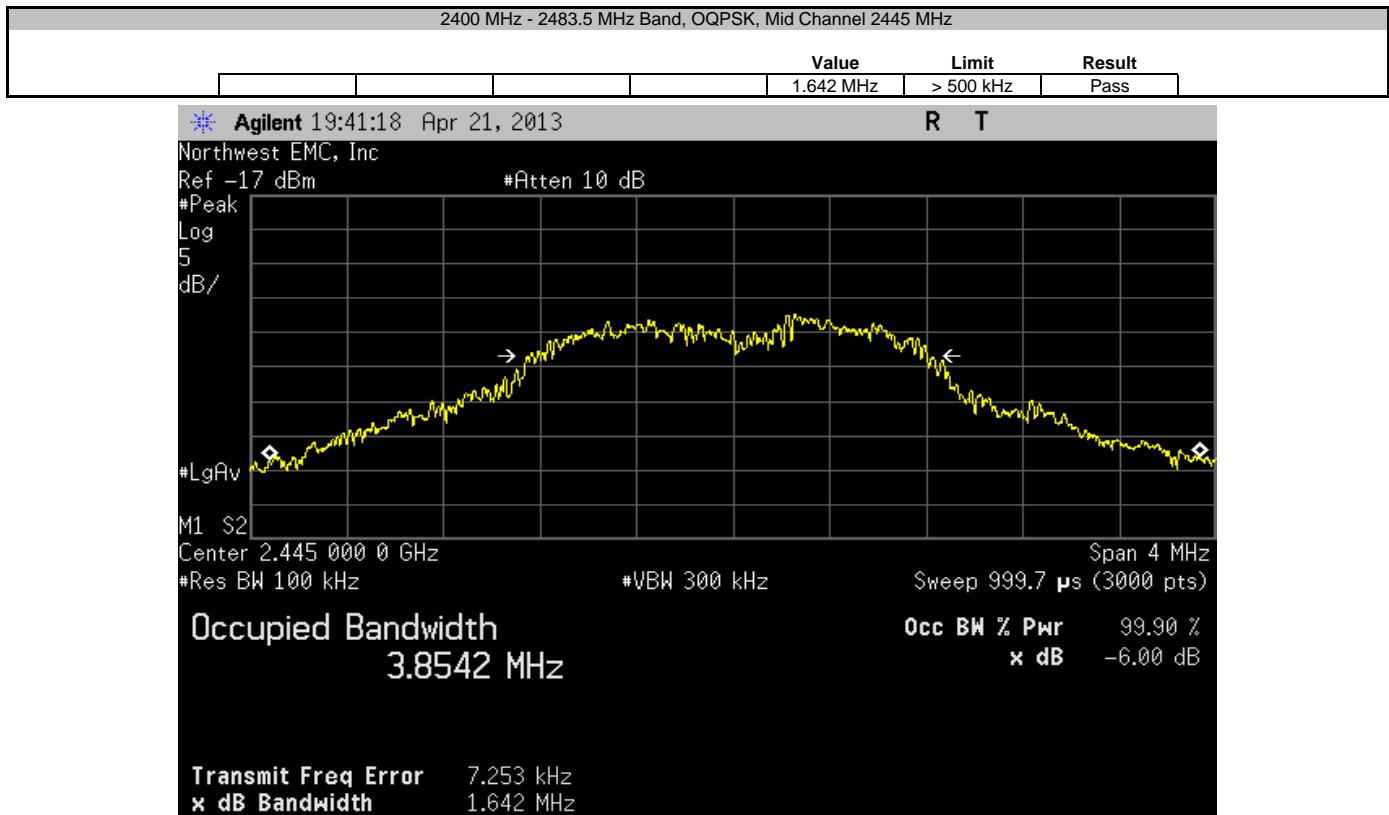
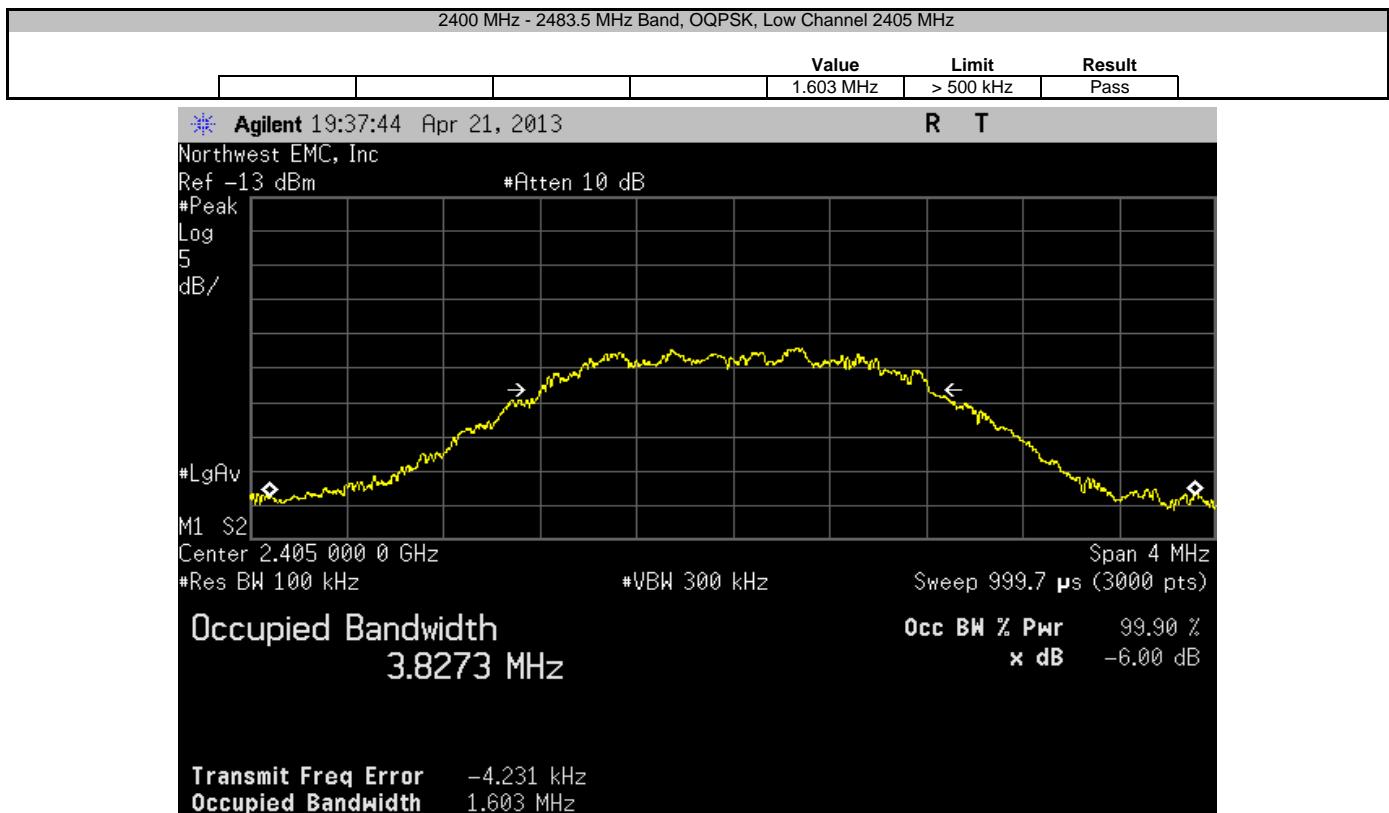
### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
DC Block, 18GHz, 'N'	Fairview Microwave	SD3074	AMF	NCR	13
Near Field Probe	EMCO	7405	IPD	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24

