NORTHWEST EMC

Medtronic Inc.

MyCareLink Monitor, Model 24950B in Bluetooth Classic Mode

FCC 15.207:2016
FCC 15.247:2016

Report # MDTR0462.1

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.

CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

Last Date of Test: May 12, 2016
Medtronic Inc.
Model: MyCareLink Monitor, Model 24950B

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.247:2016	KDB 558074

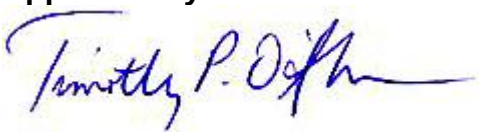
Results

Method Clause	Test Description	Applied	Results	Comments
6.2	AC - Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	Yes	Pass	
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance – Hopping Mode	Yes	Pass	
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager

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. 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2016.3.22

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 17065 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 Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

MSIP / 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.

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

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 on each data sheet. 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 16-4-2 as applicable), and are available upon request.

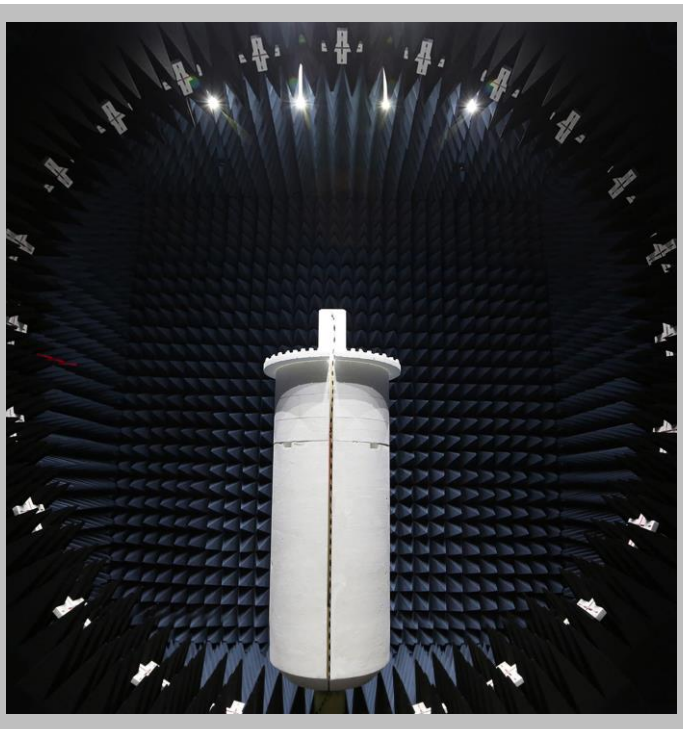
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

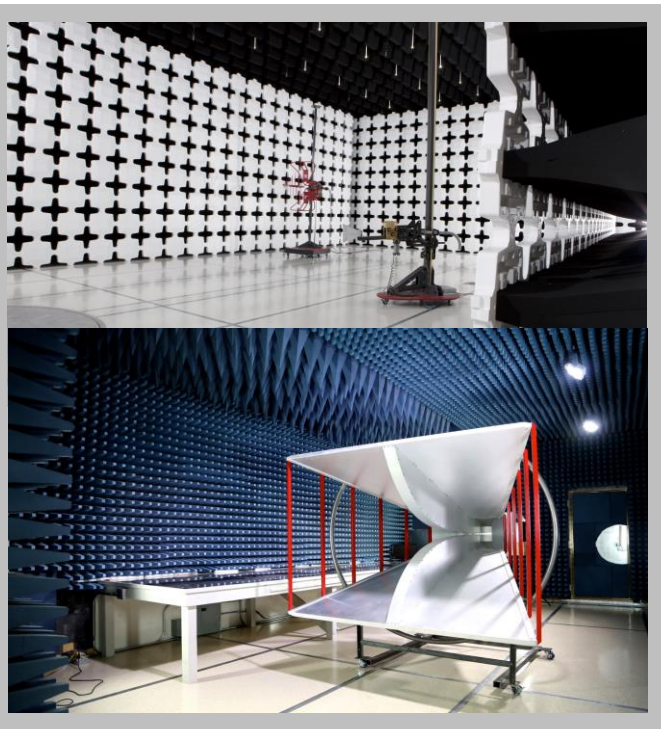
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

FACILITIES

REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic Inc.
Address:	710 Medtronic Parkway
City, State, Zip:	Minneapolis, MN 55432
Test Requested By:	Joel Peltier
Model:	MyCareLink Monitor, Model 24950B
First Date of Test:	April 29, 2016
Last Date of Test:	May 12, 2016
Receipt Date of Samples:	April 29, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The MyCareLink Monitor, Model 24950B, is a Medical instrument designed for remote monitoring of Medtronic implantable medical devices. The MyCareLink Monitor is made up of a base unit and a handset.
The MyCareLink Monitor design is being updated to incorporate a Bluetooth (BT) module that will support BT Low Energy (BLE) functionality in the base unit in order to support wireless communication with implanted cardiac devices over a BLE link. Communication between the handset and the base unit is accomplished via BT Classic. The MICS/MEDS radio module design and its associated circuitry as well as the RF Head design remains unchanged.

Testing Objective:

To demonstrate compliance of the MyCareLink Monitor, Model 24950B, operating in the Bluetooth Classic mode to the FCC 15.247 requirements.

