ZOLL Medical Corporation

Zoll CF Card Module

FCC 15.247:2013

Report #: LGPD0094.3 DRAFT

Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: May 2, 2013
ZOLL Medical Corporation
Model: Zoll CF Card Module

Emissions

Test Description	Specification	Test Method	Pass/Fail
Output Power	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: 200676-0

Test Facility

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

Northwest EMC, Inc.
41 Tesla Ave.
Irvine, CA 92618

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 #2834B-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

REV 2012.08.02

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

Canada

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

European Union

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.

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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.

Singapore

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

Hong Kong

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

Vietnam

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

Russia

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

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

MEASUREMENT UNCERTAINTY

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.

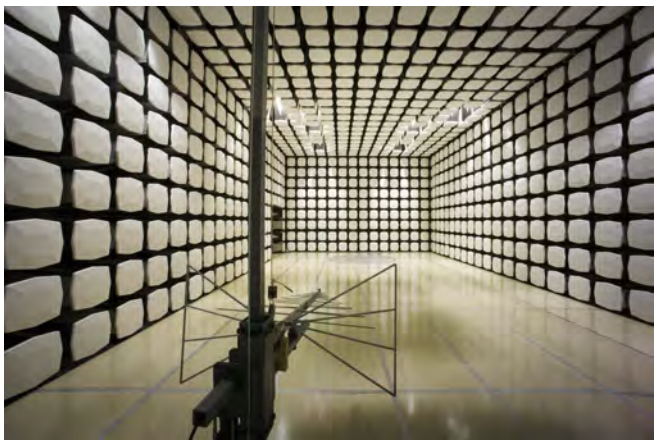
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

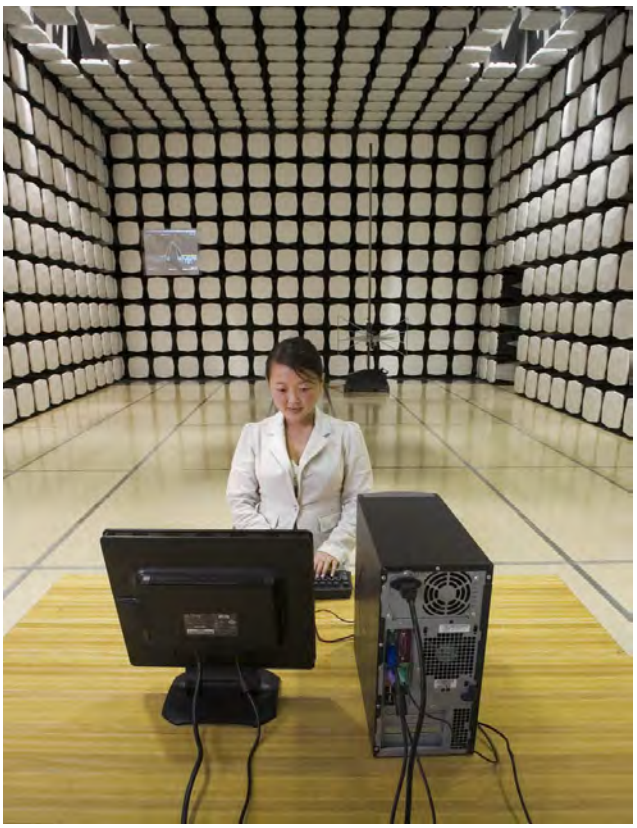
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94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

LOCATIONS

REV 2013.02.26

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

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	ZOLL Medical Corporation
Address:	269 Mill Road
City, State, Zip:	Chelmsford, MA 01824
Test Requested By:	Curt McNamara – Logic Product Development
Model:	Z-RS-DC002
First Date of Test:	April 29, 2013
Last Date of Test:	May 02, 2013
Receipt Date of Samples:	April 29, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
802.11abgn CF wireless card containing 1x1 SISO radio module operating in 20 MHz channel bandwidth that is normally installed in the ZOLL R Series™ defibrillators.

Testing Objective:
To demonstrate compliance to the radiated emissions and power requirements of FCC 15.247. Compliance to the remaining requirements of FCC 15.247 is documented in other test reports

CONFIGURATIONS

Configuration LGPD0094- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Zoll CF Card Module	Zoll Medical Corporation	Z-RS-DC002	SN0024
Defibrillator	Zoll Medical Corporation	None	AF13A026560

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
MFC Cable	No	3.7m	No	Defibrillator	Terminated
AC Cable	No	4.0m	No	Defibrillator	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration LGPD0094- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Zoll CF Card Module	Zoll Medical Corporation	Z-RS-DC002	SN0024

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell Technologies Inc.	PP18L	33583998997

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Serial Cable	No	1.8m	No	Laptop	Zoll CF Card Module
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/29/2013	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.
2	5/2/2013	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Power Sensor	Hewlett Packard	8481	SQP	4/11/2012	24
Power Meter	Hewlett Packard	E4418A	SPA	4/11/2012	24
Signal Generator	Agilent	E8257D	TGU	2/1/2012	36
Spectrum Analyzer	Agilent	E4440A	AFG	5/16/2012	24

TEST DESCRIPTION

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Method Option 1 found in KDB 558074 DTS D01 Measurement Section 8.1.1 was used because the RBW on the analyzer was greater than the Emission Bandwidth of the radio.

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

Output Power

EUT:	Zoll CF Card Module			**Work Order:**	LGPD0094
Serial Number:	SN0024			**Date:**	04/29/13
Customer:	Logic Product Development			**Temperature:**	24°C
Attendees:	None			**Humidity:**	46%
Project:	None			**Barometric Pres.:**	1020
Tested by:	Jaemi Suh	**Power:**	3.3 VDC	**Job Site:**	OC10

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

802.11 A/B/G. All settings were done in Hyper Terminal.

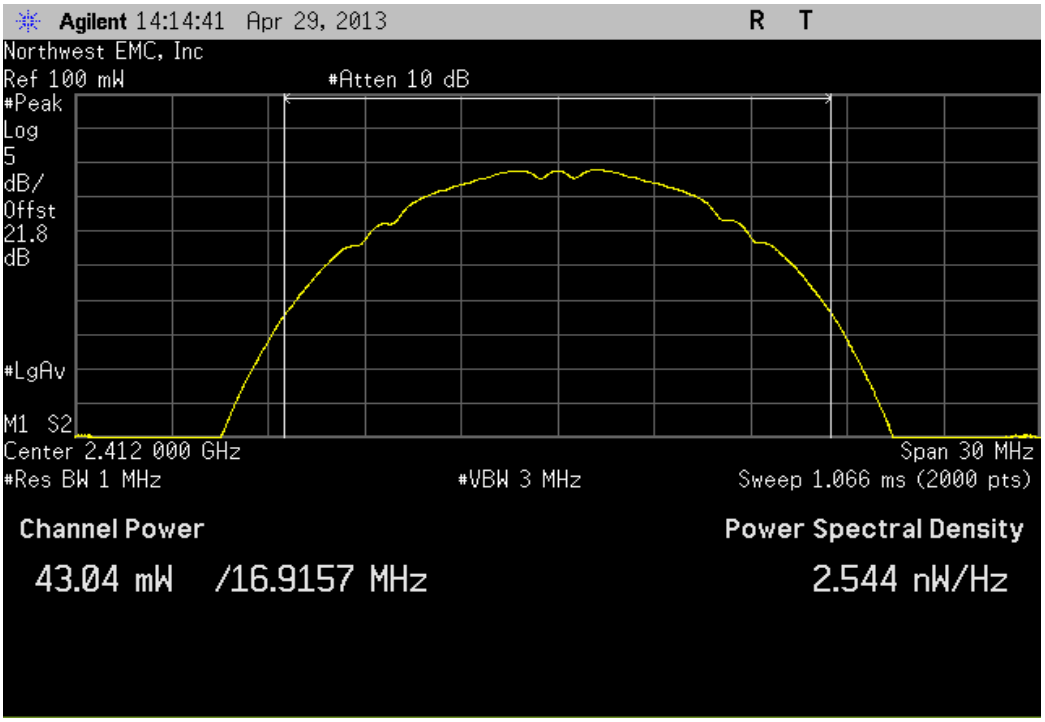
DEVIATIONS FROM TEST STANDARD

None

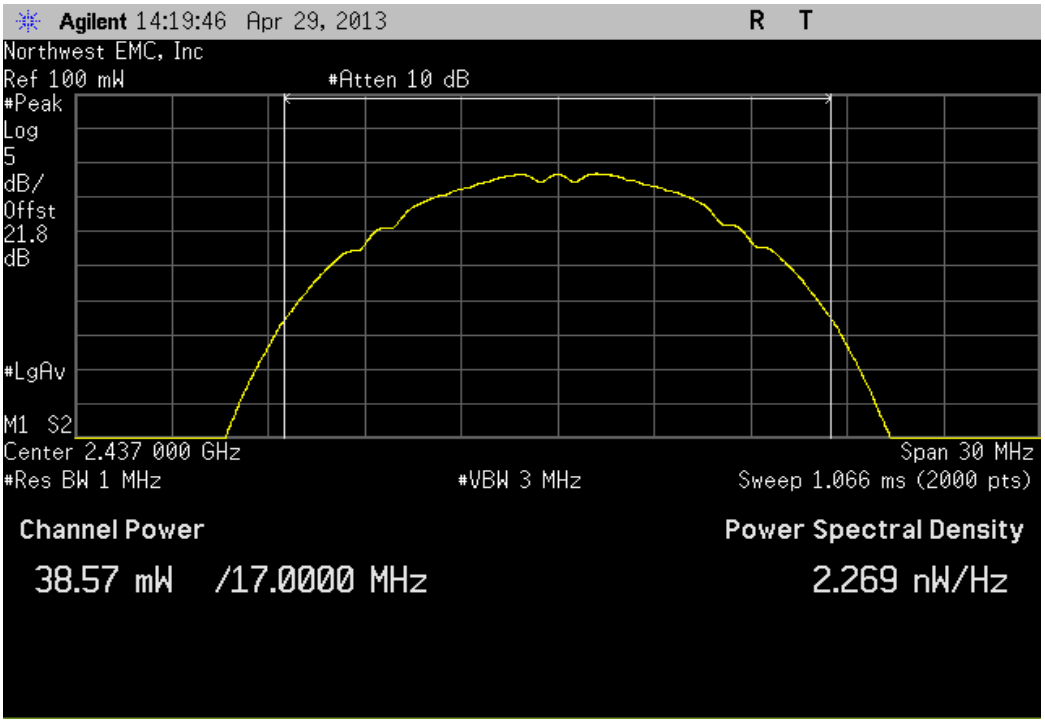
Configuration #	2	Signature

		Value	Limit	Result
2400 MHz - 2483.5 MHz Band				
	802.11(b) 1 Mbps			
	Low Channel 1, 2412 MHz	43.038 mW	< 1 W	Pass
	Mid Channel 6, 2437 MHz	38.57 mW	< 1 W	Pass
	High Channel 11, 2462 MHz	47.048 mW	< 1 W	Pass
	802.11(b) 11 Mbps			
	Low Channel 1, 2412 MHz	40.191 mW	< 1 W	Pass
	Mid Channel 6, 2437 MHz	40.422 mW	< 1 W	Pass
	High Channel 11, 2462 MHz	47.139 mW	< 1 W	Pass
	802.11(g) 6 Mbps			
	Low Channel 1, 2412 MHz	36.603 mW	< 1 W	Pass
	Mid Channel 6, 2437 MHz	38.873 mW	< 1 W	Pass
	High Channel 11, 2462 MHz	34.877 mW	< 1 W	Pass
	802.11(g) 36 Mbps			
	Low Channel 1, 2412 MHz	16.98 mW	< 1 W	Pass
	Mid Channel 6, 2437 MHz	18.123 mW	< 1 W	Pass
	High Channel 11, 2462 MHz	19.762 mW	< 1 W	Pass
	802.11(g) 54 Mbps			
	Low Channel 1, 2412 MHz	15.007 mW	< 1 W	Pass
	Mid Channel 6, 2437 MHz	15.838 mW	< 1 W	Pass
	High Channel 11, 2462 MHz	21.55 mW	< 1 W	Pass
5725 MHz - 5850 MHz Band				
	802.11(a) 6 Mbps			
	Low Channel 149, 5745 MHz	9.833 mW	< 1 W	Pass
	Mid Channel 157, 5785 MHz	10.156 mW	< 1 W	Pass
	High Channel 165, 5825 MHz	9.89 mW	< 1 W	Pass
	802.11(a) 36 Mbps			
	Low Channel 149, 5745 MHz	17.668 mW	< 1 W	Pass
	Mid Channel 157, 5785 MHz	18.119 mW	< 1 W	Pass
	High Channel 165, 5825 MHz	18.959 mW	< 1 W	Pass
	802.11(a) 54 Mbps			
	Low Channel 149, 5745 MHz	8.73 mW	< 1 W	Pass
	Mid Channel 157, 5785 MHz	7.602 mW	< 1 W	Pass
	High Channel 165, 5825 MHz	8.274 mW	< 1 W	Pass