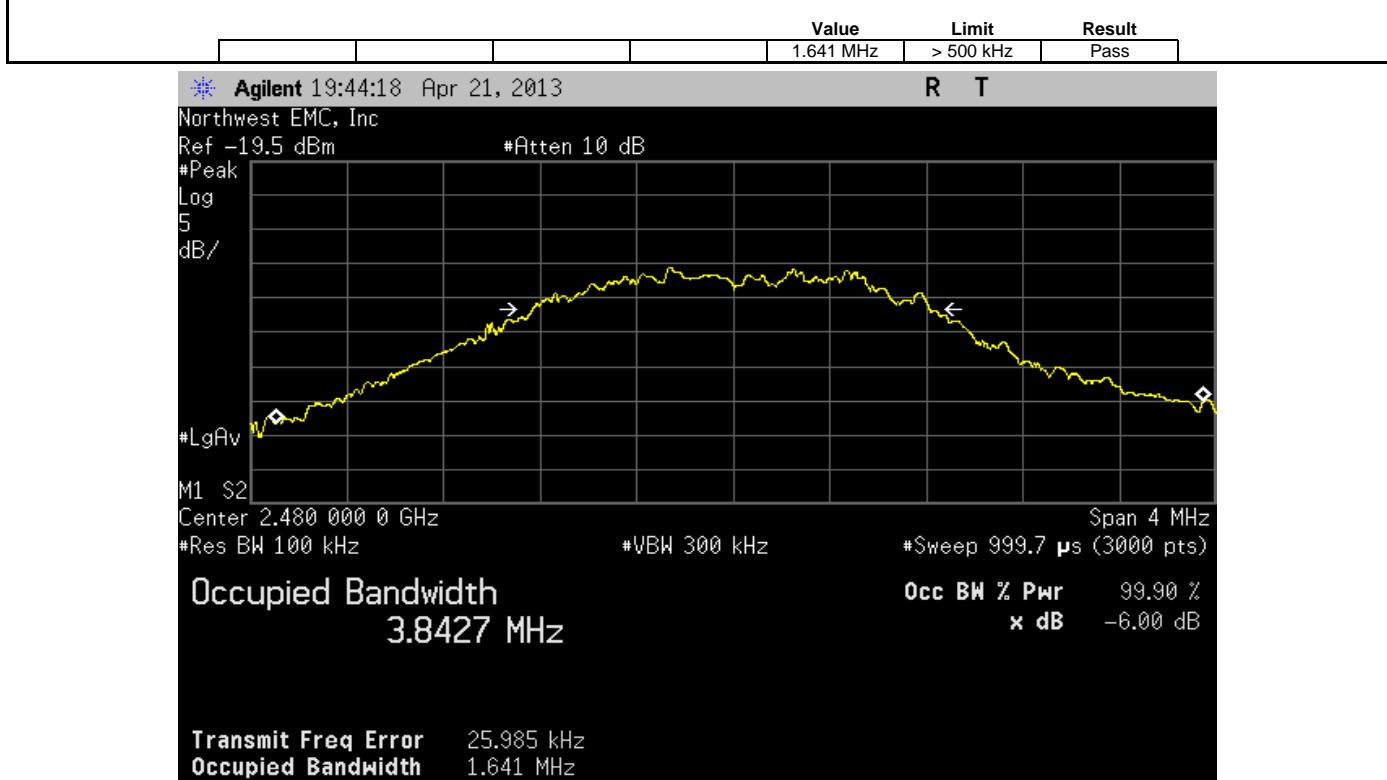
### TEST DESCRIPTION

The occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a near field probe between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode.

EUT: PIR	Work Order: CARE0015			
Serial Number: 001D400000103C2	Date: 04/22/13			
Customer: Care Innovations	Temperature: 23°C			
Attendees: Bill Morse	Humidity: 29%			
Project: None	Barometric Pres.: 1032			
Tested by: Brandon Hobbs, Rod Peloquin	Job Site: EV06			
<b>TEST SPECIFICATIONS</b>				
FCC 15.247:2013	Test Method: ANSI C63.10:2009			
<b>COMMENTS</b>				
The EUT was operating at 100% duty cycle while under test.				
<b>DEVIATIONS FROM TEST STANDARD</b>				
None				
Configuration #	4			
Signature: 				
		Value	Limit	Result
2400 MHz - 2483.5 MHz Band		1.603 MHz	> 500 kHz	Pass
OQPSK		1.642 MHz	> 500 kHz	Pass
		1.641 MHz	> 500 kHz	Pass
Low Channel 2405 MHz				
Mid Channel 2445 MHz				
High Channel 2480 MHz				



2400 MHz - 2483.5 MHz Band, OQPSK, High Channel 2480 MHz



## Output Power

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

### MODES OF OPERATION

On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz and High 2480 MHz

### POWER SETTINGS INVESTIGATED

3 VDC

### CONFIGURATIONS INVESTIGATED

CARE0015 - 4

### FREQUENCY RANGE INVESTIGATED

Start Frequency	1 GHz	Stop Frequency	3 GHz
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### SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	36 mo

### MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

### TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The radiated power was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The resolution bandwidth was set to 3 MHz and the video bandwidth was set to 8 MHz. A peak detector was used. The EUT was transmitting at its maximum data rate. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height.