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration MDTR0462- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Base Unit	Medtronic	24950	BTL000088A
Power Supply (5VDC)	BridgePower Corp	M950550A010	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
POTS Analog Modem	Radicom Research Inc	V95HU-E2-MD	0003691

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
RF Head 1	Medtronic	24955	RFH549396A

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Power Supply Cable	No	2.0m	Yes	Power Supply	Base Unit
Analog Phone Cable	No	2.1m	No	POTS Analog Modem	Unterminated
USB Cable	Yes	0.15m	No	Base Unit	POTS Analog Modem

Configuration MDTR0462- 3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Base Unit	Medtronic	24950	BTL000088A
Power Supply (5VDC)	BridgePower Corp	M950550A010	1

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Dell	Latitude E6410	7KGKYN1
AC Adapter (Laptop)	Dell	LA90PM111	CN-0Y4M8K-72438-38R-C8D9-A01

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Power Supply Cable	No	2.0m	Yes	Power Supply	Base Unit
U.FL to SMA Cable	Yes	0.2m	No	Base Unit	Measurement Equipment (AAX, TIK, MNU, AMI, RFW)
AC Mains Cable (Laptop)	No	0.9m	No	AC Adapter (Laptop)	AC Mains
DC Cable (Laptop)	No	1.8m	No	AC Adapter (Laptop)	Laptop
USB Cable (Laptop)	Yes	3.1m	No	Laptop	Base Unit

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/29/2016	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	5/5/2016	Occupied Bandwidth	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	5/5/2016	Carrier Frequency Separation	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	5/5/2016	Number of Hopping Frequencies	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	5/5/2016	Dwell Time	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.
6	5/9/2016	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.
7	5/9/2016	Spurious Conducted 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.
8	5/9/2016	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.
9	5/9/2016	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.
10	5/12/2016	AC – Powerline Conducted Emissions	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. 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.

OCCUPIED BANDWIDTH

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

The 20 dB occupied bandwidth was measured with the EUT set to low, medium and high transmit frequencies in the band. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode.

OCCUPIED BANDWIDTH

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/05/16
Customer:	Medtronic Inc.			**Temperature:**	23.3°C
Attendees:	Nick Blake			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	988.5
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None

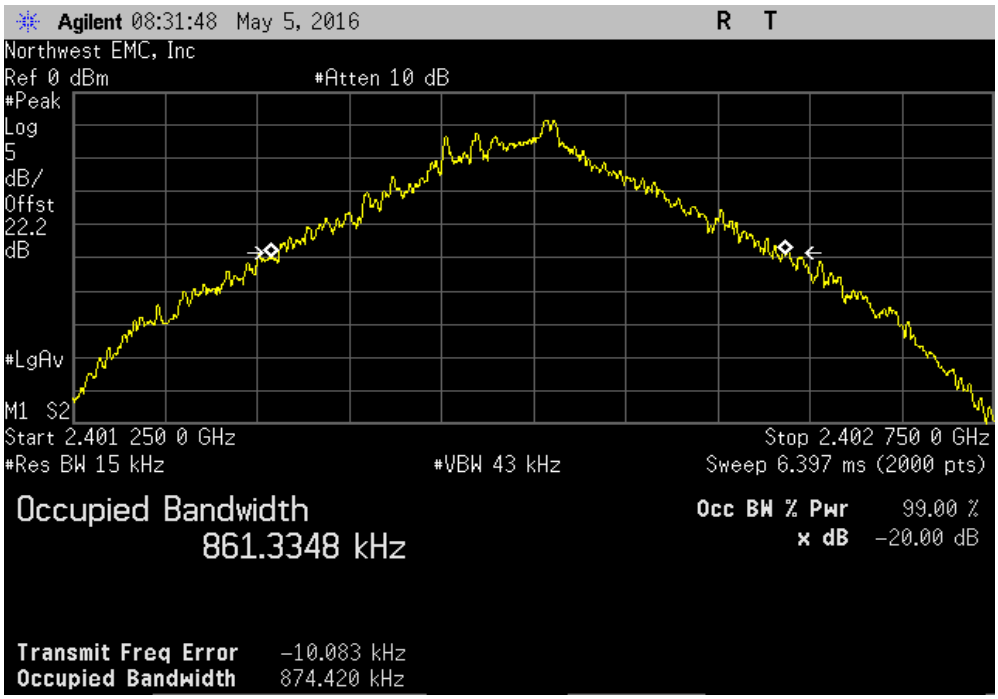
DEVIATIONS FROM TEST STANDARD

None

Configuration #	3	Signature	Trevor Buls

		Value	Limit (<)	Result
DH5, GFSK				
	Low Channel	874.42 kHz	1.5 MHz	Pass
	Mid Channel	854.844 kHz	1.5 MHz	Pass
	High Channel	874.287 kHz	1.5 MHz	Pass

DH5, GFSK, Low Channel						
				Value	Limit (<)	Result
				874.42 kHz	1.5 MHz	Pass