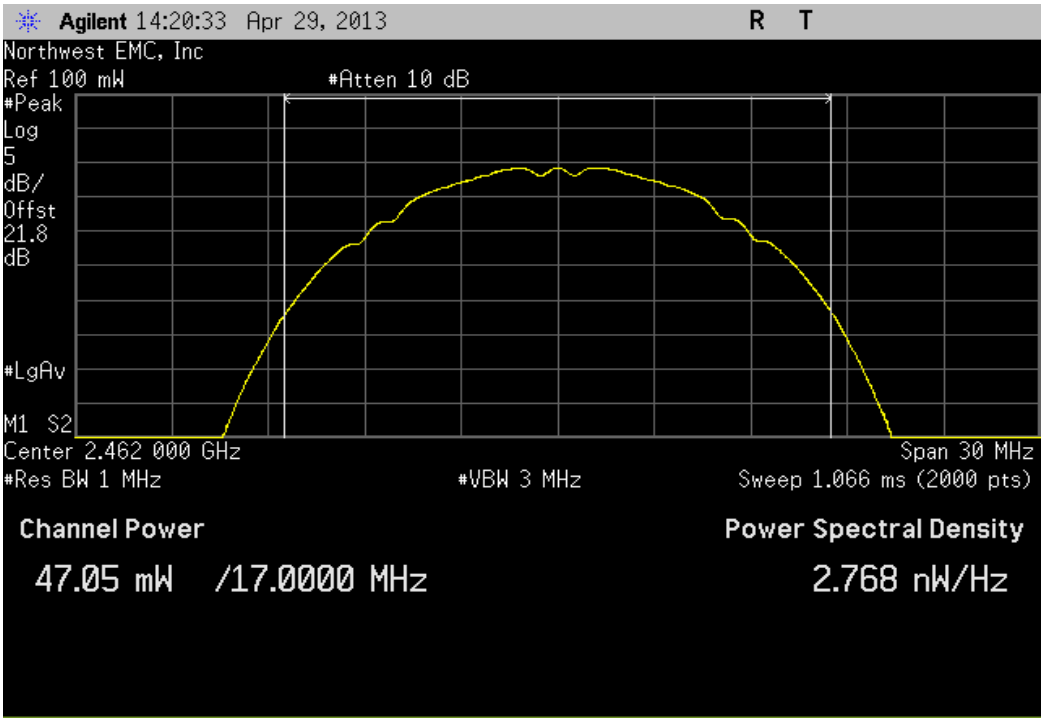
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				43.038 mW	< 1 W	Pass



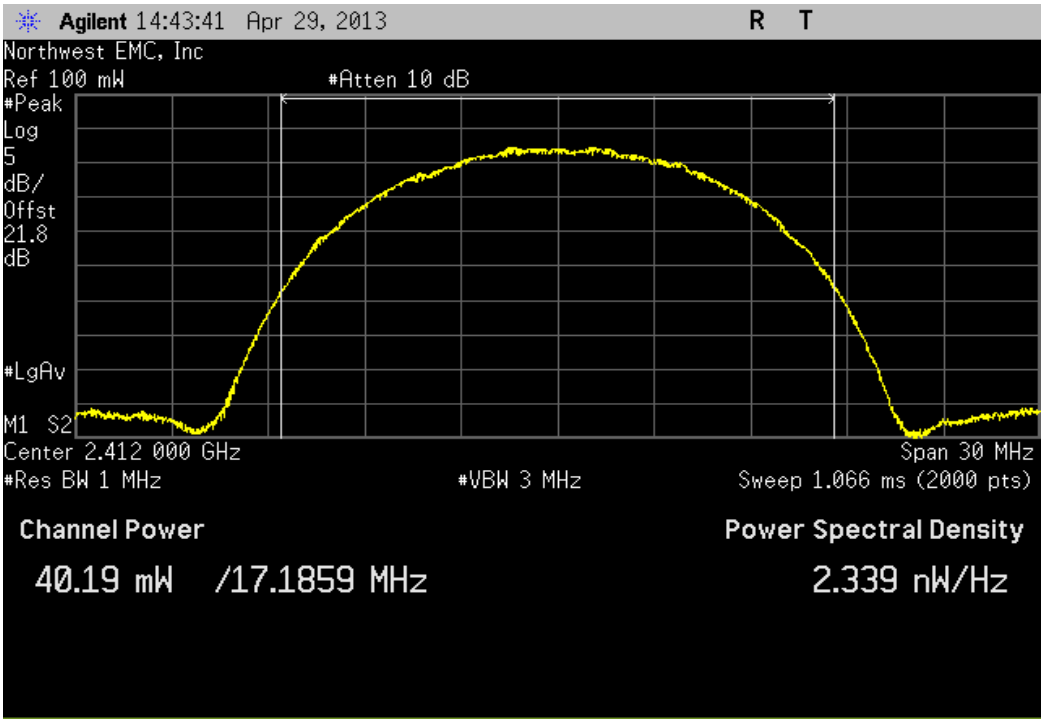
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz						
				Value	Limit	Result
				38.57 mW	< 1 W	Pass



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	Result
				47.048 mW	< 1 W	Pass

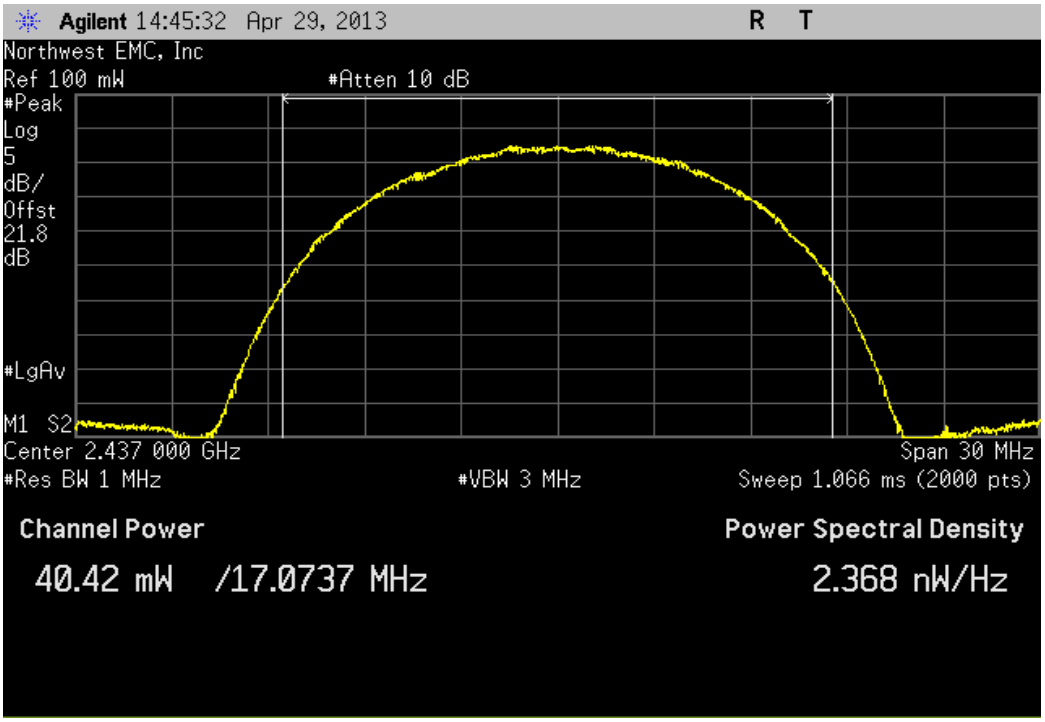


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				40.191 mW	< 1 W	Pass



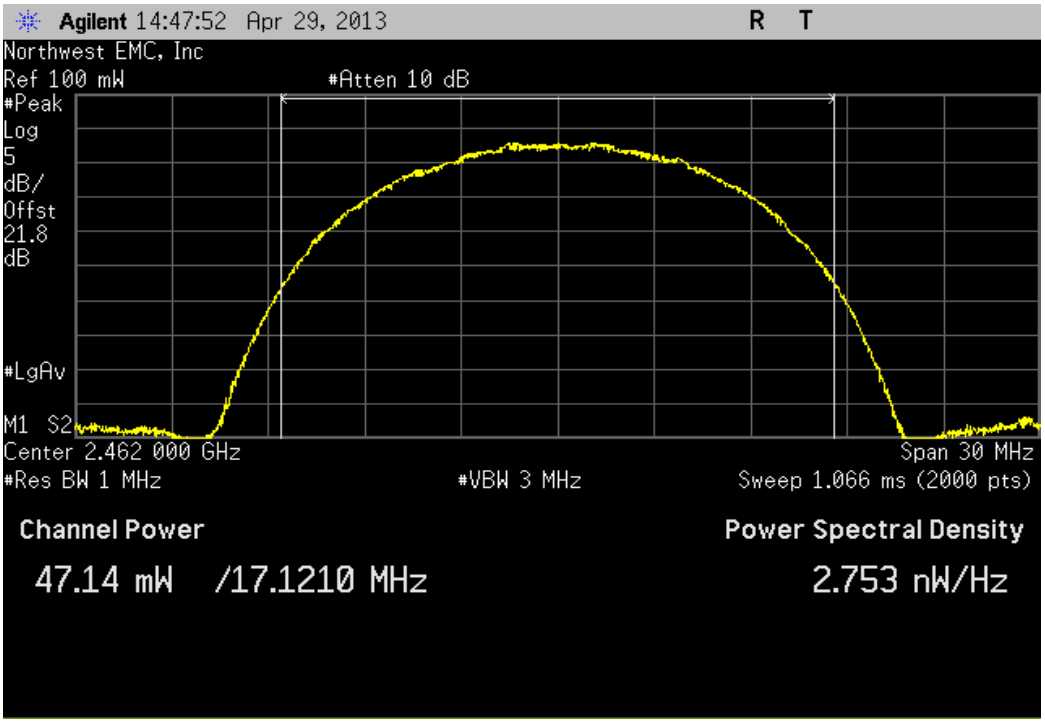
2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				40.422 mW	< 1 W	Pass



