



Medtronic Inc.
MyCareLink Patient Monitor Model 24950
FCC 15.247:2013

Report #: MDTR0294



Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

Last Date of Test: October 10, 2013
Medtronic, Inc.
Model: MyCareLink Patient Monitor

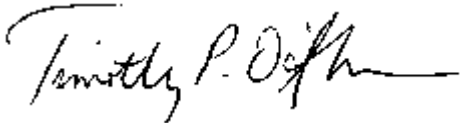
Emissions

Test Description	Specification	Test Method	Pass/Fail
Band Edge Compliance	FCC 15.247:2013	ANSI C63.10:2009	Pass
Band Edge Compliance – Hopping Mode	FCC 15.247:2013	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2013	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200881-0

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.

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

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.

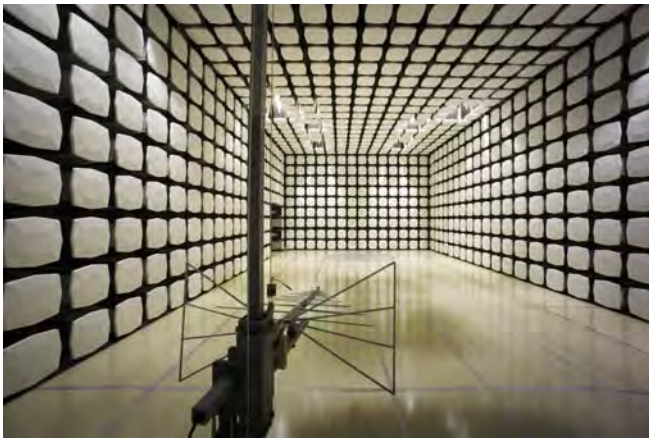
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement 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



Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs NC01-05,SU02,SU07 19201 120 th 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



Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic Inc.
Address:	8200 Coral Sea St NE
City, State, Zip:	Mounds View, MN 55112
Test Requested By:	Thomas Kelly
Model:	MyCareLink Patient Monitor Model 24950
First Date of Test:	October 10, 2013
Last Date of Test:	October 10, 2013
Receipt Date of Samples:	October 10, 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):

The system consists of a home monitor base station and a handheld reader. The base station includes a MICS transmitter and Bluetooth transmitter. The reader has an inductive transmitter and a pre-certified Bluetooth transmitter. The Reader for these tests is the Single Board Version.

Client Provided Information

The transmit power of the MyCareLink Reader Base was reduced by 4dB.

Testing Objective:

The test results included in this report are to demonstrate that the Bluetooth radio is still in continued compliance to the FCC requirements using a lower output power setting.

Configuration MDTR0294- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Base Station	Medtronic Inc.	24950	YDM000212A
DC Adapter	SL Power	MENB1020A0502C02	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude D630	7687881685
DC Adapter Laptop	Dell	DA130PE1-00	CN-OJU012-48661-04G-IOGY-A03
RF Head	Medtronic Inc.	24955	RFH000607A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	DC Adapter Laptop	AC Mains
DC Power	No	1.9m	Yes	Base Station	DC Adapter
DC Power	No	0.9m	Yes	Laptop	DC Adapter Laptop
USB	Yes	1.0m	No	Base Station	Laptop

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	10/10/2013	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.
2	10/10/2013	Band Edge Compliance – Hopping Mode	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	10/10/2013	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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.

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
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no hop mode. The channels closest to the band edges were selected.

The spectrum was scanned below the lower band edge and above the higher band edge.