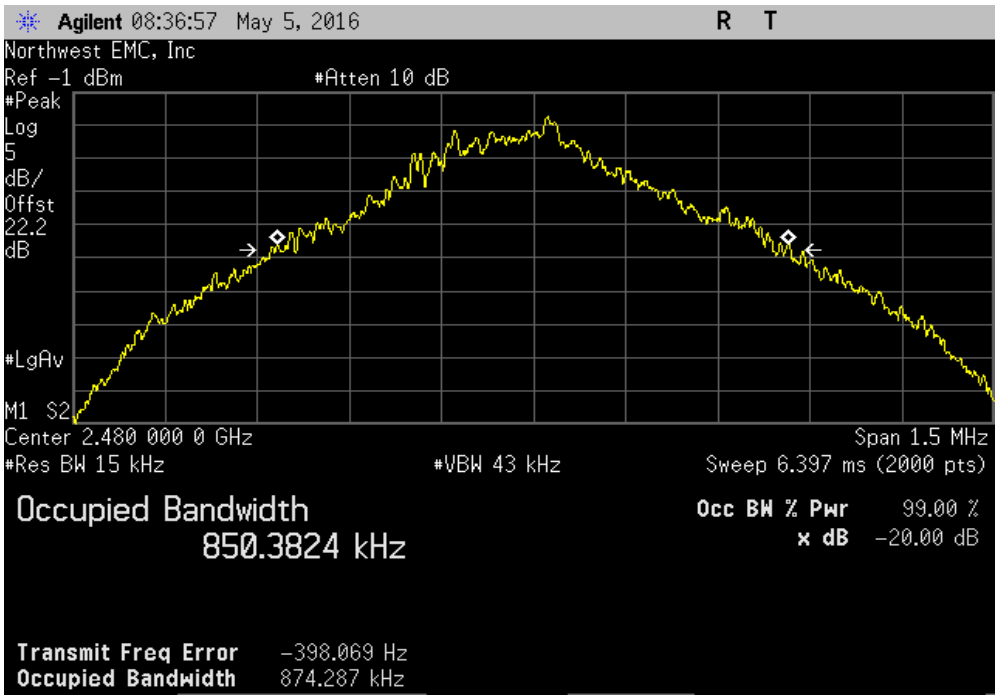


DH5, GFSK, Mid Channel						
				Value	Limit (<)	Result
				854.844 kHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

XMit 2015.01.14

DH5, GFSK, High Channel						
				Value	Limit (<)	Result
				874.287 kHz	1.5 MHz	Pass



OUTPUT POWER

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

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.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.

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

OUTPUT POWER

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/09/16
Customer:	Medtronic Inc.			**Temperature:**	22.5°C
Attendees:	Taylor Dowden			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	981.4
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