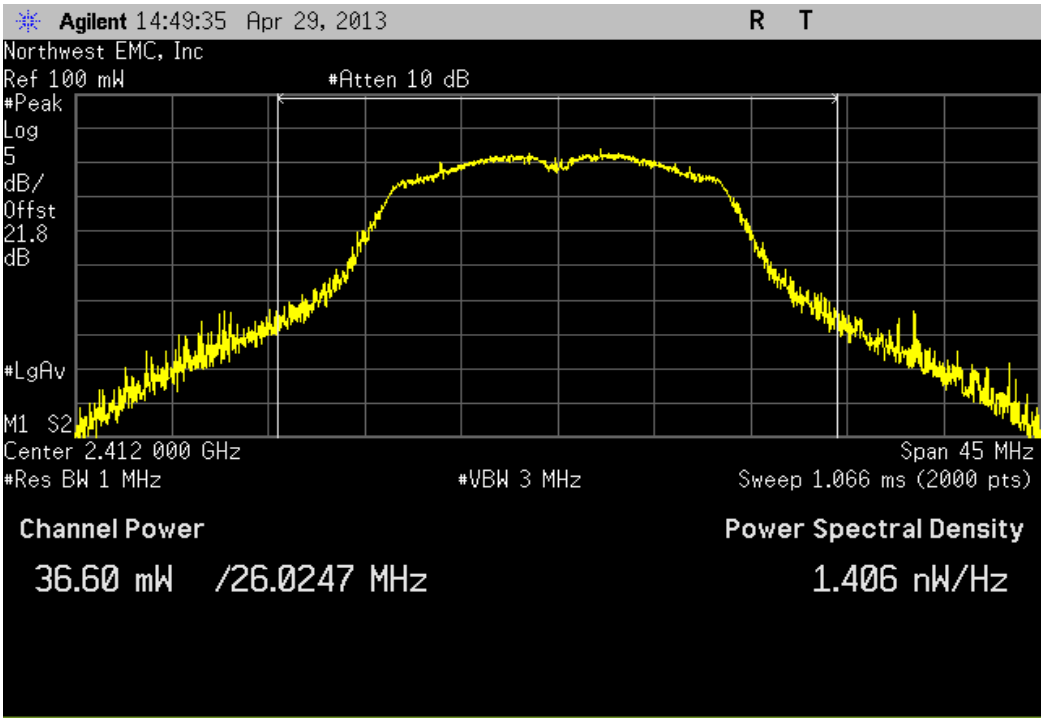
2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				47.139 mW	< 1 W	Pass



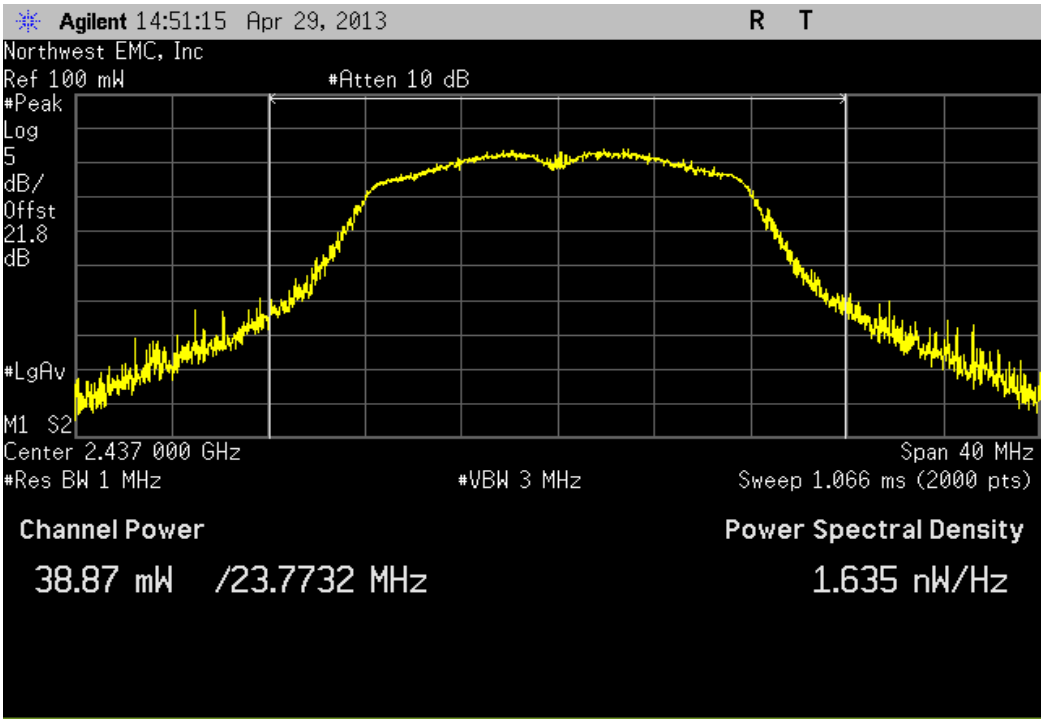
2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				36.603 mW	< 1 W	Pass

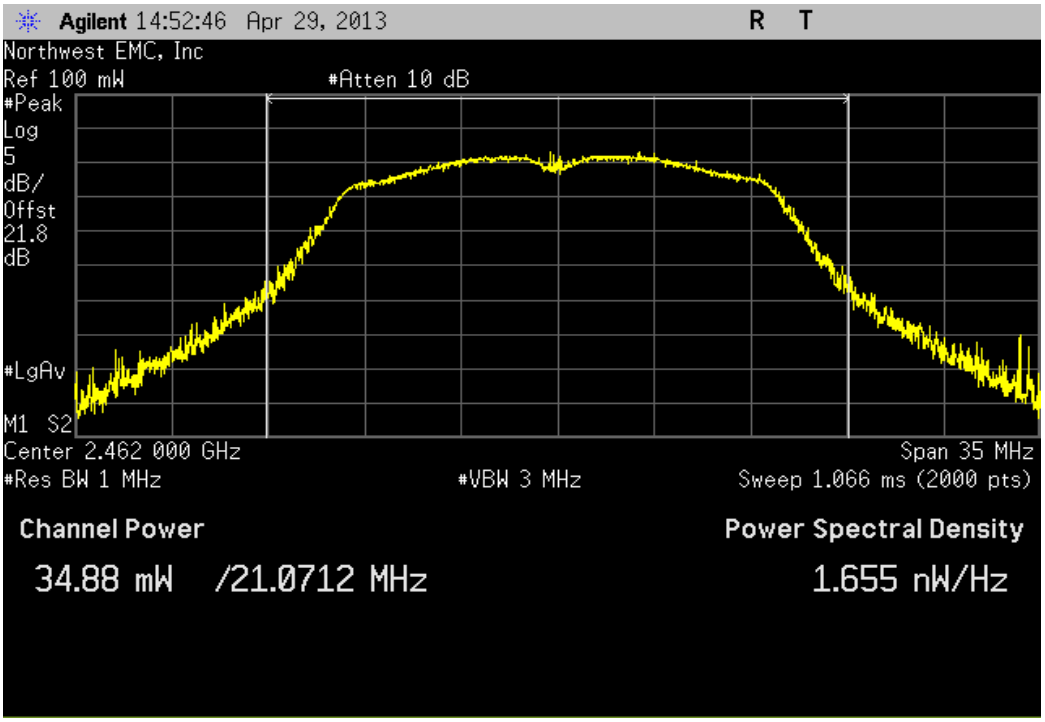


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

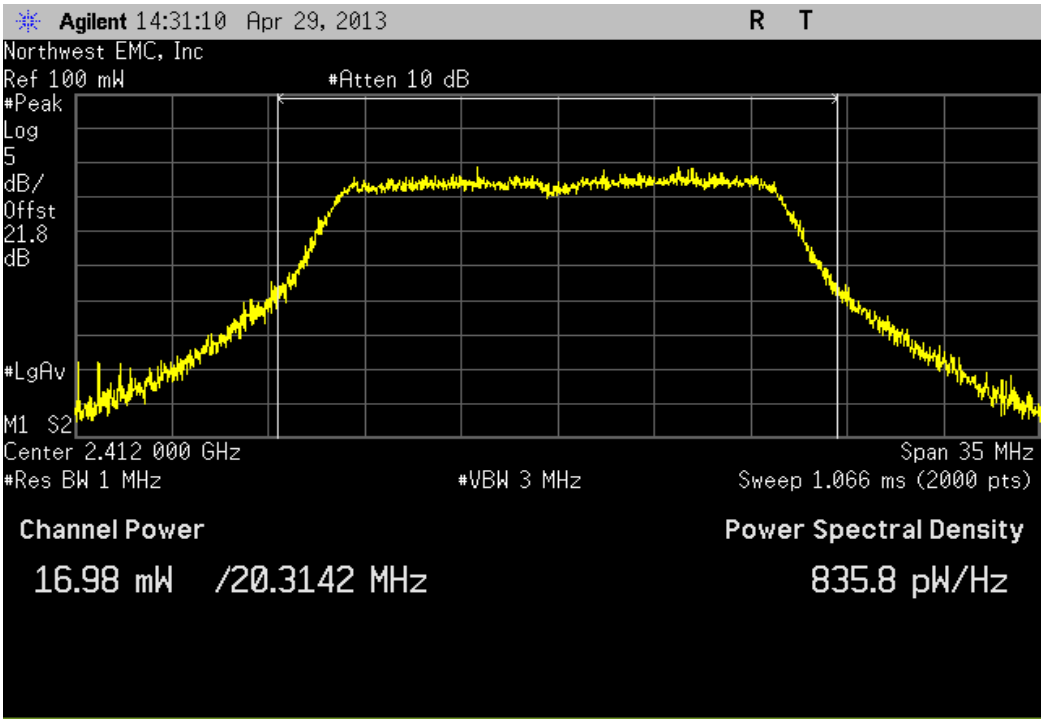
				Value	Limit	Result
				38.873 mW	< 1 W	Pass



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	Result
				34.877 mW	< 1 W	Pass