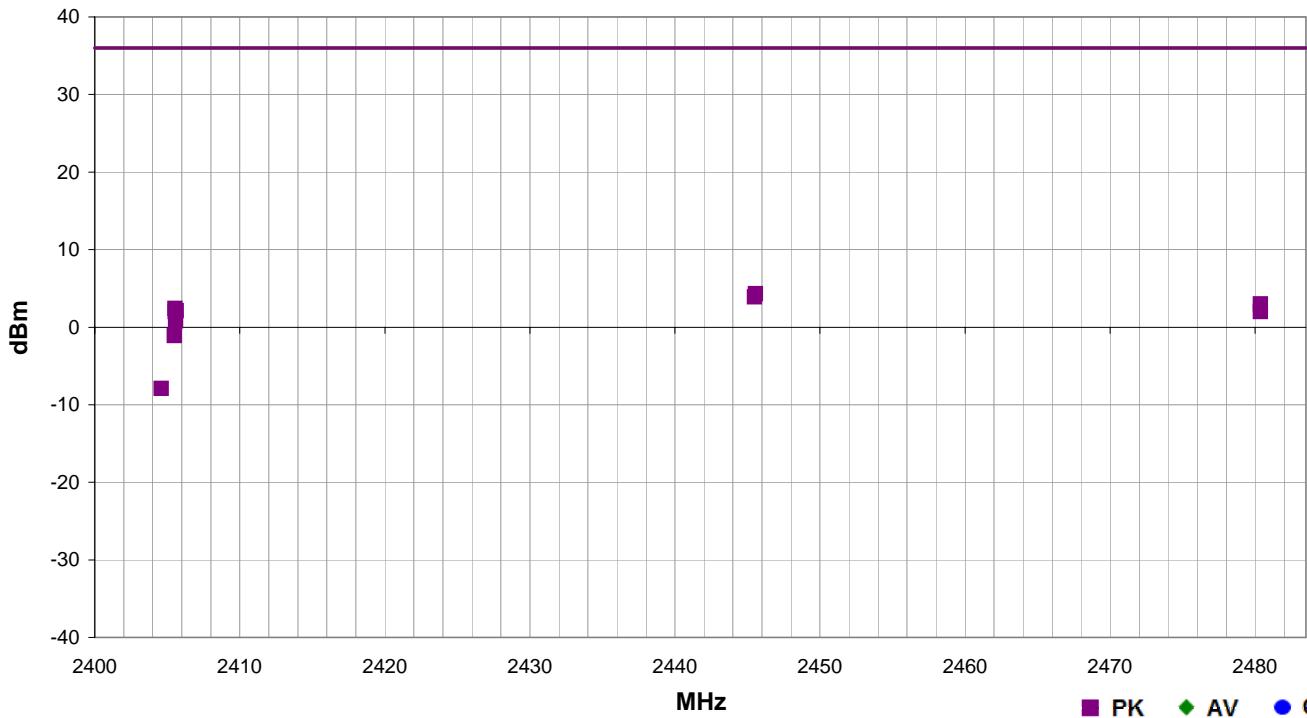
The field strength measurement was converted to effective radiated power (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 5.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36dBm.

Work Order:	CARE0015	Date:	04/19/13	 <b>Tested by:</b> Brandon Hobbs
Project:	None	Temperature:	23.4 °C	
Job Site:	EV01	Humidity:	38.4% RH	
Serial Number:	001D400000103C2	Barometric Pres.:	1021 mbar	
EUT:	PIR			
Configuration:	4			
Customer:	Care Innovations			
Attendees:	Bill Morse Stan Telson			
EUT Power:	3 VDC			
Operating Mode:	On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz and High 2480 MHz			
Deviations:	None			
Comments:	Please reference the data comments for frequency and EUT orientation. The duty cycle is operating at 100% duty cycle while under test.			

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009

Run #	Test Distance (m)	Antenna Height(s)	Results
37	3	1-4m	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2445.560	1.0	300.0	Horz	PK	2.69E-03	4.3	36.0	-31.7	EUT Horz	
2445.480	1.0	105.0	Vert	PK	2.46E-03	3.9	36.0	-32.1	EUT Vert	
2480.373	1.0	103.0	Vert	PK	1.99E-03	3.0	36.0	-33.0	EUT Vert	
2405.540	1.0	93.0	Vert	PK	1.74E-03	2.4	36.0	-33.6	EUT Vert	
2405.633	1.0	112.0	Horz	PK	1.63E-03	2.1	36.0	-33.9	EUT Horz	
2405.567	1.0	106.0	Vert	PK	1.59E-03	2.0	36.0	-34.0	EUT On Side	
2480.360	1.0	270.0	Horz	PK	1.58E-03	2.0	36.0	-34.0	EUT Horz	
2405.587	1.0	258.0	Horz	PK	1.21E-03	0.8	36.0	-35.2	EUT Horz	
2405.500	2.1	237.0	Vert	PK	7.78E-04	-1.1	36.0	-37.1	EUT On Side	
2404.580	1.5	172.0	Horz	PK	1.63E-04	-7.9	36.0	-43.9	EUT Vert	

## Band Edge Compliance

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12
Antenna, Horn	ETS	3115	AIZ	1/24/2011	36
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

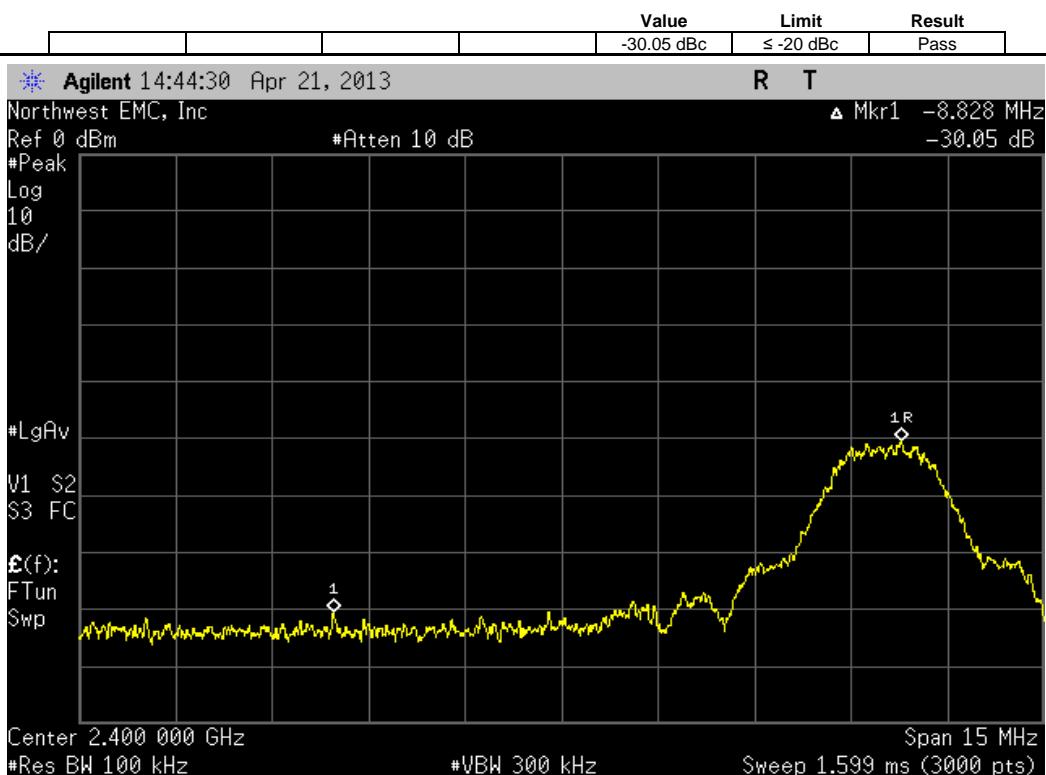
### TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a radiated measurement. The EUT was transmitting at the maximum data rate available.