0.885dB cable loss added to reference level offset

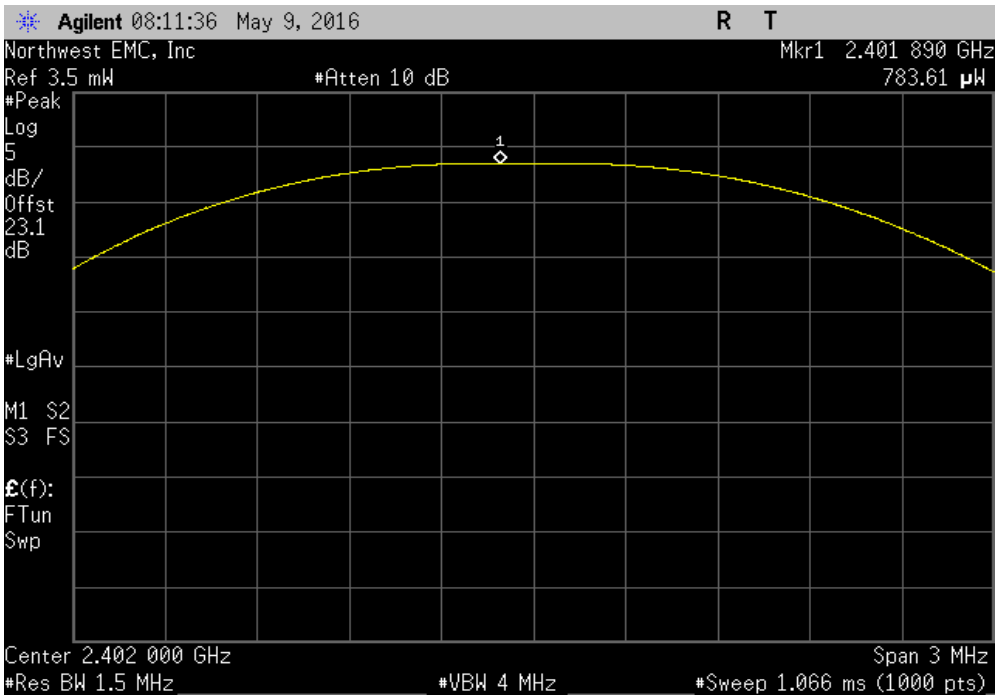
DEVIATIONS FROM TEST STANDARD

None

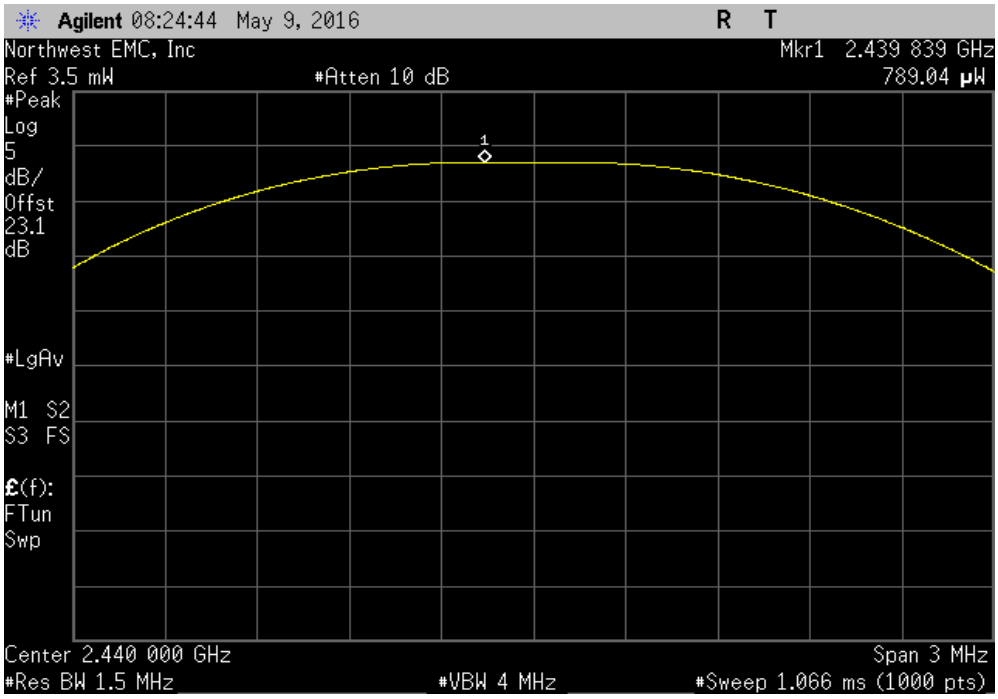
Configuration #	3	Signature	Trevor Buls

	Value	Limit (<)	Result
DH5, GFSK			
Low Channel	783.61 uW	125 mW	Pass
Mid Channel	789.042 uW	125 mW	Pass
High Channel	637.676 uW	125 mW	Pass

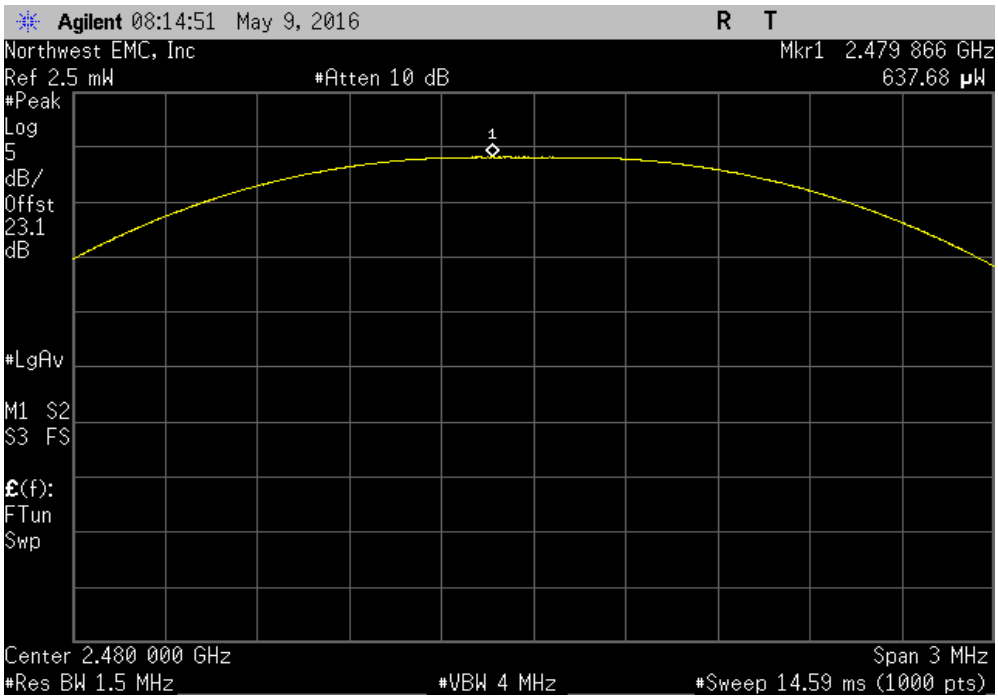
DH5, GFSK, Low Channel						
				Value	Limit (<)	Result
				783.61 uW	125 mW	Pass



DH5, GFSK, Mid Channel						
				Value	Limit (<)	Result
				789.042 uW	125 mW	Pass



DH5, GFSK, High Channel						
				Value	Limit (<)	Result
				637.676 uW	125 mW	Pass



SPURIOUS CONDUCTED EMISSIONS

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were 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. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/09/16
Customer:	Medtronic Inc.			**Temperature:**	22.5°C
Attendees:	Taylor Dowden			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	981.4
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