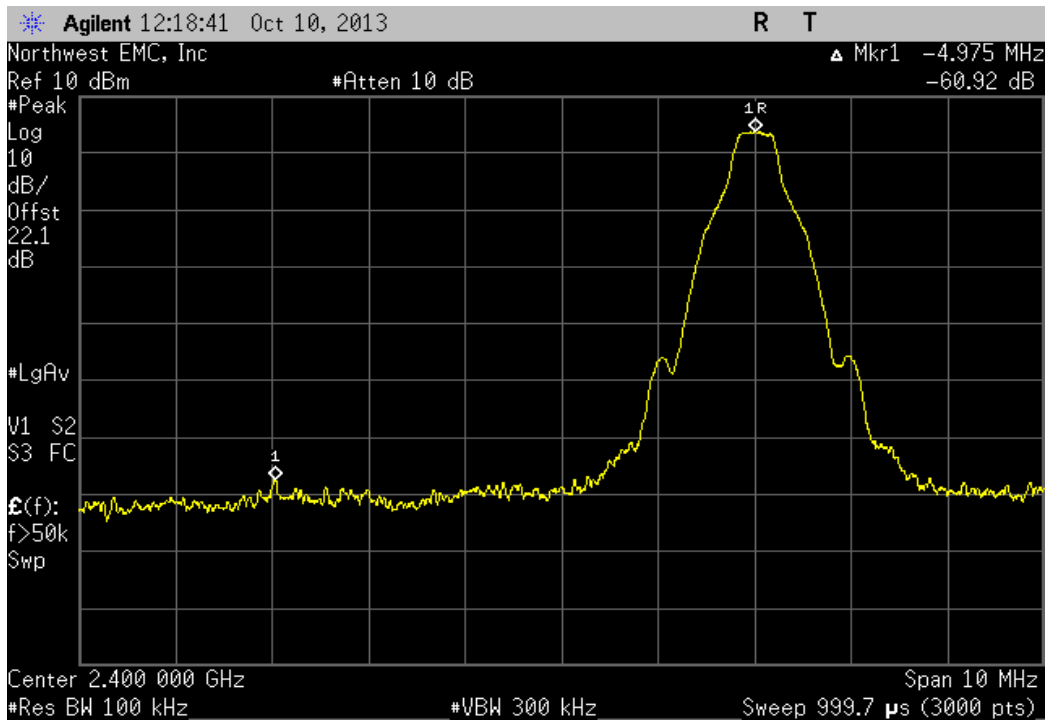


Band Edge Compliance

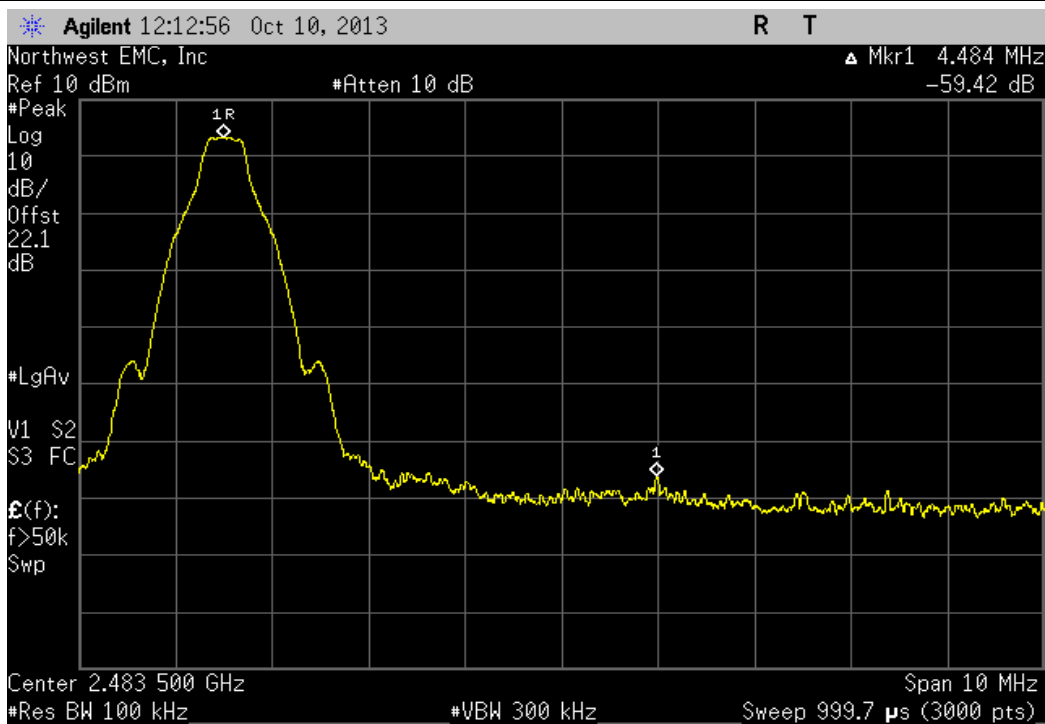
XMit 2013.08.15
PsaTx 2013.08.16

EUT: Base		Work Order: MDTR0294	
Serial Number: YDM000212A		Date: 10/10/13	
Customer: Medtronic Inc.		Temperature: 23.0°C	
Attendees: Thomas Kelly		Humidity: 42%	
Project: None		Barometric Pres.: 1016.3	
Tested by: Trevor Buls		Power: 5VDC	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2013		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
DH5, GFSK			Result
Low Channel		-60.92 dBc	≤ -20 dBc
High Channel		-59.42 dBc	≤ -20 dBc
			Pass
			Pass