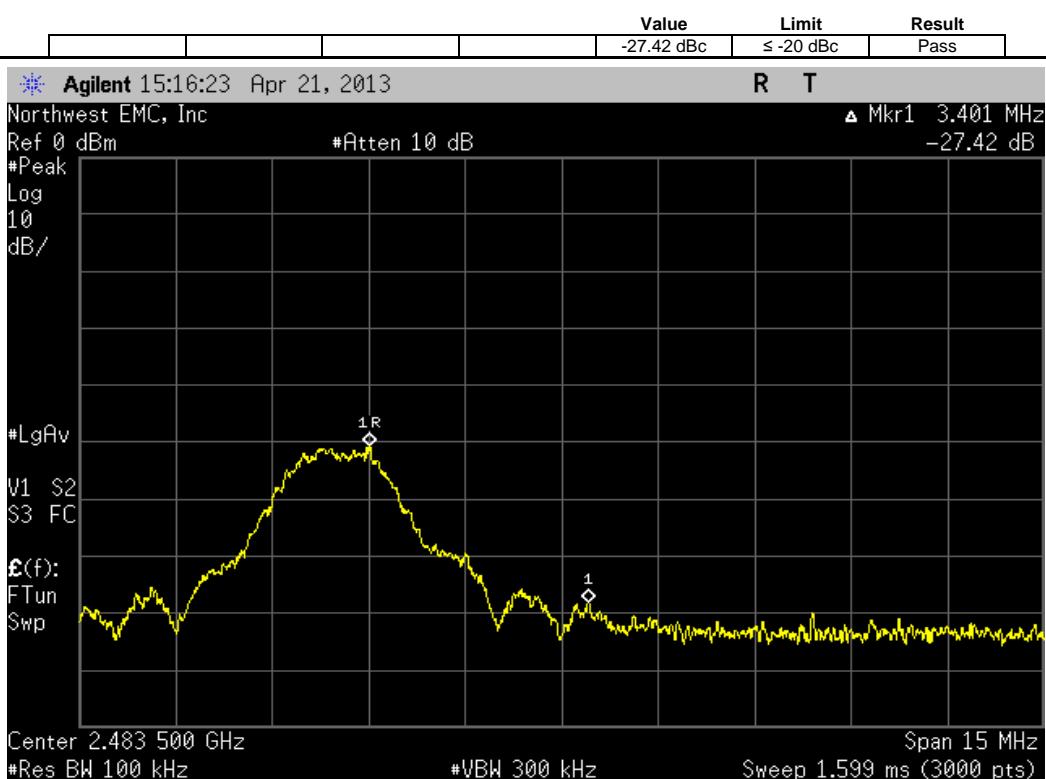
The spectrum was scanned across each band edge from at least 10 MHz below the band edge to 10 MHz above the band edge.

EUT: PIR	Work Order: CARE0015			
Serial Number: 001D400000103C2	Date: 04/22/13			
Customer: Care Innovations	Temperature: 23°C			
Attendees: Bill Morse	Humidity: 29%			
Project: None	Barometric Pres.: 1032			
Tested by: Brandon Hobbs, Rod Peloquin	Job Site: EV01			
<b>TEST SPECIFICATIONS</b>				
FCC 15.247:2013	Test Method: ANSI C63.10:2009			
<b>COMMENTS</b>				
The EUT was operating at 100% duty cycle while under test.				
<b>DEVIATIONS FROM TEST STANDARD</b>				
None				
Configuration #	4			
Signature: 				
		Value	Limit	Result
2400 MHz - 2483.5 MHz Band		-30.05 dBc	≤ -20 dBc	Pass
OQPSK		-27.42 dBc	≤ -20 dBc	Pass
Low Channel 2405 MHz				
High Channel 2480 MHz				

2400 MHz - 2483.5 MHz Band, OQPSK, Low Channel 2405 MHz



2400 MHz - 2483.5 MHz Band, OQPSK, High Channel 2480 MHz



## Power Spectral Density

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12
Antenna, Horn	ETS	3115	AIZ	1/24/2011	36
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24

### TEST DESCRIPTION

The peak power spectral density was measured with the EUT set to low, medium, and high transmit frequencies. The radiated power spectral density was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The EUT was transmitting at its maximum data rate for each modulation type available. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height. Per the procedure outlined in ANSI C63.10:2009, the spectrum analyzer was used as follows:

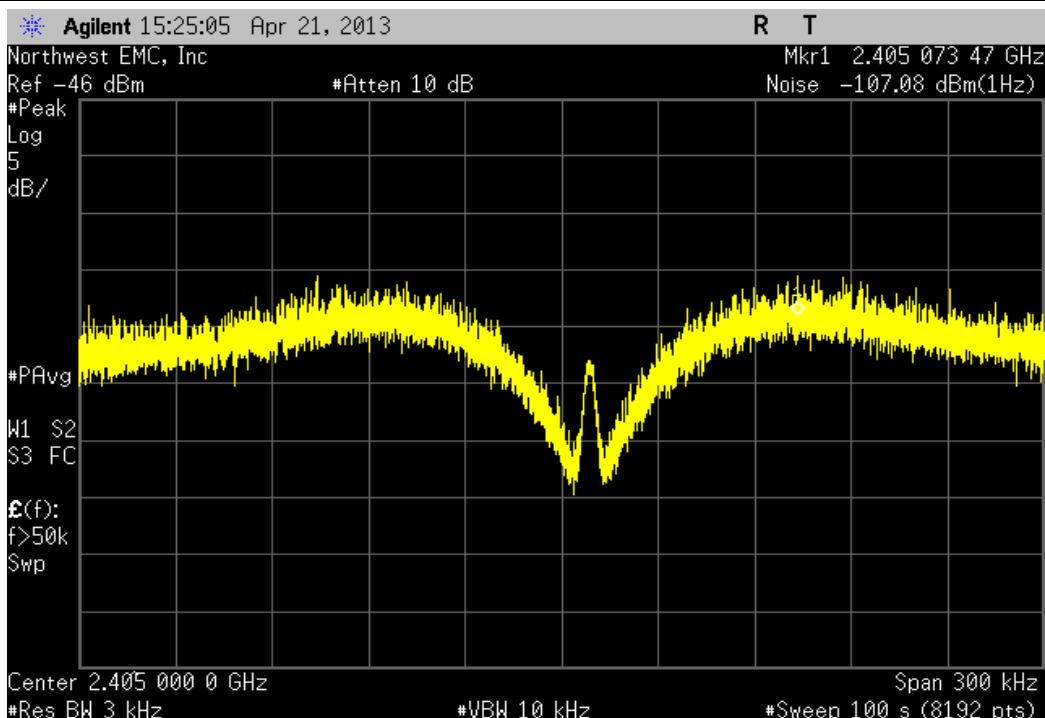
The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be  $1.5 \times 10^6 \div 3 \times 10^3 = 500$  seconds. The following FCC procedure was used for modifying the power spectral density measurements:

*"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35 dB for correction to 3 kHz."*