0.885dB cable loss added to reference level offset

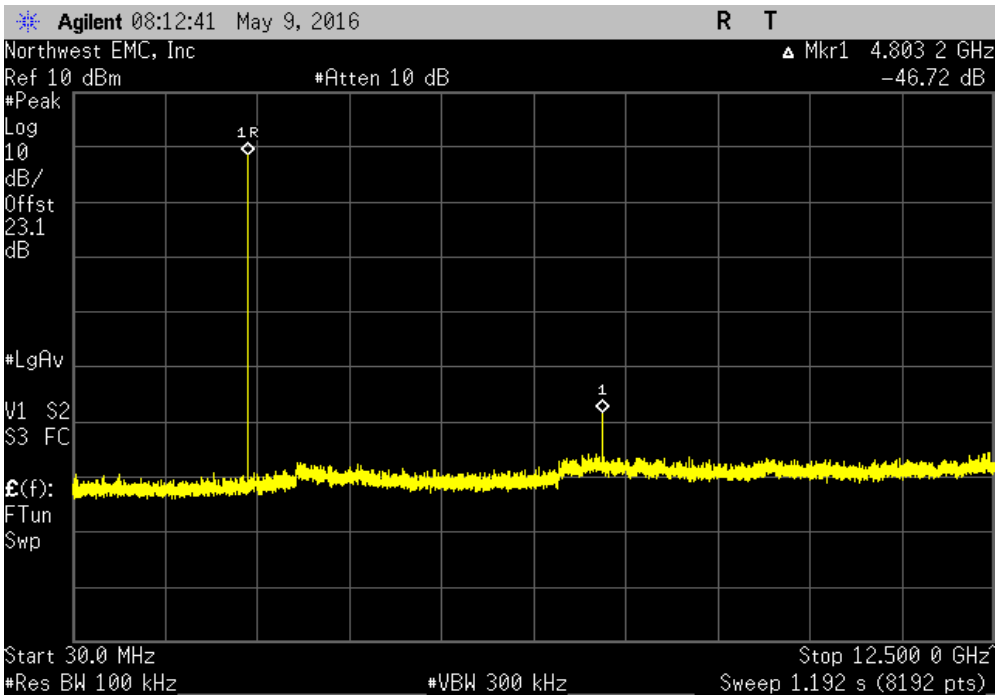
DEVIATIONS FROM TEST STANDARD

None

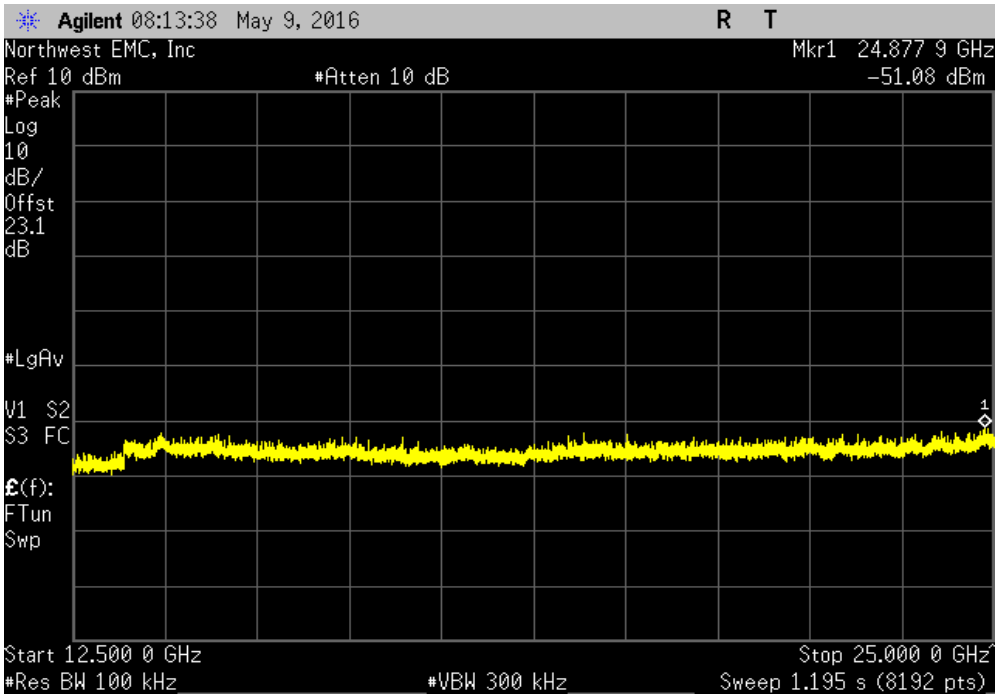
Configuration #	3	Signature	Trevor Buls

		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
DH5, GFSK					
	Low Channel	30 MHz - 12.5 GHz	-46.72	-20	Pass
	Low Channel	12.5 GHz - 25 GHz	-49.61	-20	Pass
	Mid Channel	30 MHz - 12.5 GHz	-46.35	-20	Pass
	Mid Channel	12.5 GHz - 25 GHz	-50.37	-20	Pass
	High Channel	30 MHz - 12.5 GHz	-45.83	-20	Pass
	High Channel	12.5 GHz - 25 GHz	-49.2	-20	Pass