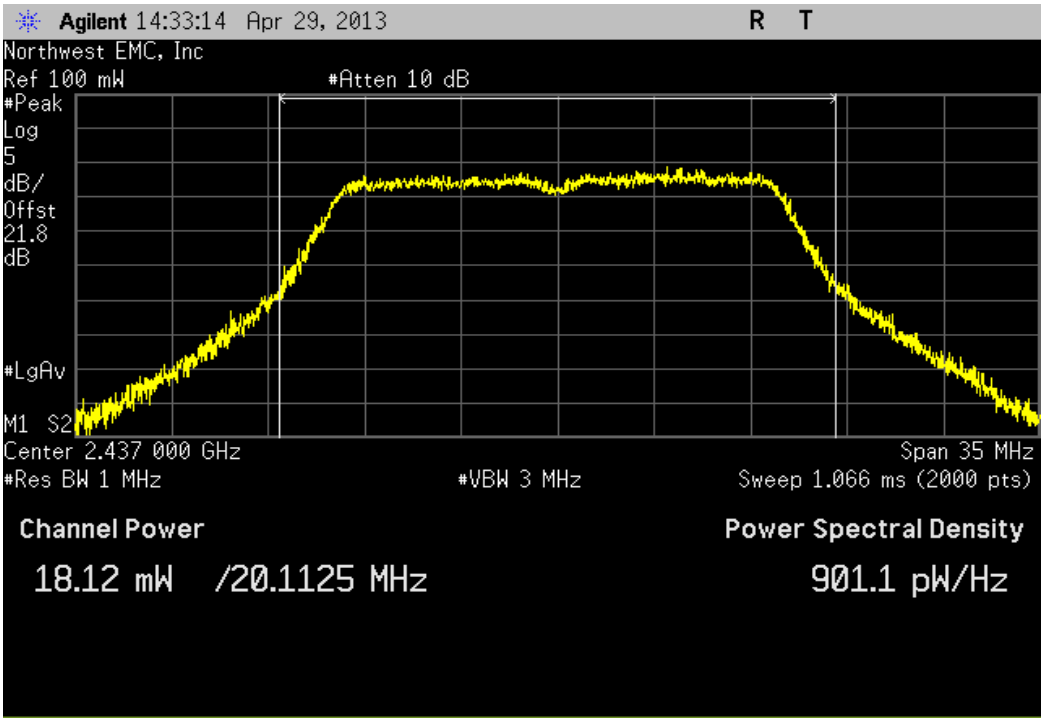


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz						
				Value	Limit	Result
				16.98 mW	< 1 W	Pass



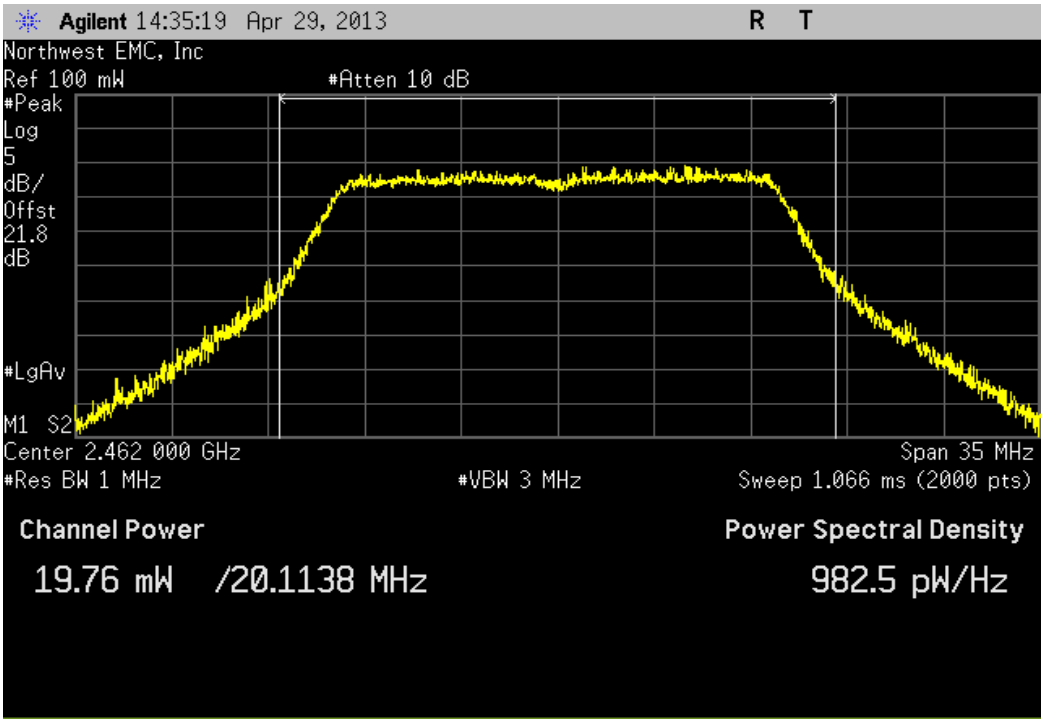
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				18.123 mW	< 1 W	Pass



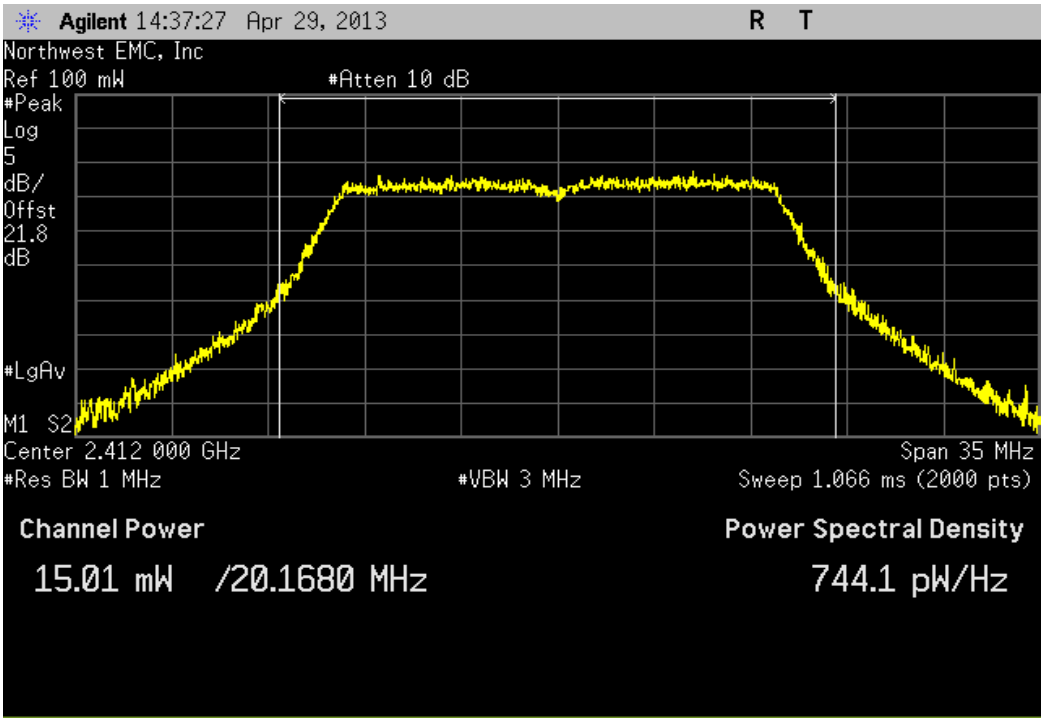
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz

				Value	Limit	Result
				19.762 mW	< 1 W	Pass



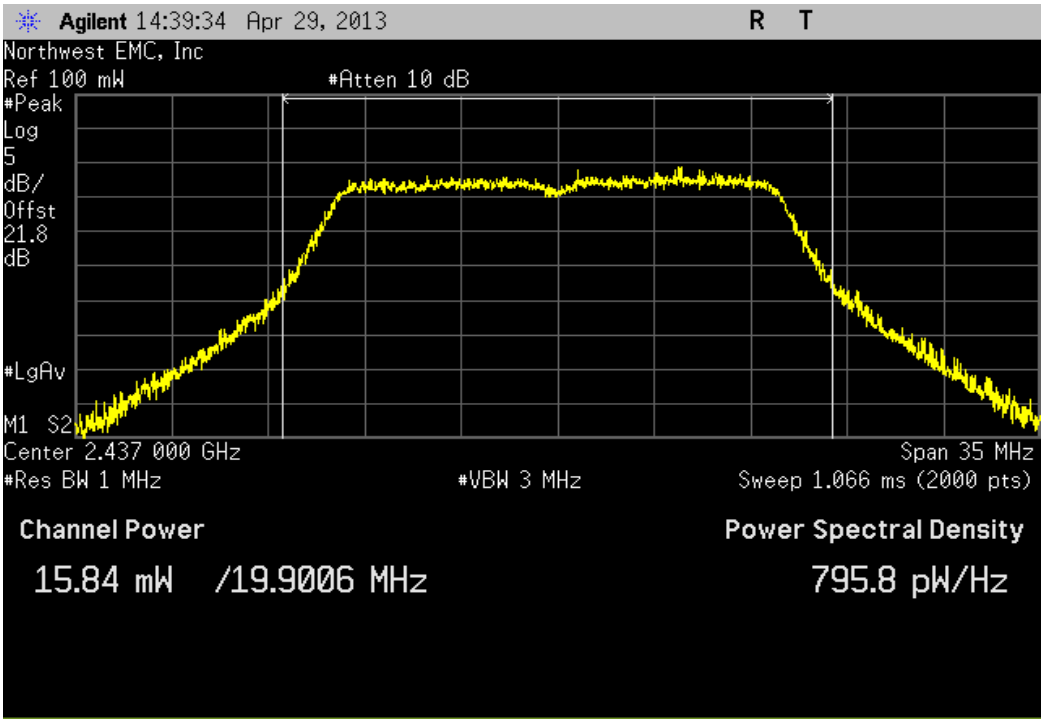
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

				Value	Limit	Result
				15.007 mW	< 1 W	Pass



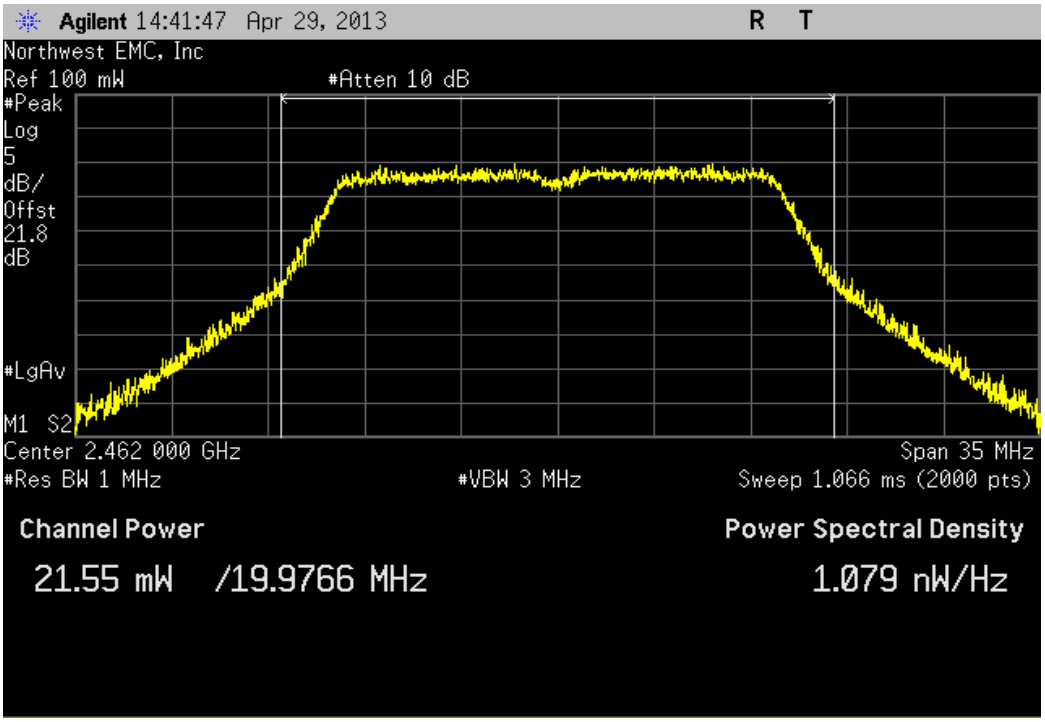
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz

				Value	Limit	Result
				15.838 mW	< 1 W	Pass

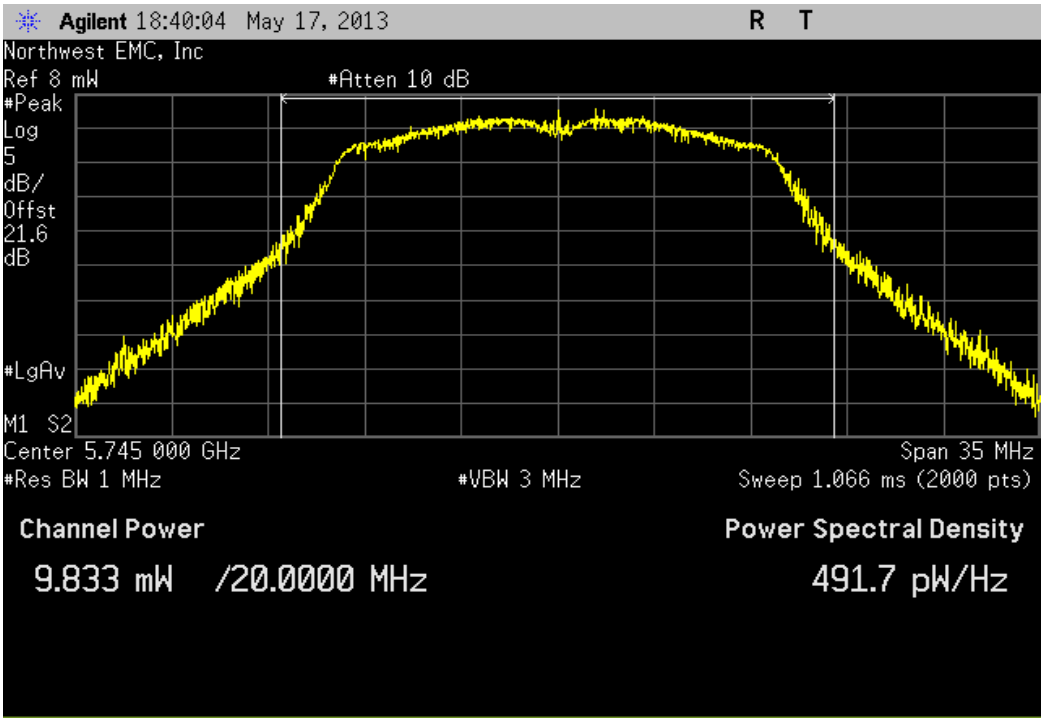


Output Power

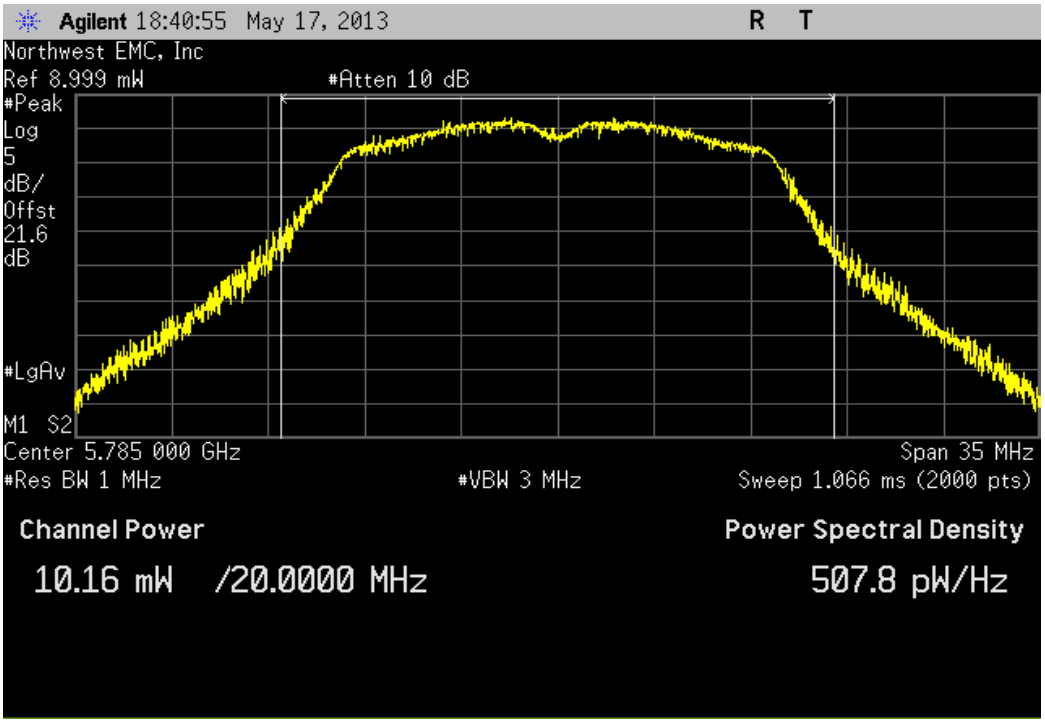
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	Result
				21.55 mW	< 1 W	Pass



5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Low Channel 149, 5745 MHz						
				Value	Limit	Result
				9.833 mW	< 1 W	Pass

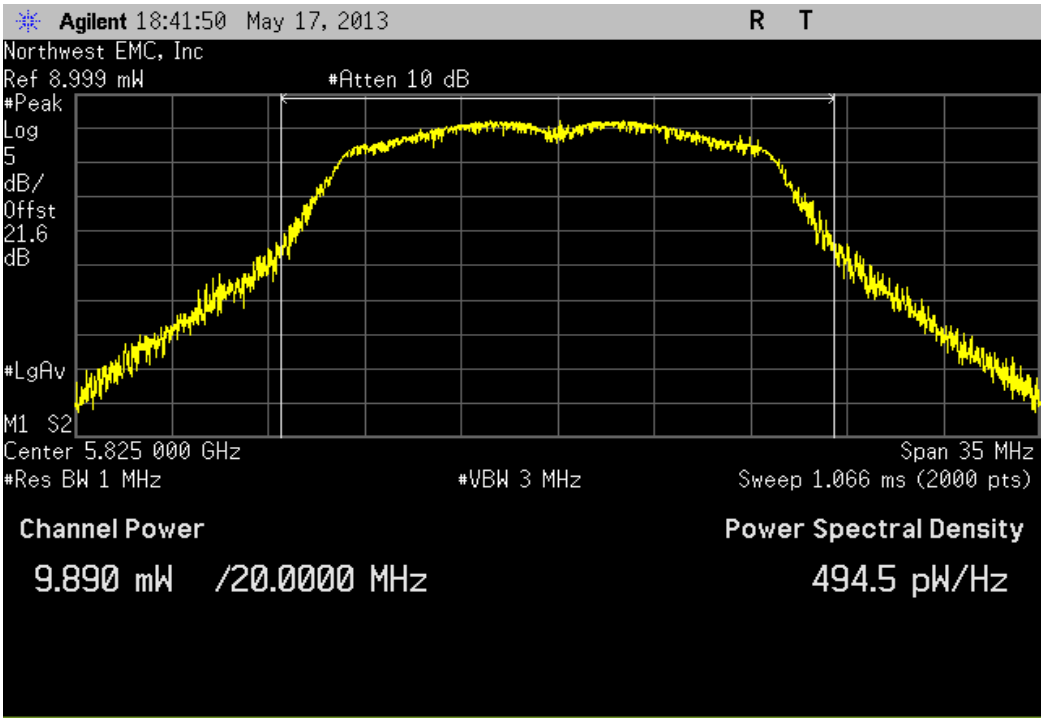


5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, Mid Channel 157, 5785 MHz						
				Value	Limit	Result
				10.156 mW	< 1 W	Pass



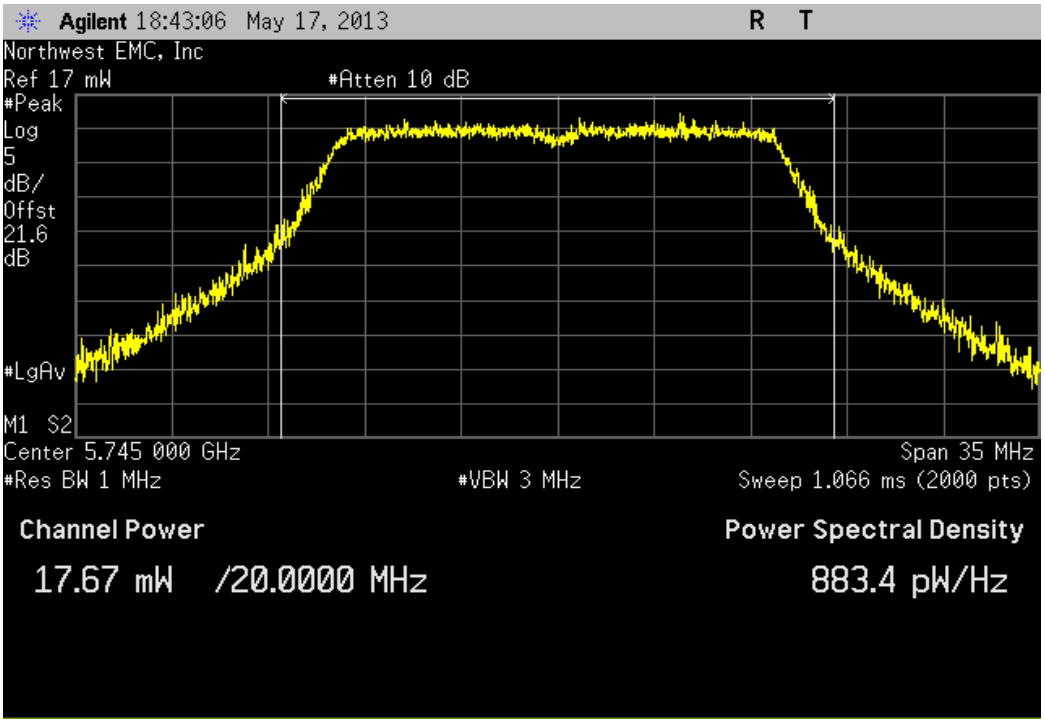
5725 MHz - 5850 MHz Band, 802.11(a) 6 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				9.89 mW	< 1 W	Pass



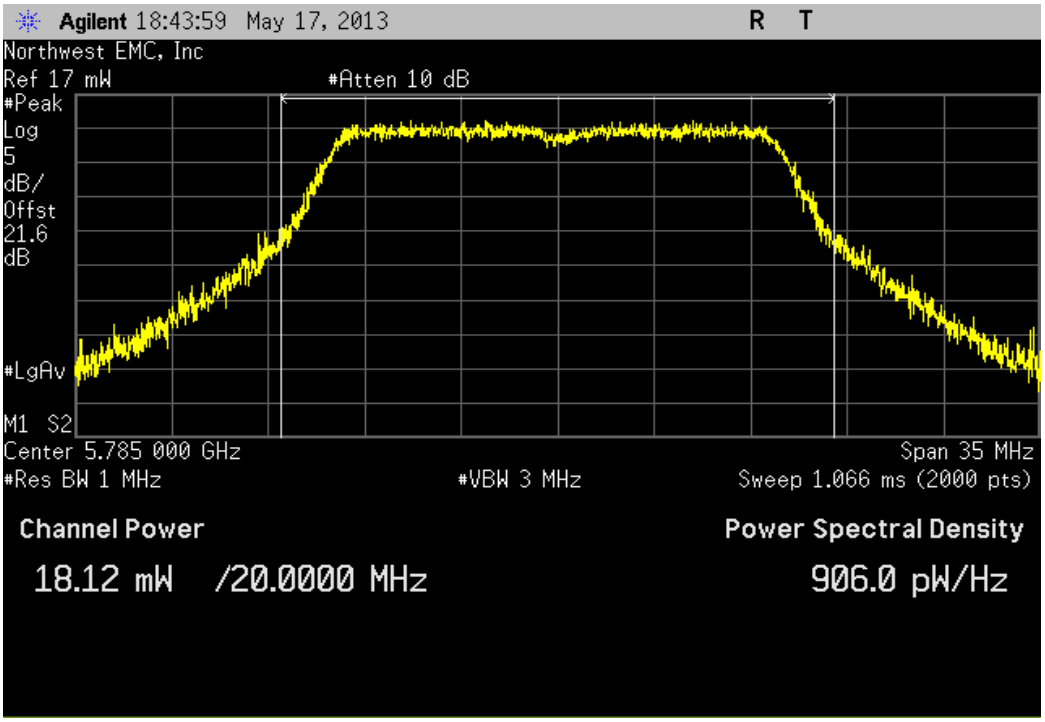
5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				17.668 mW	< 1 W	Pass