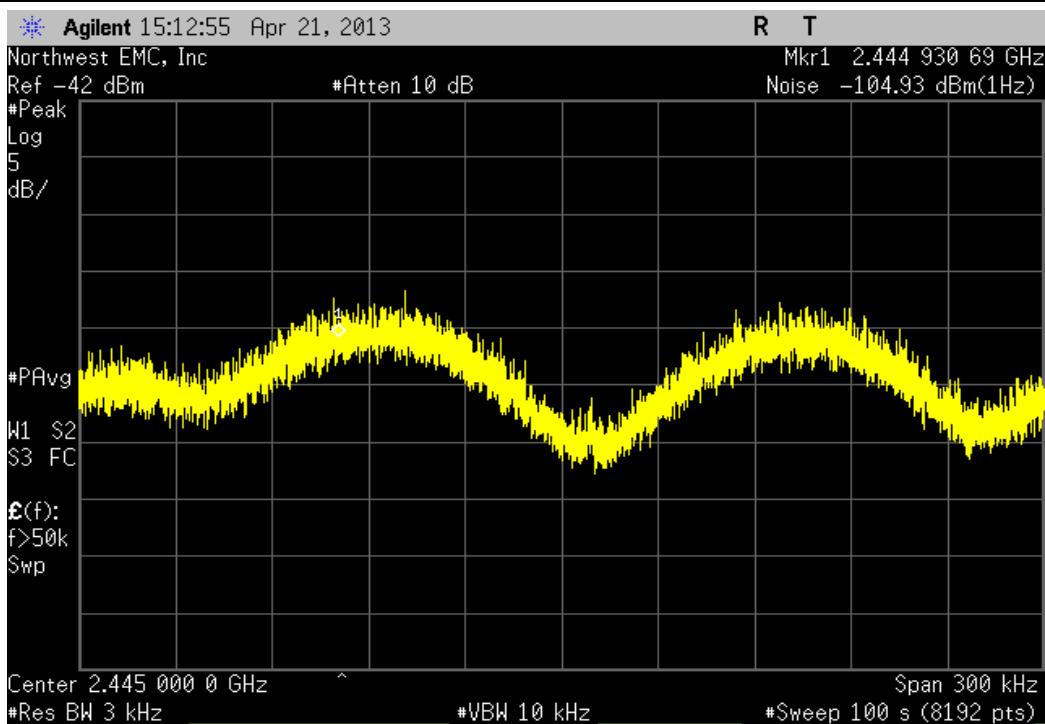
The field strength measurement of power spectral density was converted to effective radiated power spectral density (dBm/3kHz) (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 6.

EUT: PIR	Work Order: CARE0015						
Serial Number: 001D400000103C2	Date: 04/22/13						
Customer: Care Innovations	Temperature: 23°C						
Attendees: Bill Morse	Humidity: 29%						
Project: None	Barometric Pres.: 1032						
Tested by: Brandon Hobbs, Rod Peloquin	Job Site: EV01						
<b>TEST SPECIFICATIONS</b>							
FCC 15.247:2013	Test Method: ANSI C63.10:2009						
<b>COMMENTS</b>							
The EUT was operating at 100% duty cycle while under test.							
<b>DEVIATIONS FROM TEST STANDARD</b>							
None							
Configuration #	4	Signature: 					
		dBm/1Hz To dBm/3kHz	Value dBm/1Hz	Factor (dBm)	Value dBm/3kHz	Limit dBm/3kHz	Result
2400 MHz - 2483.5 MHz Band OQPSK							
Low Channel 2405 MHz		35	-107.081	34.4	-37.681	8	Pass
Mid Channel 2445 MHz		35	-104.934	34.4	-35.534	8	Pass
High Channel 2480 MHz		35	-107.467	34.4	-38.067	8	Pass

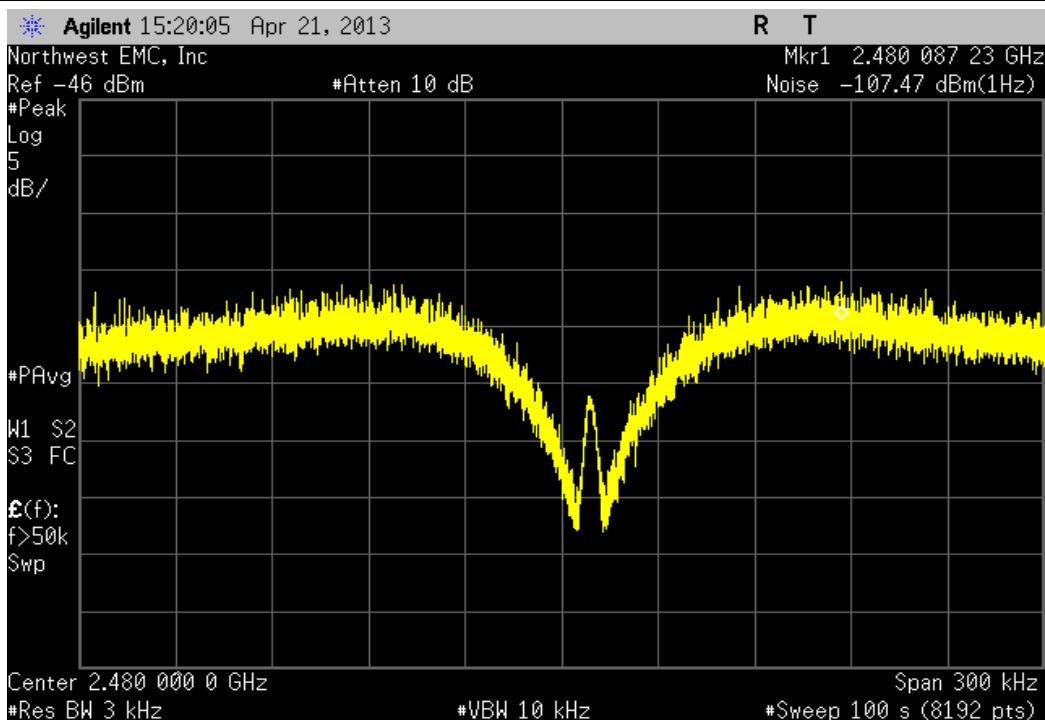
2400 MHz - 2483.5 MHz Band, OQPSK, Low Channel 2405 MHz						
	dBm/1Hz To dBm/3kHz	Value dBm/1Hz	Factor (dBm)	Value dBm/3kHz	Limit dBm/3kHz	Result
	35	-107.081	34.4	-37.681	8	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, Mid Channel 2445 MHz						
	dBm/1Hz To dBm/3kHz	Value dBm/1Hz	Factor (dBm)	Value dBm/3kHz	Limit dBm/3kHz	Result
	35	-104.934	34.4	-35.534	8	Pass



2400 MHz - 2483.5 MHz Band, OQPSK, High Channel 2480 MHz						
To dBm/1Hz	Value	Factor	Value	Limit		
dBm/3kHz	dBm/1Hz	(dBm)	dBm/3kHz	dBm/3kHz	Result	
35	-107.467	34.4	-38.067	8	Pass	