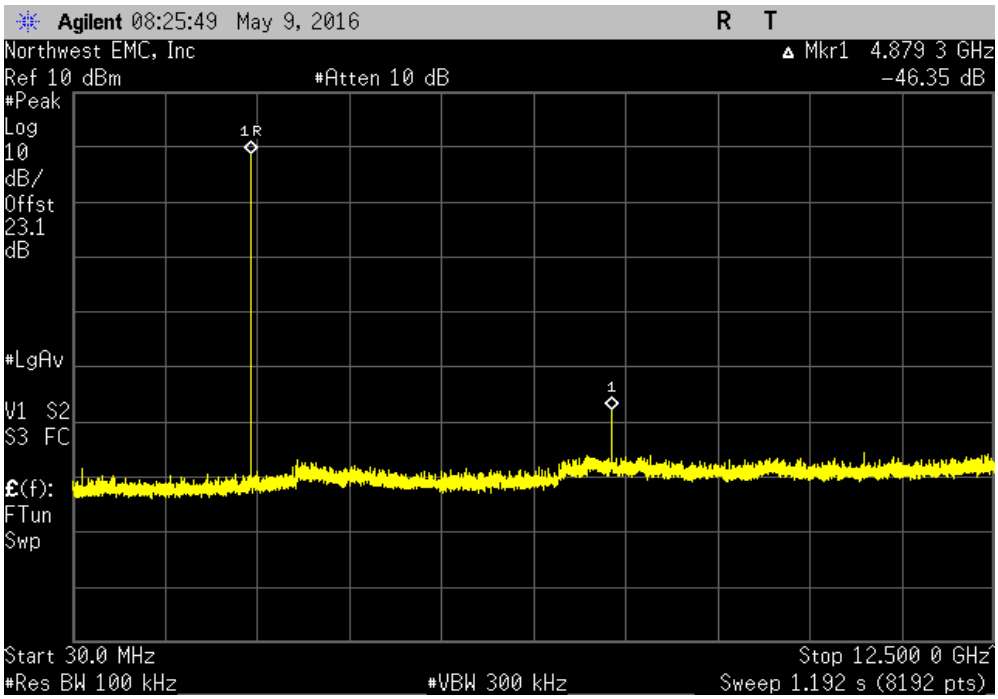
DH5, GFSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.72	-20	Pass



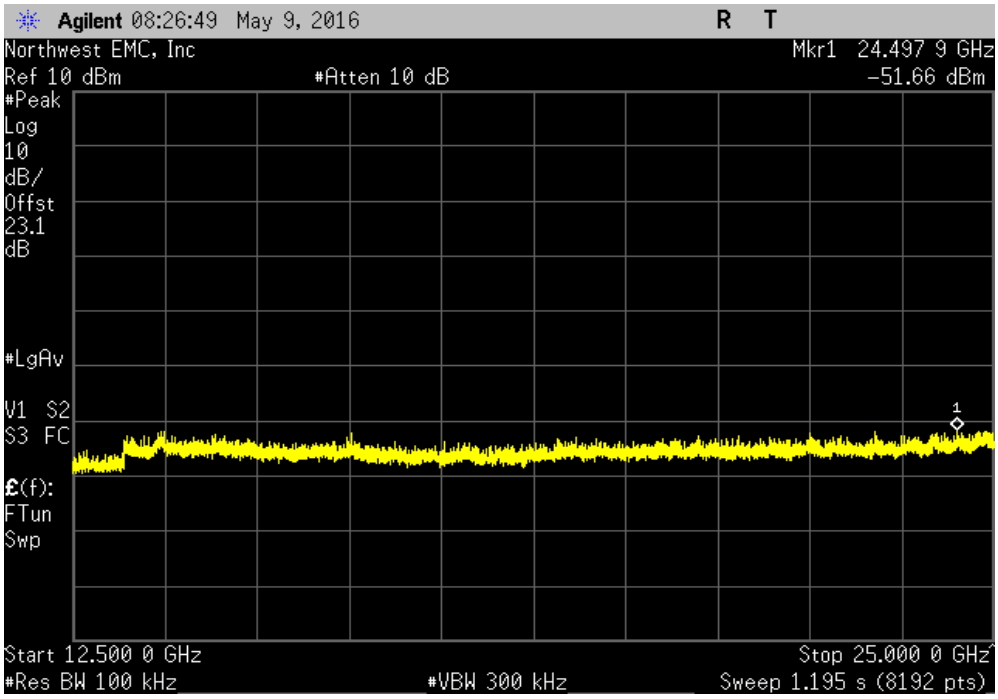
DH5, GFSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-49.61	-20	Pass



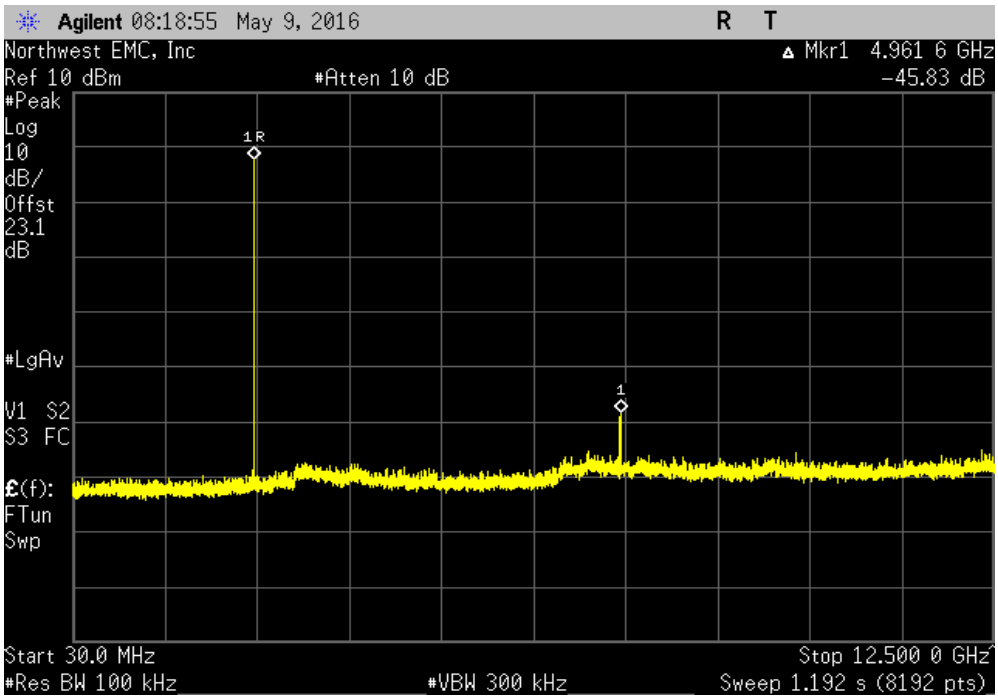
DH5, GFSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.35	-20	Pass