DH5, GFSK, Low Channel			
	Value	Limit	Result
	-60.92 dBc	≤ -20 dBc	Pass



DH5, GFSK, High Channel			
	Value	Limit	Result
	-59.42 dBc	≤ -20 dBc	Pass



Band Edge Compliance - Hopping Mode

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	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.



Band Edge Compliance - Hopping Mode

XMit 2013.08.15
PsaTx 2013.08.16

EUT: Base	Work Order: MDTR0294
Serial Number: YDM000212A	Date: 10/10/13
Customer: Medtronic Inc.	Temperature: 23.0°C
Attendees: Thomas Kelly	Humidity: 42%
Project: None	Barometric Pres.: 1016.3
Tested by: Trevor Buls	Power: 5VDC
	Job Site: MN08

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

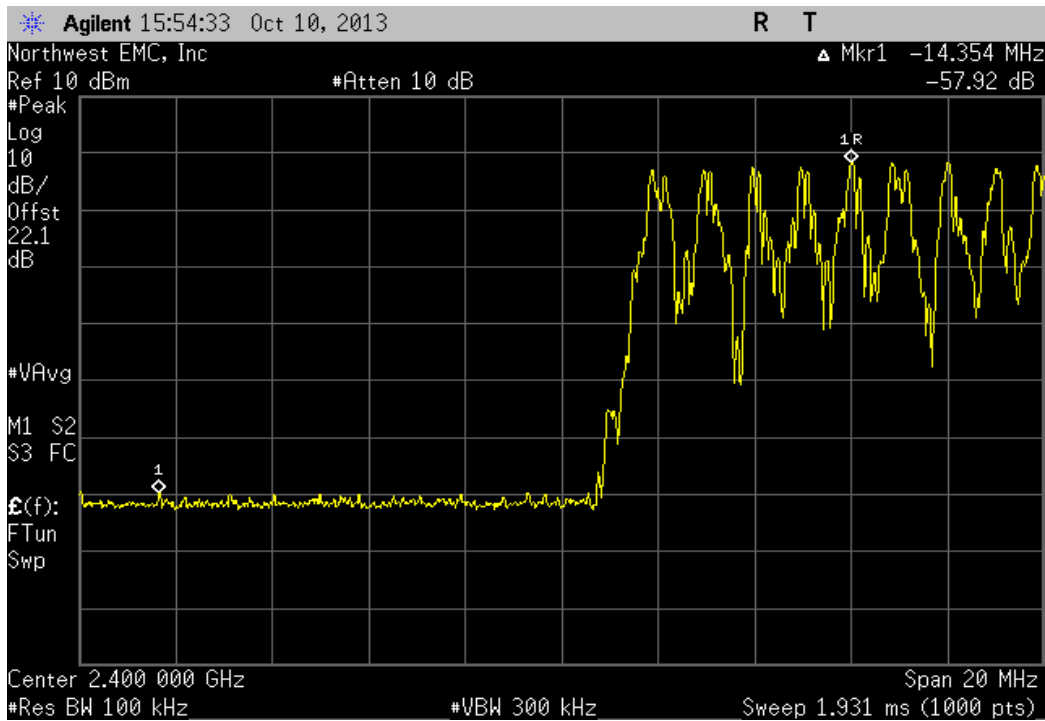
COMMENTS
None

DEVIATIONS FROM TEST STANDARD
None

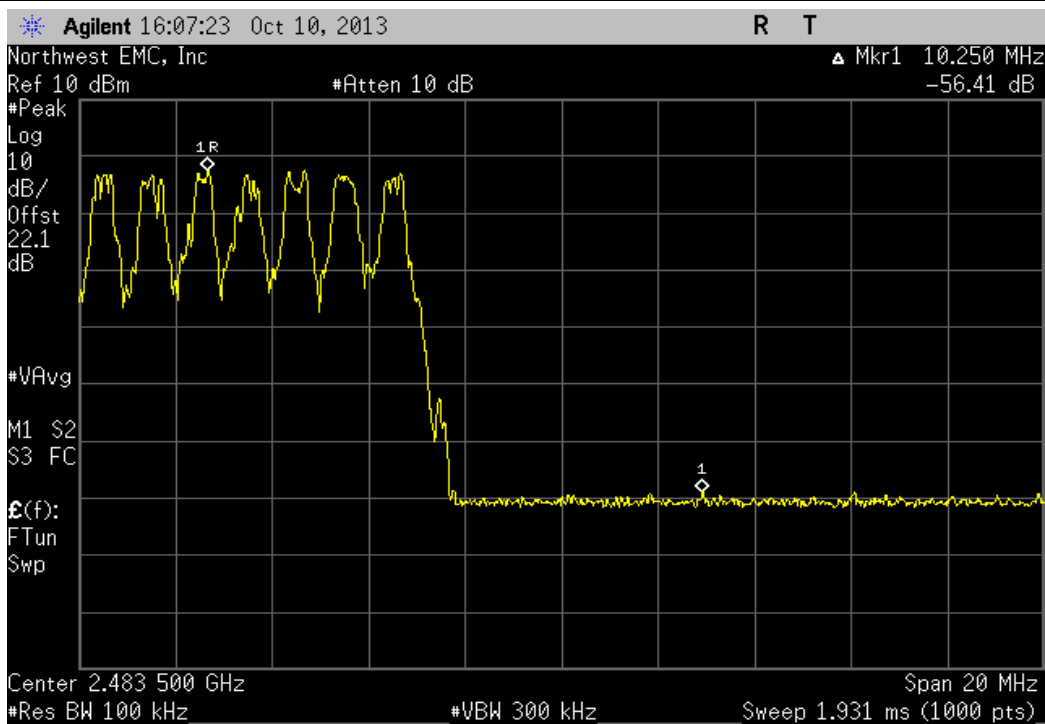
Configuration #	1	Signature	<i>Trevor Buls</i>
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	Value	Limit	Result
Hopping Mode			
DH5, GFSK			
Low Channel, 2402 MHz	-57.93 dBc	≤ -20 dBc	Pass
High Channel, 2480 MHz	-56.41 dBc	≤ -20 dBc	Pass

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz			
	Value	Limit	Result
	-57.93 dBc	≤ -20 dBc	Pass



Hopping Mode, DH5, GFSK, High Channel, 2480 MHz			
	Value	Limit	Result
	-56.41 dBc	≤ -20 dBc	Pass



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	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +27dBm.



Output Power

XMit 2013.08.15
PsaTx 2013.08.16

EUT: Base	Work Order: MDTR0294
Serial Number: YDM000212A	Date: 10/10/13
Customer: Medtronic Inc.	Temperature: 23.0°C
Attendees: Thomas Kelly	Humidity: 42%
Project: None	Barometric Pres.: 1016.3
Tested by: Trevor Buls	Power: 5VDC
	Job Site: MN08