## Spurious Radiated Emissions

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

### MODES OF OPERATION

On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz, High 2480 MHz

### POWER SETTINGS INVESTIGATED

3 VDC

### CONFIGURATIONS INVESTIGATED

CARE0015 - 4

### FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26 GHz

### SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	KMKG-72	EVY	9/11/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/11/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AVI	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/27/2013	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	36 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/27/2013	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/27/2013	12 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/27/2012	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	36 mo
LP Filter	Micro-Tronics	LPM50004	LFD	7/6/2012	24 mo
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/6/2012	24 mo

### MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

### TEST DESCRIPTION

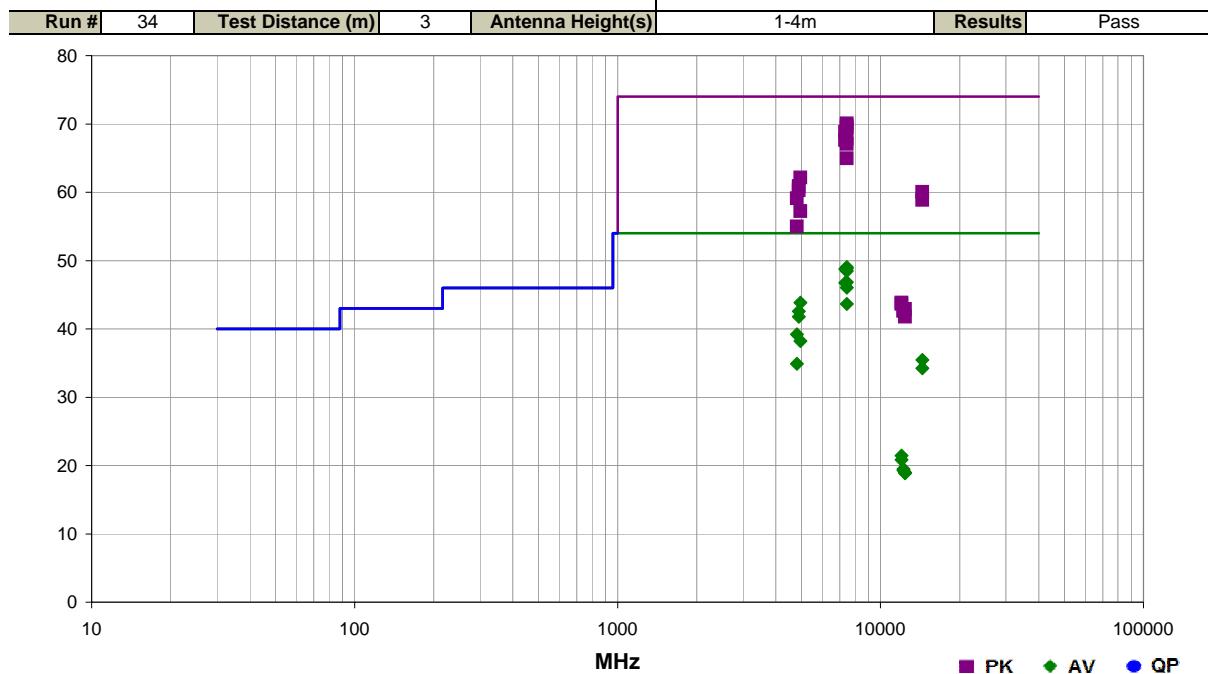
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

All radiated emissions were measured. The emissions that fell in the restricted bands of 15.205 were measured to the 15.209 limits and all other emissions were compared to the -20dBc limit of 15.247(b)

## Spurious Radiated Emissions

Work Order:	CARE0015	Date:	04/19/13				
Project:	None	Temperature:	23.4 °C				
Job Site:	EV01	Humidity:	36.1% RH				
Serial Number:	001D400000103C2	Barometric Pres.:	1021 mbar	Tested by: Brandon Hobbs			
EUT:	PIR						
Configuration:	4						
Customer:	Care Innovations						
Attendees:	Bill Morse Stan Telson						
EUT Power:	3 VDC						
Operating Mode:	On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz, High 2480 MHz						
Deviations:	None						
Comments:	Please reference the data comments for frequency and EUT orientation. The duty cycle is operating at 100% duty cycle while under test. 10Hz VBW was used during the video averaging measurements as noted under the data comments.						