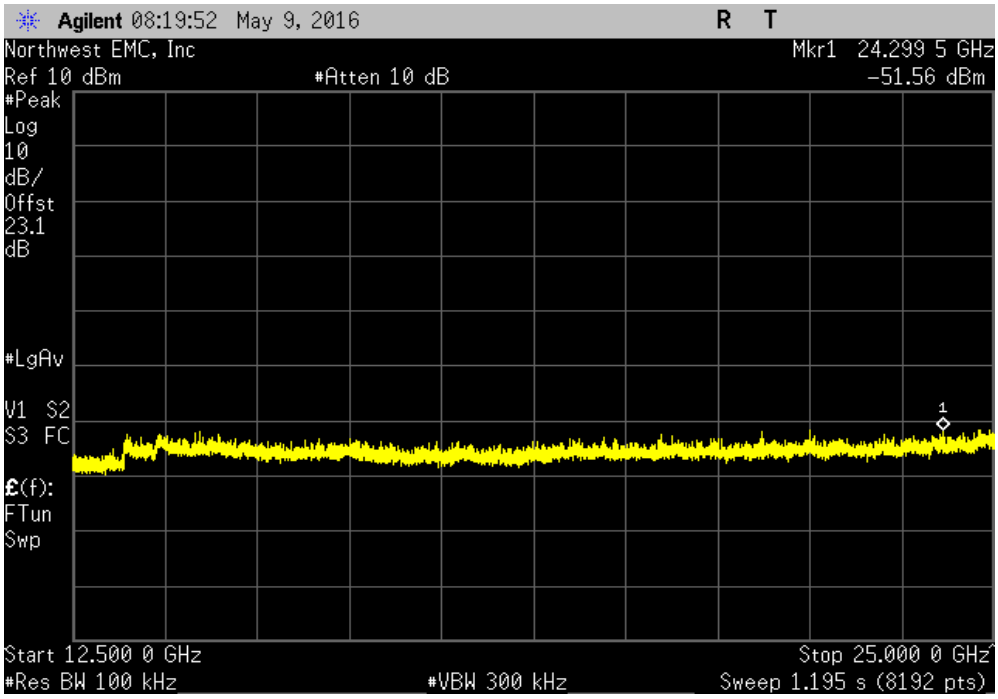
DH5, GFSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-50.37	-20	Pass



DH5, GFSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-45.83	-20	Pass



DH5, GFSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-49.2	-20	Pass



BAND EDGE COMPLIANCE

NORTHWEST EMC

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

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

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/09/16
Customer:	Medtronic Inc.			**Temperature:**	22.5°C
Attendees:	Taylor Dowden			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	981.4
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