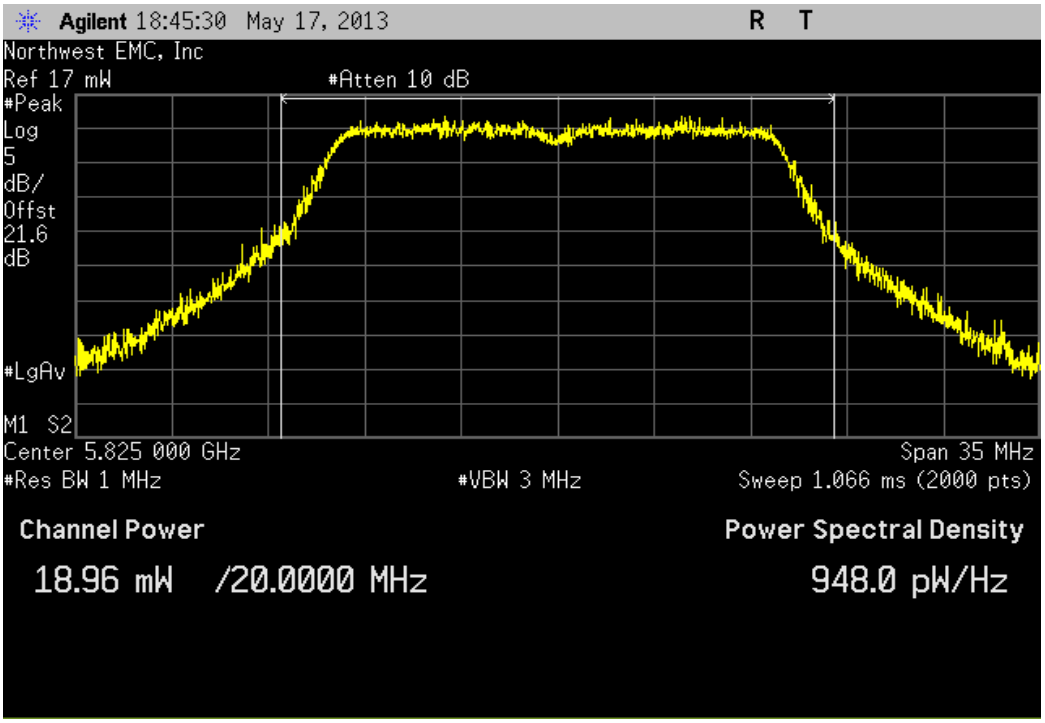
5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, Mid Channel 157, 5785 MHz

				Value	Limit	Result
				18.119 mW	< 1 W	Pass



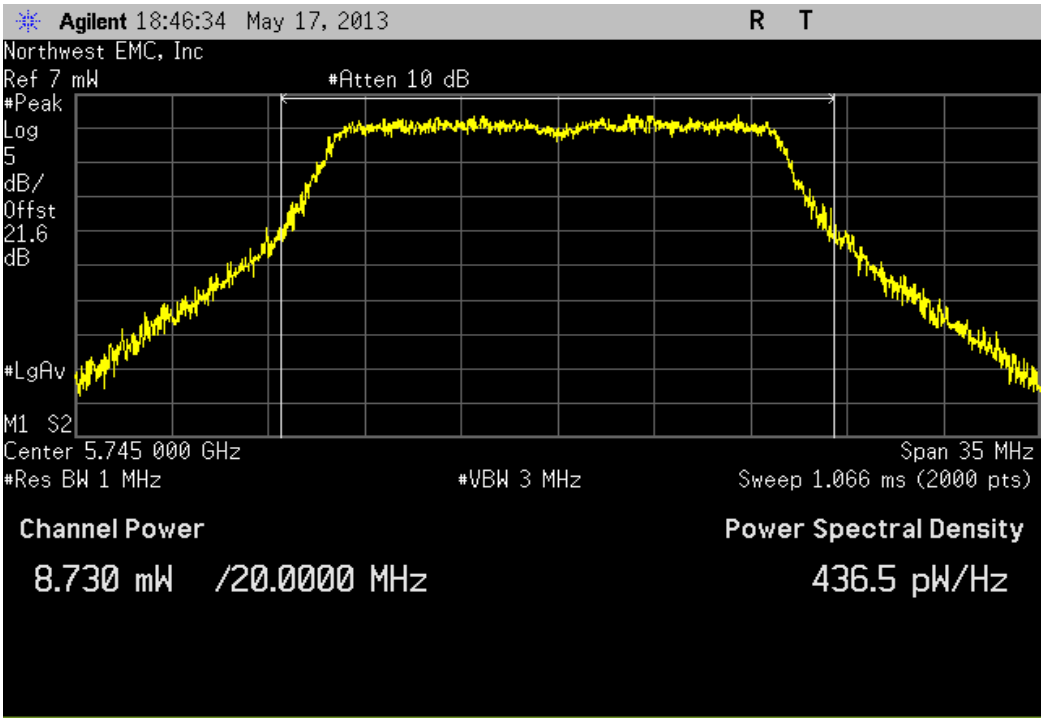
5725 MHz - 5850 MHz Band, 802.11(a) 36 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				18.959 mW	< 1 W	Pass



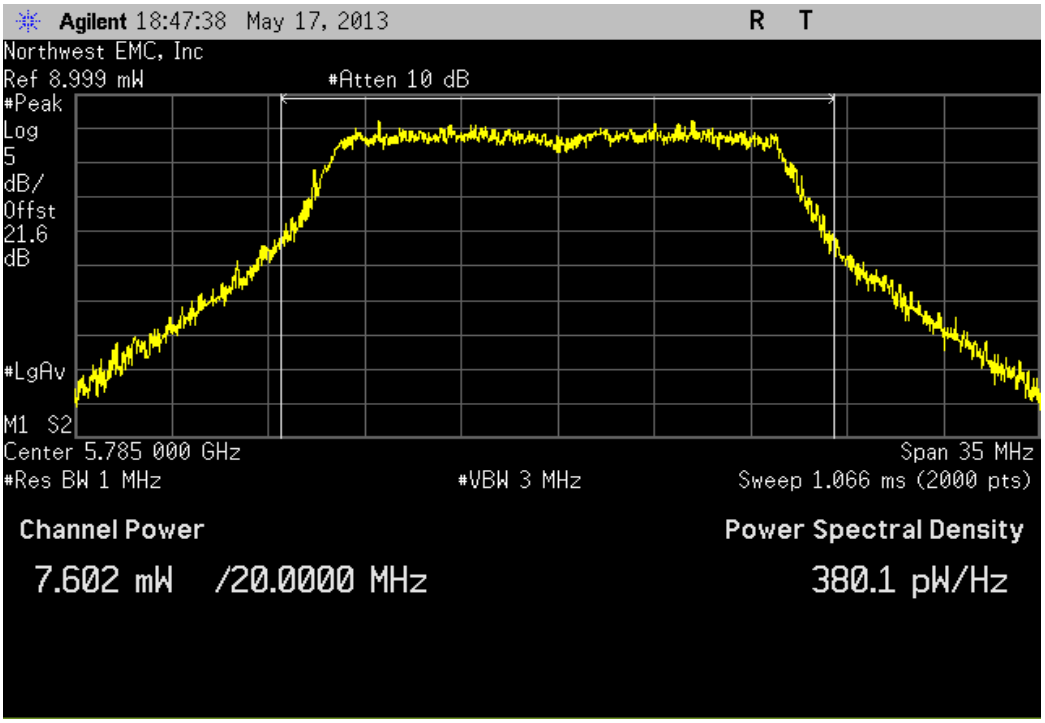
5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Low Channel 149, 5745 MHz

				Value	Limit	Result
				8.73 mW	< 1 W	Pass



5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, Mid Channel 157, 5785 MHz

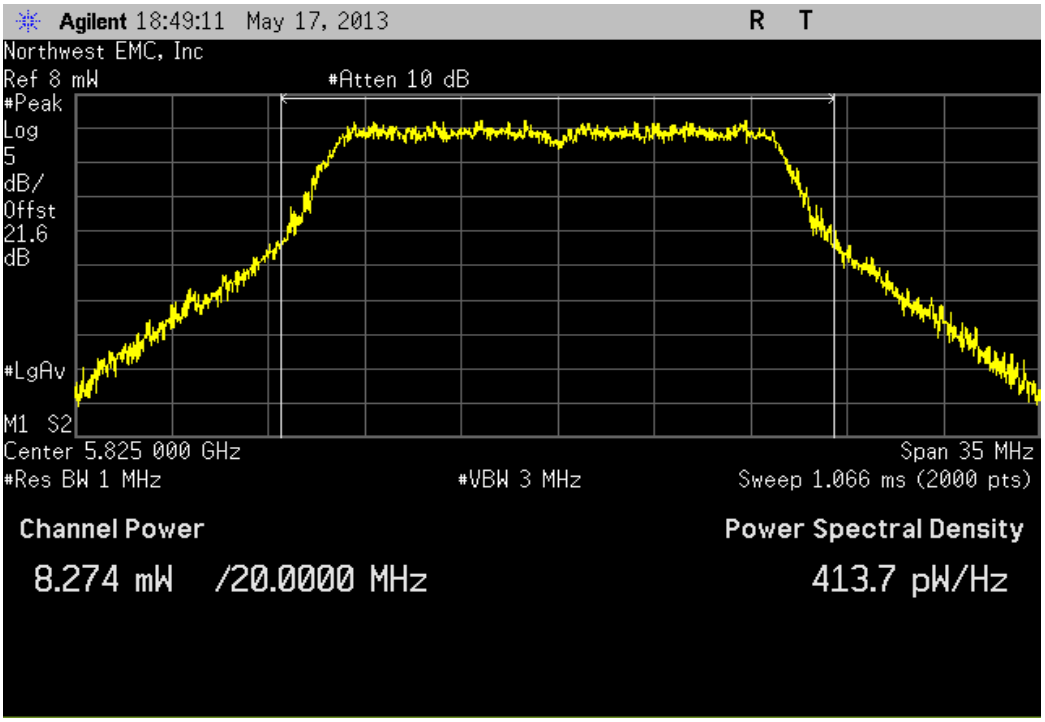
				Value	Limit	Result
				7.602 mW	< 1 W	Pass