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009

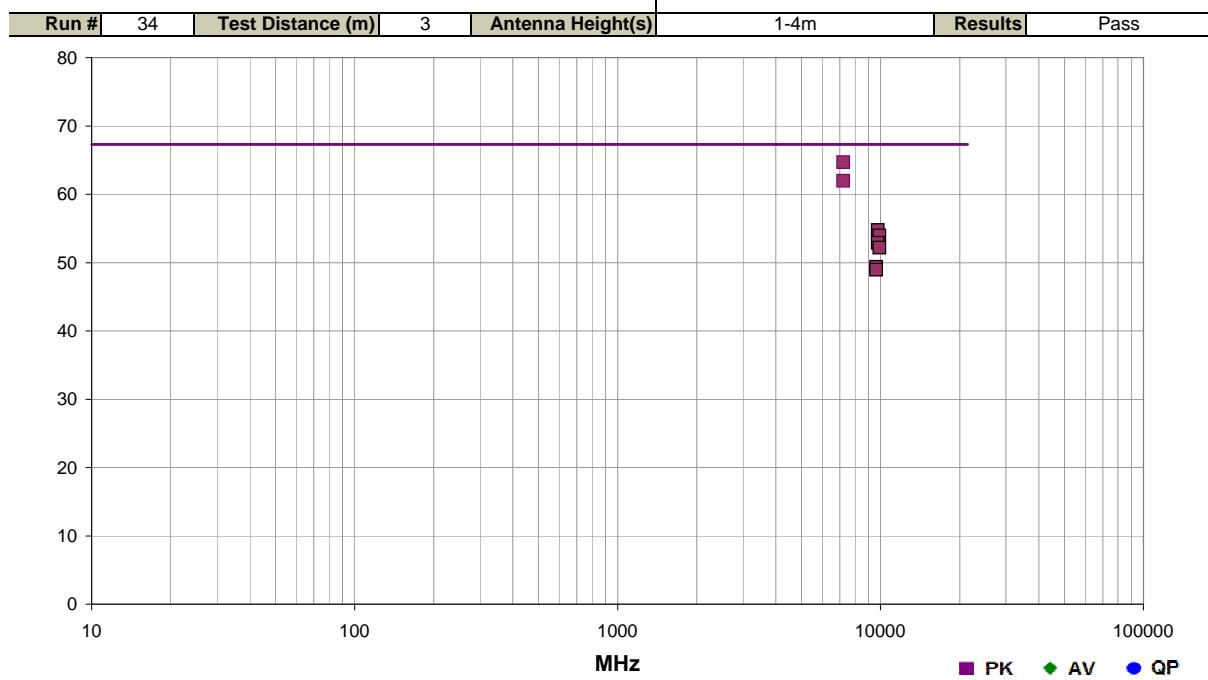


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7438.111	50.6	19.5	2.1	173.0	0.0	0.0	Horz	PK	0.0	70.1	74.0	-3.9	EUT Horz
7438.081	50.3	19.5	2.4	203.0	0.0	0.0	Vert	PK	0.0	69.8	74.0	-4.2	EUT On Side
7438.028	50.0	19.5	2.3	16.0	0.0	0.0	Vert	PK	0.0	69.5	74.0	-4.5	EUT Horz
7438.974	40.4	19.5	2.1	173.0	-10.8	0.0	Horz	AV	0.0	49.1	54.0	-4.9	(10Hz), EUT Horz
7438.958	40.2	19.5	2.4	203.0	-10.8	0.0	Vert	AV	0.0	48.9	54.0	-5.1	(10Hz), EUT On Side
7333.925	49.8	19.1	1.6	166.0	0.0	0.0	Horz	PK	0.0	68.9	74.0	-5.1	EUT Horz
7335.246	40.5	19.1	1.6	166.0	-10.8	0.0	Horz	AV	0.0	48.8	54.0	-5.2	(10Hz), EUT Horz
7438.963	39.8	19.5	2.3	16.0	-10.8	0.0	Vert	AV	0.0	48.5	54.0	-5.5	(10Hz), EUT Horz
7438.159	48.4	19.5	2.1	348.0	0.0	0.0	Horz	PK	0.0	67.9	74.0	-6.1	EUT On Side
7333.649	48.6	19.1	2.7	207.0	0.0	0.0	Vert	PK	0.0	67.7	74.0	-6.3	EUT On Side
7438.125	47.6	19.5	2.5	94.0	0.0	0.0	Vert	PK	0.0	67.1	74.0	-6.9	EUT Vert Up
7438.909	38.2	19.5	2.1	348.0	-10.8	0.0	Horz	AV	0.0	46.9	54.0	-7.1	(10Hz), EUT On Side
7335.258	38.5	19.1	2.7	207.0	-10.8	0.0	Vert	AV	0.0	46.8	54.0	-7.2	(10Hz), EUT On Side
7438.910	37.4	19.5	2.5	94.0	-10.8	0.0	Vert	AV	0.0	46.1	54.0	-7.9	(10Hz), EUT Vert Up
7438.305	45.5	19.5	1.0	159.0	0.0	0.0	Horz	PK	0.0	65.0	74.0	-9.0	EUT Vert Up
4959.276	43.9	10.7	1.6	87.0	-10.8	0.0	Horz	AV	0.0	43.8	54.0	-10.2	(10Hz), EUT Horz
7438.866	35.0	19.5	1.0	159.0	-10.8	0.0	Horz	AV	0.0	43.7	54.0	-10.3	(10Hz), EUT Vert Up
4889.548	42.9	10.5	1.0	168.0	-10.8	0.0	Horz	AV	0.0	42.6	54.0	-11.4	(10Hz), EUT Horz
4958.926	51.4	10.7	1.6	87.0	0.0	0.0	Horz	PK	0.0	62.1	74.0	-11.9	EUT Horz
4889.551	42.1	10.5	3.6	201.0	-10.8	0.0	Vert	AV	0.0	41.8	54.0	-12.2	(10Hz), EUT On Side
4890.743	50.4	10.5	1.0	168.0	0.0	0.0	Horz	PK	0.0	60.9	74.0	-13.1	EUT Horz
4888.545	49.8	10.5	3.6	201.0	0.0	0.0	Vert	PK	0.0	60.3	74.0	-13.7	EUT On Side

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
14428.010	42.2	17.9	1.3	286.0	0.0	0.0	Vert	PK	0.0	60.1	74.0	-13.9	EUT On Side
4809.194	39.8	10.2	1.0	153.0	-10.8	0.0	Horz	AV	0.0	39.2	54.0	-14.8	(10Hz), EUT Horz
4809.281	48.9	10.2	1.0	153.0	0.0	0.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Horz
14428.350	41.0	17.9	1.0	214.0	0.0	0.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT Horz
4959.245	38.3	10.7	3.5	201.0	-10.8	0.0	Vert	AV	0.0	38.2	54.0	-15.8	(10Hz), EUT On Side
4958.907	46.5	10.7	3.5	201.0	0.0	0.0	Vert	PK	0.0	57.2	74.0	-16.8	EUT On Side
14428.000	28.4	17.9	1.3	286.0	-10.8	0.0	Vert	AV	0.0	35.5	54.0	-18.5	(10Hz), EUT On Side
4809.439	44.8	10.2	1.0	291.0	0.0	0.0	Vert	PK	0.0	55.0	74.0	-19.0	EUT On Side
4809.251	35.5	10.2	1.0	291.0	-10.8	0.0	Vert	AV	0.0	34.9	54.0	-19.1	(10Hz), EUT On Side
14428.060	27.2	17.9	1.0	214.0	-10.8	0.0	Horz	AV	0.0	34.3	54.0	-19.7	(10Hz), EUT Horz
12026.990	48.2	-4.3	1.0	205.0	0.0	0.0	Horz	PK	0.0	43.9	74.0	-30.1	EUT Horz
12023.310	48.0	-4.4	1.7	185.0	0.0	0.0	Vert	PK	0.0	43.6	74.0	-30.4	EUT On Side
12401.210	46.0	-3.1	1.5	339.0	0.0	0.0	Horz	PK	0.0	42.9	74.0	-31.1	EUT Horz
12223.470	46.4	-3.7	1.0	180.0	0.0	0.0	Vert	PK	0.0	42.7	74.0	-31.3	EUT On Side
12226.180	46.3	-3.7	1.2	223.0	0.0	0.0	Horz	PK	0.0	42.6	74.0	-31.4	EUT Horz
12398.290	44.9	-3.1	1.0	182.0	0.0	0.0	Vert	PK	0.0	41.8	74.0	-32.2	EUT On Side
12027.000	36.6	-4.3	1.7	185.0	-10.8	0.0	Vert	AV	0.0	21.5	54.0	-32.5	(10Hz), EUT On Side
12027.000	36.0	-4.3	1.0	205.0	-10.8	0.0	Horz	AV	0.0	20.9	54.0	-33.1	(10Hz), EUT Horz
12223.390	34.0	-3.7	1.0	180.0	-10.8	0.0	Vert	AV	0.0	19.5	54.0	-34.5	(10Hz), EUT On Side
12223.320	33.8	-3.7	1.2	223.0	-10.8	0.0	Horz	AV	0.0	19.3	54.0	-34.7	(10Hz), EUT Horz
12398.250	32.9	-3.1	1.5	339.0	-10.8	0.0	Horz	AV	0.0	19.0	54.0	-35.0	(10Hz), EUT Horz
12398.290	32.8	-3.1	1.0	182.0	-10.8	0.0	Vert	AV	0.0	18.9	54.0	-35.1	(10Hz), EUT On Side