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

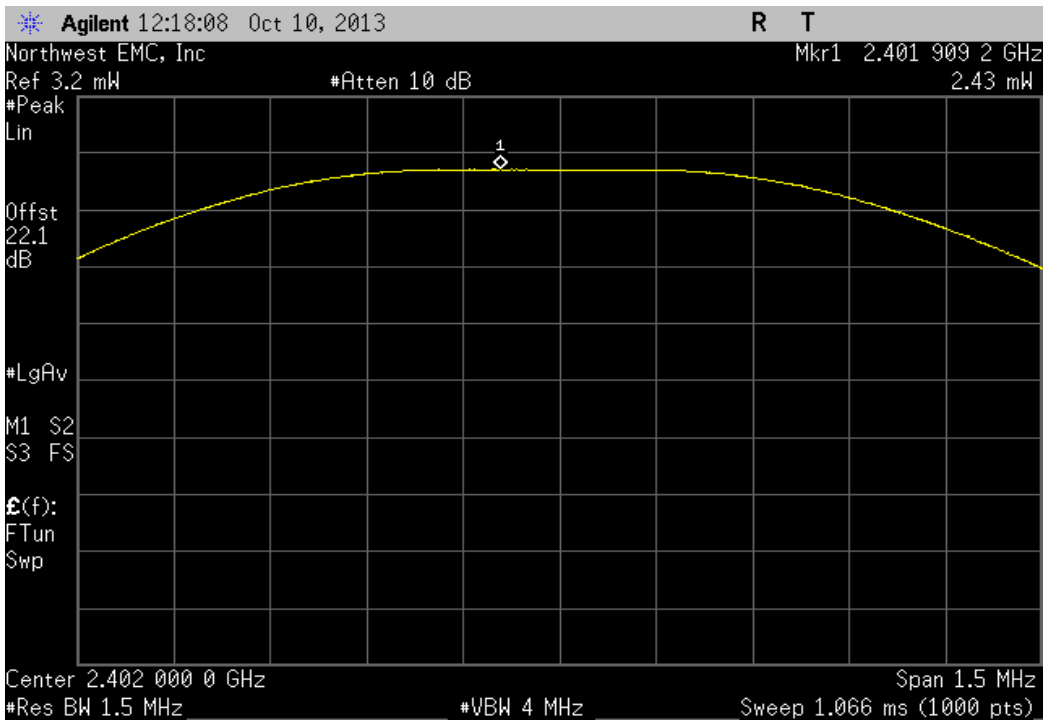
COMMENTS
None

DEVIATIONS FROM TEST STANDARD
None

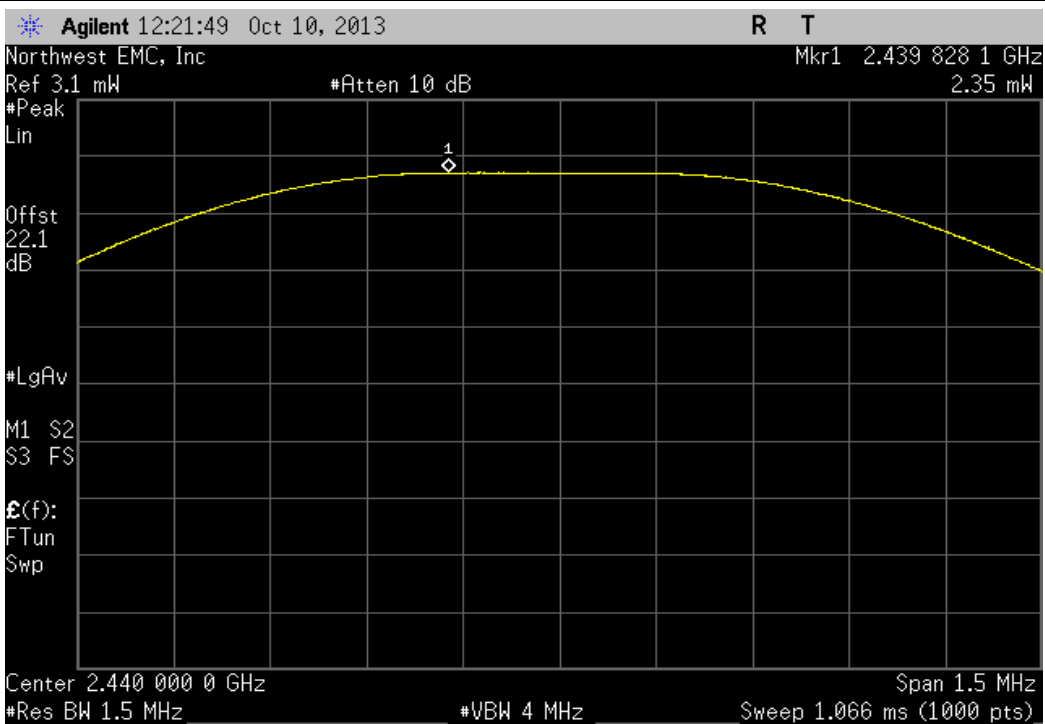
Configuration #	1	Signature	<i>Trevor Buls</i>
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	Value	Limit	Result
DH5, GFSK			
Low Channel	2.429 mW	< 125 mW	Pass
Mid Channel	2.352 mW	< 125 mW	Pass
High Channel	2.232 mW	< 125 mW	Pass

DH5, GFSK, Low Channel			
	Value	Limit	Result
	2.429 mW	< 125 mW	Pass



DH5, GFSK, Mid Channel			
	Value	Limit	Result
	2.352 mW	< 125 mW	Pass



DH5, GFSK, High Channel

Value	Limit	Result
2.232 mW	< 125 mW	Pass