Output Power

5725 MHz - 5850 MHz Band, 802.11(a) 54 Mbps, High Channel 165, 5825 MHz

				Value	Limit	Result
				8.274 mW	< 1 W	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

Transmitting at 802.11 b/g. Low Channel, 2412 MHz; Mid Channel, 2437 MHz; High Channel 2462 MHz.
Transmitting at 802.11a: Low Channel 149 - 5745 MHz, Mid Channel 157 - 5785 MHz, High Channel - 5825 MHz.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LGPD0094 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40000 MHz

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
High Pass Filter 1.2-18 GHz	Micro-Tronics	HPM50108	HFW	4/2/2012	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HFM	4/2/2012	24 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	4/29/2013	12 mo
Antenna, Horn	EMCO	3160-09	AHN	NCR	0 mo
OC floating Cable	N/A	18-26GHz RE Cables	OCK	4/29/2013	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	11/21/2012	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/21/2012	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
OC 10 Cables	N/A	8-18GHz RE Cables	OCO	10/10/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	6/7/2012	12 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	36 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/10/2012	12 mo
Antenna, Biconilog	EMCO	3142	AXB	6/14/2012	12 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	6/7/2012	12 mo
Pre-Amplifier	Miteq	AM-1064-9079	AOO	6/7/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAY	2/22/2013	24 mo
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	PAE	1/29/2013	12 mo
Antenna, Horn	EMCO	3160-10	AIX	NCR	0 mo
OC floating Cable	ESM Cable Corp	26-40GHz RE Cables	OC1	1/29/2013	12 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

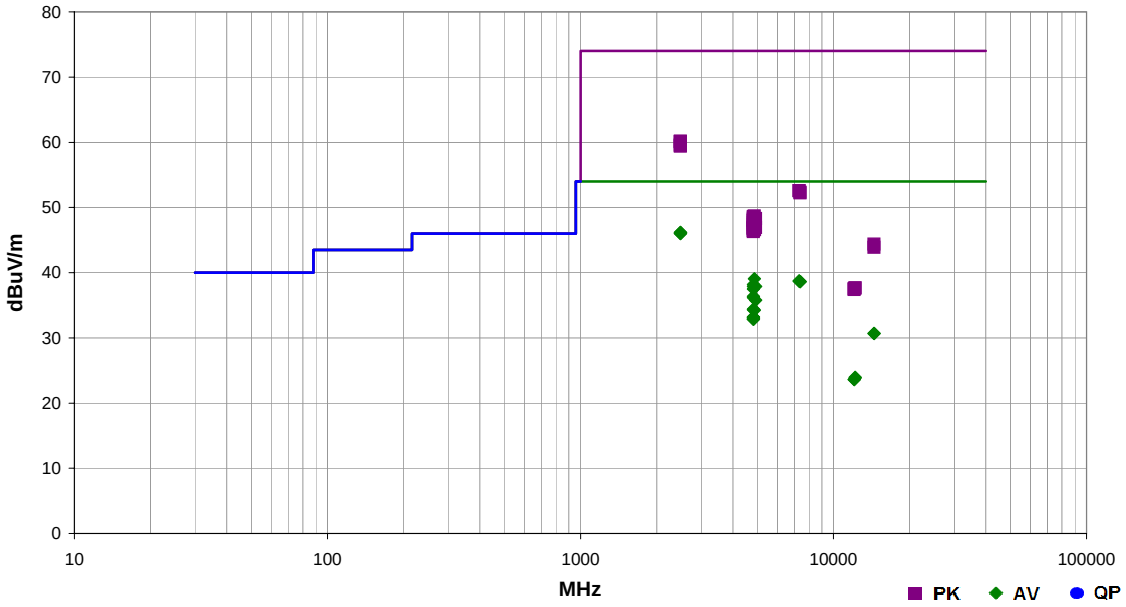
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify 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.

SPURIOUS RADIATED EMISSIONS

Work Order:	LGPD0094	**Date:**	05/02/13		
Project:	None	**Temperature:**	24.12 °C		
Job Site:	OC10	**Humidity:**	45% RH		
Serial Number:	SN0024	**Barometric Pres.:**	1020 mbar	**Tested by:**	Jaemi Suh
EUT:	Zoll CF Card Module				
Configuration:	1				
Customer:	Logic Product Development				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 802.11 b/g. Low Channel, 2412 MHz; Mid Channel, 2437 MHz; High Channel 2462 MHz.				
Deviations:	None				
Comments:	Using Hyperterminal to program the CF Card. CF Card is powered up by the Defibrillator. Data Rates: 1 Mbps, 11 Mbps, 6 Mbps, 36 Mbps, 54 Mbps				

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

Run #	13	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.496	24.1	2.1	1.0	50.0	3.0	20.0	Horz	AV	0.0	46.2	54.0	-7.8	Ch 11, 2462MHz, X-Axis. 1 Mbps
2483.497	24.0	2.1	1.3	169.0	3.0	20.0	Horz	AV	0.0	46.1	54.0	-7.9	Ch 11, 2462MHz, Z-Axis. 1 Mbps
2483.495	24.0	2.1	1.0	310.0	3.0	20.0	Vert	AV	0.0	46.1	54.0	-7.9	Ch 11, 2462MHz, Y-Axis. 1 Mbps
2483.502	24.0	2.1	1.0	80.0	3.0	20.0	Horz	AV	0.0	46.1	54.0	-7.9	Ch 11, 2462MHz, Y-Axis. 1 Mbps
2483.495	24.0	2.1	1.0	3.0	3.0	20.0	Vert	AV	0.0	46.1	54.0	-7.9	Ch 11, 2462MHz, Z-Axis. 1 Mbps
2483.503	23.9	2.1	1.4	129.0	3.0	20.0	Vert	AV	0.0	46.0	54.0	-8.0	Ch 11, 2462MHz, X-Axis. 1 Mbps
2483.501	38.1	2.1	1.4	129.0	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8	Ch 11, 2462MHz, X-Axis. 1 Mbps
2483.498	38.0	2.1	1.0	80.0	3.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	Ch 11, 2462MHz, Y-Axis. 1 Mbps
2483.500	38.0	2.1	1.0	3.0	3.0	20.0	Vert	PK	0.0	60.1	74.0	-13.9	Ch 11, 2462MHz, Y-Axis. 1 Mbps
2483.495	37.5	2.1	1.0	310.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	Ch 11, 2462MHz, Z-Axis. 1 Mbps
2483.498	37.4	2.1	1.0	50.0	3.0	20.0	Horz	PK	0.0	59.5	74.0	-14.5	Ch 11, 2462MHz, Z-Axis. 1 Mbps
2483.495	37.3	2.1	1.3	169.0	3.0	20.0	Horz	PK	0.0	59.4	74.0	-14.6	Ch 11, 2462MHz, X-Axis. 1 Mbps
4873.993	28.7	10.4	1.0	224.0	3.0	0.0	Horz	AV	0.0	39.1	54.0	-14.9	Ch 6, 2437MHz, X-Axis. 1 Mbps
7309.373	22.9	15.8	1.2	110.0	3.0	0.0	Horz	AV	0.0	38.7	54.0	-15.3	Ch 6, 2437MHz, X-Axis. 1 Mbps
7309.060	22.9	15.8	1.0	332.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	Ch 6, 2437MHz, X-Axis. 1 Mbps
7385.200	22.7	15.9	1.5	215.0	3.0	0.0	Horz	AV	0.0	38.6	54.0	-15.4	Ch 11, 2462MHz, X-Axis. 1 Mbps
7384.340	22.7	15.9	1.0	52.0	3.0	0.0	Vert	AV	0.0	38.6	54.0	-15.4	Ch 11, 2462MHz, X-Axis. 1 Mbps
4824.007	27.9	10.3	1.3	226.0	3.0	0.0	Horz	AV	0.0	38.2	54.0	-15.8	Ch 1, 2412MHz, X-Axis. 1 Mbps
4924.000	27.4	10.5	1.0	214.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Ch 11, 2462MHz, X-Axis. 1 Mbps
4824.007	27.6	10.3	1.0	317.0	3.0	0.0	Vert	AV	0.0	37.9	54.0	-16.1	Ch 1, 2412MHz, X-Axis. 1 Mbps
4824.047	27.2	10.3	1.3	245.0	3.0	0.0	Vert	AV	0.0	37.5	54.0	-16.5	Ch 1, 2412MHz, Y-Axis. 1 Mbps
4824.013	26.1	10.3	1.0	272.0	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6	Ch 1, 2412MHz, Z-Axis. 1 Mbps
4824.053	25.9	10.3	3.0	261.0	3.0	0.0	Horz	AV	0.0	36.2	54.0	-17.8	Ch 1, 2412MHz, Y-Axis. 1 Mbps
4924.020	25.3	10.5	1.0	243.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	Ch 11, 2462MHz, X-Axis. 1 Mbps
4824.007	24.1	10.3	1.0	220.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	Ch 1, 2412MHz, X-Axis. 11 Mbps
4824.020	24.0	10.3	1.0	105.0	3.0	0.0	Horz	AV	0.0	34.3	54.0	-19.7	Ch 1, 2412MHz, Z-Axis. 1 Mbps
4873.987	23.9	10.4	1.0	154.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	Ch 6, 2437MHz, X-Axis. 1 Mbps