Work Order:	CARE0015	Date:	04/19/13	
Project:	None	Temperature:	23.4 °C	
Job Site:	EV01	Humidity:	36.1% RH	
Serial Number:	001D400000103C2	Barometric Pres.:	1021 mbar	Tested by: Brandon Hobbs
EUT:	PIR			
Configuration:	4			
Customer:	Care Innovations			
Attendees:	Bill Morse Stan Telson			
EUT Power:	3 VDC			
Operating Mode:	On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz, High 2480 MHz			
Deviations:	None			
Comments:	Please reference the data comments for frequency and EUT orientation. The duty cycle is operating at 100% duty cycle while under test. The Limit = the lowest radiated output power - 20dBc, Calculated => 87.33 - 20 = 67.33 dB			

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7216.697	46.3	18.4	1.3	168.0	3.0	0.0	Horz	PK	0.0	64.7	67.3	-2.7	EUT Horz
7216.899	43.6	18.4	1.0	223.0	3.0	0.0	Vert	PK	0.0	62.0	67.3	-5.4	EUT On Side
9781.352	67.1	-12.3	1.5	72.0	3.0	0.0	Horz	PK	0.0	54.8	67.3	-12.6	EUT Horz
9917.625	66.3	-12.3	1.0	163.0	3.0	0.0	Horz	PK	0.0	54.0	67.3	-13.4	EUT Horz

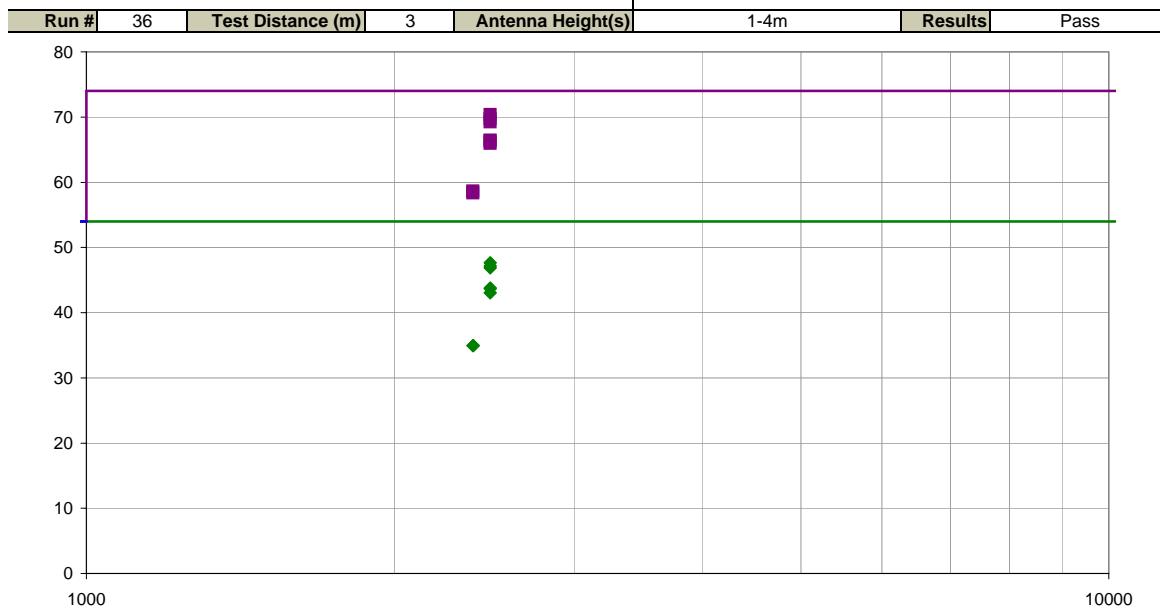


## Spurious Radiated Emissions

PSA-ESCI 2012.12.14  
PSA-ESCI Version 2013.2.20

Work Order:	CARE0015	Date:	04/19/13	
Project:	None	Temperature:	23.4 °C	
Job Site:	EV01	Humidity:	36.1% RH	
Serial Number:	001D40000103C2	Barometric Pres.:	1021 mbar	Tested by: Brandon Hobbs
EUT:	PIR			
Configuration:	4			
Customer:	Care Innovations			
Attendees:	Bill Morse Stan Telson			
EUT Power:	3 VDC			
Operating Mode:	On transmitting 802.11 Zigbee Low 2405 MHz, Mid 2445 MHz, High 2480 MHz			
Deviations:	None			
Comments:	Please reference the data comments for frequency and EUT orientation. The duty cycle is operating at 100% duty cycle while under test. 10Hz VBW was used during the video averaging measurements as noted under the data comments.			

Test Specifications	Test Method
FCC 15.247:2013	ANSI C63.10:2009



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.500	48.5	1.9	1.0	105.0	0.0	20.0	Vert	PK	0.0	70.4	74.0	-3.6	Band Edge EUT Vert
2483.500	47.9	1.9	1.0	304.0	0.0	20.0	Horz	PK	0.0	69.8	74.0	-4.2	Band Edge EUT On Side
2483.573	47.4	1.9	1.0	126.0	0.0	20.0	Horz	PK	0.0	69.3	74.0	-4.7	Band Edge EUT Horz
2483.500	36.6	1.9	1.0	105.0	-10.8	20.0	Vert	AV	0.0	47.7	54.0	-6.3	Band Edge (10Hz)EUT Vert
2483.500	36.1	1.9	1.0	126.0	-10.8	20.0	Horz	AV	0.0	47.2	54.0	-6.8	Band Edge (10Hz)EUT Horz
2483.500	35.8	1.9	1.0	304.0	-10.8	20.0	Horz	AV	0.0	46.9	54.0	-7.1	Band Edge (10Hz)EUT On Side
2483.673	44.6	1.9	1.9	232.0	0.0	20.0	Vert	PK	0.0	66.5	74.0	-7.5	Band Edge EUT On Side
2483.507	44.5	1.9	1.0	191.0	0.0	20.0	Horz	PK	0.0	66.4	74.0	-7.6	Band Edge EUT Vert
2483.507	44.1	1.9	1.0	170.0	0.0	20.0	Vert	PK	0.0	66.0	74.0	-8.0	Band Edge EUT Horz
2483.500	32.7	1.9	1.9	232.0	-10.8	20.0	Vert	AV	0.0	43.8	54.0	-10.2	Band Edge (10Hz)EUT On Side
2483.500	32.6	1.9	1.0	191.0	-10.8	20.0	Horz	AV	0.0	43.7	54.0	-10.3	Band Edge (10Hz)EUT Vert
2483.500	32.0	1.9	1.0	170.0	-10.8	20.0	Vert	AV	0.0	43.1	54.0	-10.9	Band Edge (10Hz)EUT Horz
2388.623	37.1	1.6	2.7	77.0	0.0	20.0	Vert	PK	0.0	58.7	74.0	-15.3	Band Edge EUT Vert
2388.017	36.8	1.6	1.0	181.0	0.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	Band Edge EUT Horz
2388.960	24.2	1.5	1.0	181.0	-10.8	20.0	Horz	AV	0.0	35.0	54.0	-19.0	Band Edge (10Hz)EUT Horz
2389.790	24.2	1.5	2.7	77.0	-10.8	20.0	Vert	AV	0.0	35.0	54.0	-19.0	Band Edge (10Hz)EUT Vert