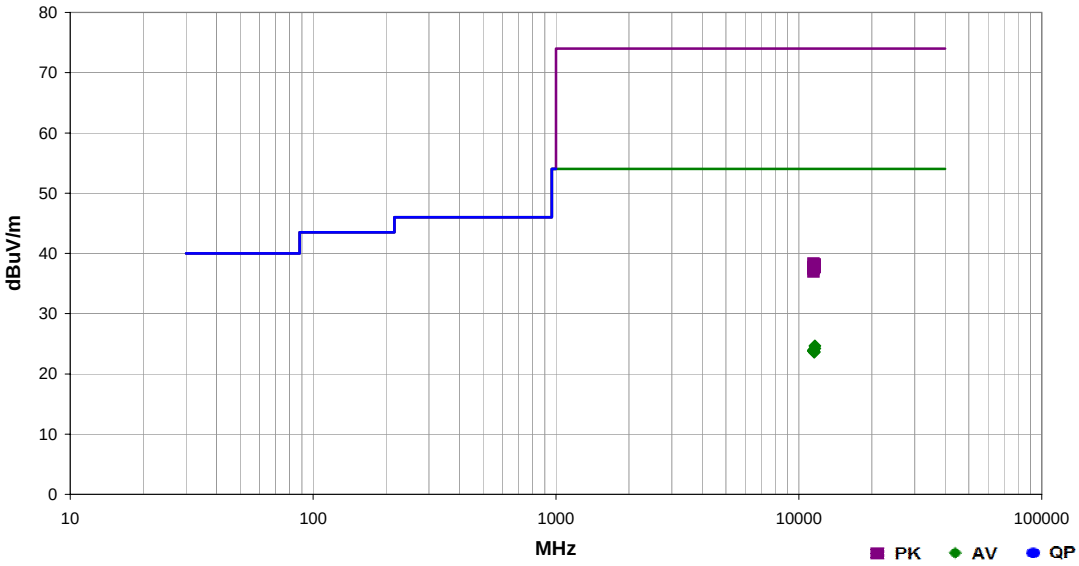
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4824.013	22.9	10.3	1.0	259.0	3.0	0.0	Vert	AV	0.0	33.2	54.0	-20.8	Ch 1, 2412MHz, X-Axis. 11 Mbps
4823.913	22.9	10.3	1.0	238.0	3.0	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Ch 1, 2412MHz, X-Axis. 36 Mbps
4823.860	22.9	10.3	1.0	212.0	3.0	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Ch 1, 2412MHz, X-Axis. 6 Mbps
4825.773	22.6	10.3	2.2	168.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 1, 2412MHz, X-Axis. 36 Mbps
4824.453	22.6	10.3	3.9	280.0	3.0	0.0	Horz	AV	0.0	32.9	54.0	-21.1	Ch 1, 2412MHz, X-Axis. 54 Mbps
4824.320	22.6	10.3	1.0	72.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 1, 2412MHz, X-Axis. 6 Mbps
4823.887	22.6	10.3	1.2	321.0	3.0	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Ch 1, 2412MHz, X-Axis. 54 Mbps
7309.387	36.7	15.8	1.0	332.0	3.0	0.0	Vert	PK	0.0	52.5	74.0	-21.5	Ch 6, 2437MHz, X-Axis. 1 Mbps
7309.133	36.7	15.8	1.2	110.0	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	Ch 6, 2437MHz, X-Axis. 1 Mbps
7386.567	36.4	15.9	1.5	215.0	3.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	Ch 11, 2462MHz, X-Axis. 1 Mbps
7386.320	36.3	15.9	1.0	52.0	3.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	Ch 11, 2462MHz, X-Axis. 1 Mbps
14473.600	26.0	4.7	1.0	258.0	3.0	0.0	Horz	AV	0.0	30.7	54.0	-23.3	Ch 1, 2412MHz, X-Axis. 1 Mbps
14472.850	26.0	4.7	1.0	251.0	3.0	0.0	Vert	AV	0.0	30.7	54.0	-23.3	Ch 1, 2412MHz, X-Axis. 1 Mbps
4874.620	38.3	10.4	1.0	224.0	3.0	0.0	Horz	PK	0.0	48.7	74.0	-25.3	Ch 6, 2437MHz, X-Axis. 1 Mbps
4824.013	38.3	10.3	1.0	220.0	3.0	0.0	Horz	PK	0.0	48.6	74.0	-25.4	Ch 1, 2412MHz, X-Axis. 11 Mbps
4825.140	38.1	10.3	1.0	272.0	3.0	0.0	Vert	PK	0.0	48.4	74.0	-25.6	Ch 1, 2412MHz, X-Axis. 1 Mbps
4923.773	37.8	10.5	1.0	214.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	Ch 11, 2462MHz, X-Axis. 1 Mbps
4823.353	37.9	10.3	1.3	245.0	3.0	0.0	Vert	PK	0.0	48.2	74.0	-25.8	Ch 1, 2412MHz, Y-Axis. 1 Mbps
4824.113	37.7	10.3	1.3	226.0	3.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	Ch 1, 2412MHz, X-Axis. 1 Mbps
4823.773	37.7	10.3	1.0	317.0	3.0	0.0	Vert	PK	0.0	48.0	74.0	-26.0	Ch 1, 2412MHz, Z-Axis. 1 Mbps
4822.093	37.4	10.3	2.2	168.0	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	Ch 1, 2412MHz, X-Axis. 36 Mbps
4825.200	37.1	10.3	1.0	259.0	3.0	0.0	Vert	PK	0.0	47.4	74.0	-26.6	Ch 1, 2412MHz, X-Axis. 11 Mbps
4825.053	36.7	10.3	1.0	212.0	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	Ch 1, 2412MHz, X-Axis. 6 Mbps
4924.020	36.4	10.5	1.0	243.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Ch 11, 2462MHz, X-Axis. 1 Mbps
4823.660	36.6	10.3	1.0	105.0	3.0	0.0	Horz	PK	0.0	46.9	74.0	-27.1	Ch 1, 2412MHz, Z-Axis. 1 Mbps
4823.947	36.5	10.3	3.0	261.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Ch 1, 2412MHz, Y-Axis. 1 Mbps
4822.453	36.5	10.3	3.9	280.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Ch 1, 2412MHz, X-Axis. 54 Mbps
4875.407	36.2	10.4	1.0	154.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	Ch 6, 2437MHz, X-Axis. 1 Mbps
4825.887	36.2	10.3	1.2	321.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	Ch 1, 2412MHz, X-Axis. 54 Mbps
4822.907	36.2	10.3	1.0	238.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	Ch 1, 2412MHz, X-Axis. 36 Mbps
4823.693	36.0	10.3	1.0	72.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	Ch 1, 2412MHz, X-Axis. 6 Mbps
14472.710	39.7	4.7	1.0	251.0	3.0	0.0	Vert	PK	0.0	44.4	74.0	-29.6	Ch 1, 2412MHz, X-Axis. 1 Mbps
12183.030	33.0	-9.0	2.3	59.0	3.0	0.0	Vert	AV	0.0	24.0	54.0	-30.0	Ch 6, 2437MHz, X-Axis. 1 Mbps
12183.430	32.9	-9.0	1.0	229.0	3.0	0.0	Horz	AV	0.0	23.9	54.0	-30.1	Ch 6, 2437MHz, X-Axis. 1 Mbps
14470.710	39.2	4.7	1.0	258.0	3.0	0.0	Horz	PK	0.0	43.9	74.0	-30.1	Ch 1, 2412MHz, X-Axis. 1 Mbps
12061.350	32.8	-9.2	1.0	324.0	3.0	0.0	Horz	AV	0.0	23.6	54.0	-30.4	Ch 1, 2412MHz, X-Axis. 1 Mbps
12060.680	32.8	-9.2	1.0	21.0	3.0	0.0	Vert	AV	0.0	23.6	54.0	-30.4	Ch 1, 2412MHz, X-Axis. 1 Mbps
12185.810	46.7	-9.0	1.0	229.0	3.0	0.0	Horz	PK	0.0	37.7	74.0	-36.3	Ch 6, 2437MHz, X-Axis. 1 Mbps
12185.540	46.7	-9.0	2.3	59.0	3.0	0.0	Vert	PK	0.0	37.7	74.0	-36.3	Ch 6, 2437MHz, X-Axis. 1 Mbps
12060.940	46.7	-9.2	1.0	21.0	3.0	0.0	Vert	PK	0.0	37.5	74.0	-36.5	Ch 1, 2412MHz, X-Axis. 1 Mbps
12058.790	46.6	-9.2	1.0	324.0	3.0	0.0	Horz	PK	0.0	37.4	74.0	-36.6	Ch 1, 2412MHz, X-Axis. 1 Mbps

SPURIOUS RADIATED EMISSIONS

Work Order:	LGPD0094	**Date:**	05/02/13		
Project:	None	**Temperature:**	25.2 °C		
Job Site:	OC10	**Humidity:**	48.1% RH		
Serial Number:	SN0024	**Barometric Pres.:**	1011 mbar	**Tested by:**	Jaemi Suh
EUT:	Zoll CF Card Module				
Configuration:	1				
Customer:	Logic Product Development				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting at 802.11a: Low Channel 149 - 5745 MHz, Mid Channel 157 - 5785 MHz, High Channel - 5825 MHz.				
Deviations:	None				
Comments:	Using Hyperterminal to program the CF Card. CF Card is powered up by the Defibrillator. Data Rates: 6 Mbps, 36 Mbps, 54 Mbps.				

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

Run #	20	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
11649.970	34.1	-9.5	1.0	331.0	3.0	0.0	Horz	AV	0.0	24.6	54.0	-29.4	High Ch 149, 5825 MHz, X-Axis, 36 Mbps
11649.980	33.7	-9.5	1.0	3.0	3.0	0.0	Vert	AV	0.0	24.2	54.0	-29.8	High Ch 149, 5825 MHz, X-Axis, 36 Mbps
11488.370	33.4	-9.5	1.0	8.0	3.0	0.0	Vert	AV	0.0	23.9	54.0	-30.1	Low Ch 149, 5745 MHz, X-Axis, 36 Mbps
11488.230	33.4	-9.5	1.0	153.0	3.0	0.0	Horz	AV	0.0	23.9	54.0	-30.1	Low Ch 149, 5745 MHz, X-Axis, 36 Mbps
11488.700	33.4	-9.5	1.0	60.0	3.0	0.0	Vert	AV	0.0	23.9	54.0	-30.1	Low Ch 149, 5745 MHz, X-Axis, 54 Mbps
11488.550	33.3	-9.5	1.0	159.0	3.0	0.0	Horz	AV	0.0	23.8	54.0	-30.2	Low Ch 149, 5745 MHz, X-Axis, 54 Mbps
11488.000	33.3	-9.5	3.6	331.0	3.0	0.0	Vert	AV	0.0	23.8	54.0	-30.2	Low Ch 149, 5745 MHz, X-Axis, 6 Mbps
11488.190	33.3	-9.5	2.7	100.0	3.0	0.0	Horz	AV	0.0	23.8	54.0	-30.2	Low Ch 149, 5745 MHz, X-Axis, 6 Mbps
11569.460	33.2	-9.5	1.0	187.0	3.0	0.0	Vert	AV	0.0	23.7	54.0	-30.3	Mid Ch 157, 5785 MHz, X-Axis, 36 Mbps
11569.980	33.1	-9.5	1.0	97.0	3.0	0.0	Horz	AV	0.0	23.6	54.0	-30.4	Mid Ch 157, 5785 MHz, X-Axis, 36 Mbps
11490.000	47.8	-9.5	1.0	8.0	3.0	0.0	Vert	PK	0.0	38.3	74.0	-35.7	Low Ch 149, 5745 MHz, X-Axis, 36 Mbps
11650.430	47.6	-9.5	1.0	3.0	3.0	0.0	Vert	PK	0.0	38.1	74.0	-35.9	High Ch 149, 5825 MHz, X-Axis, 36 Mbps
11571.780	47.4	-9.5	1.0	97.0	3.0	0.0	Horz	PK	0.0	37.9	74.0	-36.1	Mid Ch 157, 5785 MHz, X-Axis, 36 Mbps
11649.860	47.2	-9.5	1.0	331.0	3.0	0.0	Horz	PK	0.0	37.7	74.0	-36.3	High Ch 149, 5825 MHz, X-Axis, 36 Mbps
11569.870	47.2	-9.5	1.0	187.0	3.0	0.0	Vert	PK	0.0	37.7	74.0	-36.3	Mid Ch 157, 5785 MHz, X-Axis, 36 Mbps
11490.880	47.2	-9.5	1.0	60.0	3.0	0.0	Vert	PK	0.0	37.7	74.0	-36.3	Low Ch 149, 5745 MHz, X-Axis, 54 Mbps
11488.330	47.1	-9.5	1.0	153.0	3.0	0.0	Horz	PK	0.0	37.6	74.0	-36.4	Low Ch 149, 5745 MHz, X-Axis, 36 Mbps
11490.810	47.0	-9.5	3.6	331.0	3.0	0.0	Vert	PK	0.0	37.5	74.0	-36.5	Low Ch 149, 5745 MHz, X-Axis, 6 Mbps
11488.590	47.0	-9.5	1.0	159.0	3.0	0.0	Horz	PK	0.0	37.5	74.0	-36.5	Low Ch 149, 5745 MHz, X-Axis, 54 Mbps
11488.050	46.5	-9.5	2.7	100.0	3.0	0.0	Horz	PK	0.0	37.0	74.0	-37.0	Low Ch 149, 5745 MHz, X-Axis, 6 Mbps