0.885dB cable loss added to reference level offset

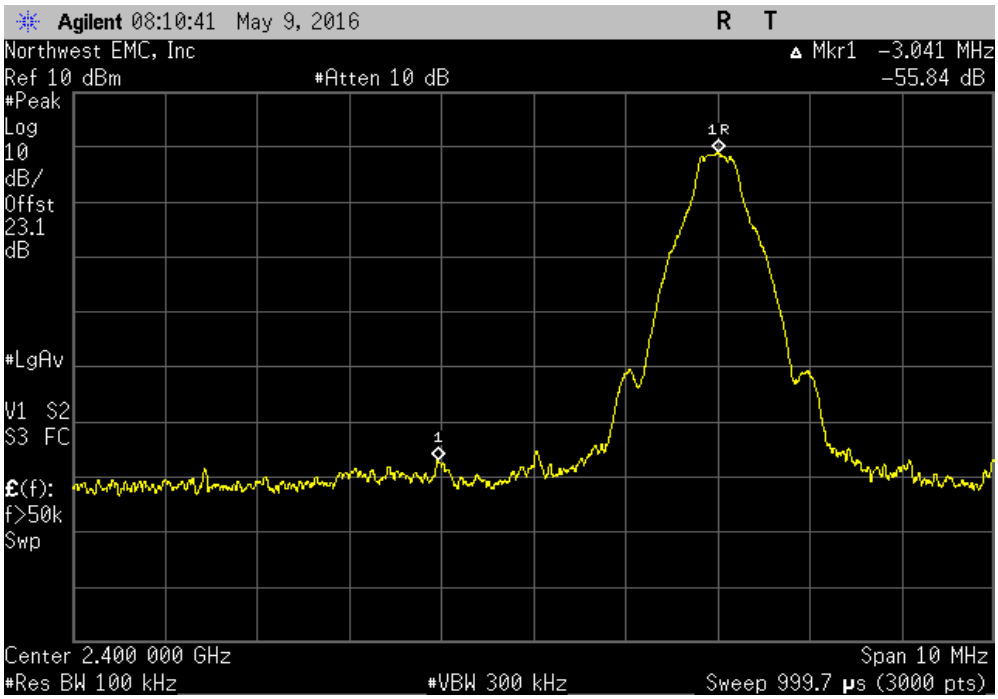
DEVIATIONS FROM TEST STANDARD

None

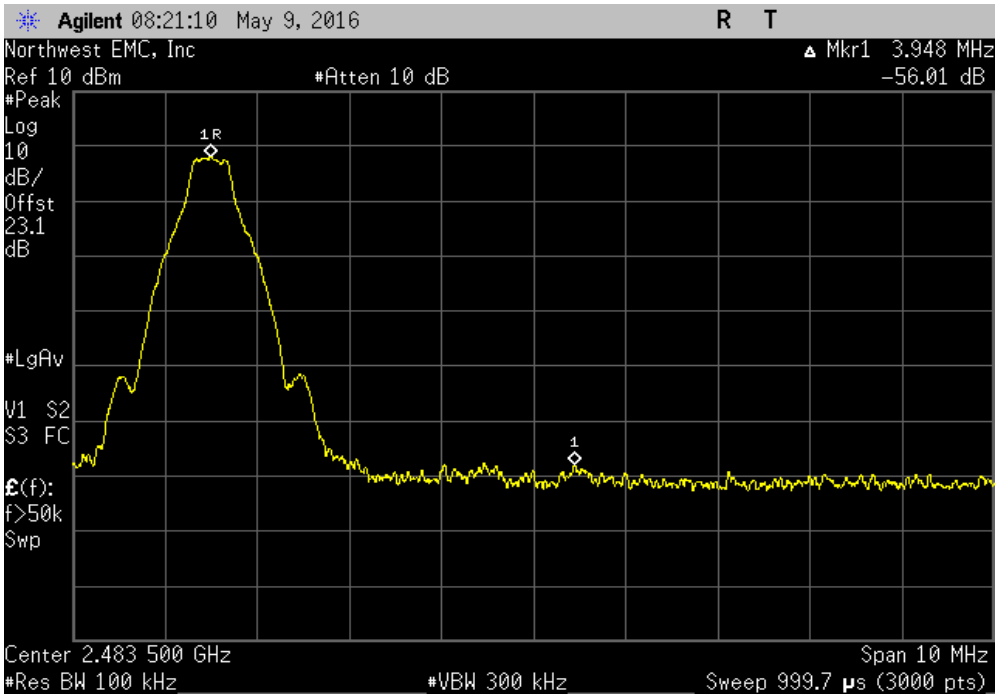
Configuration #	3	Signature	Trevor Buls

	Value (dBc)	Limit ≤ (dBc)	Result
DH5, GFSK			
Low Channel	-55.84	-20	Pass
High Channel	-56.01	-20	Pass

DH5, GFSK, Low Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-55.84	-20	Pass



DH5, GFSK, High Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-56.01	-20	Pass



BAND EDGE COMPLIANCE -HOPPING MODE

NORTHWEST EMC

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

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

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/09/16
Customer:	Medtronic Inc.			**Temperature:**	22.5°C
Attendees:	Taylor Dowden			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	981.4
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

0.885dB cable loss added to reference level offset

DEVIATIONS FROM TEST STANDARD

None

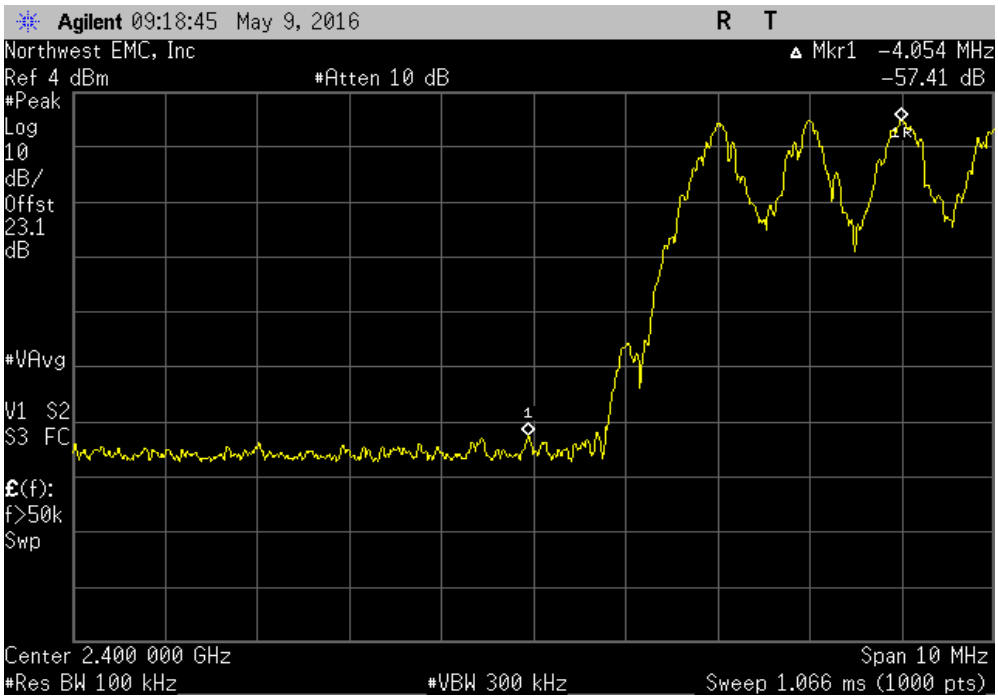
Configuration #	3	Signature	Trevor Buls

	Value (dBc)	Limit ≤ (dBc)	Result
Hopping Mode			
DH5, GFSK			
Low Channel, 2402 MHz	-57.41	-20	Pass
High Channel, 2480 MHz	-53.09	-20	Pass

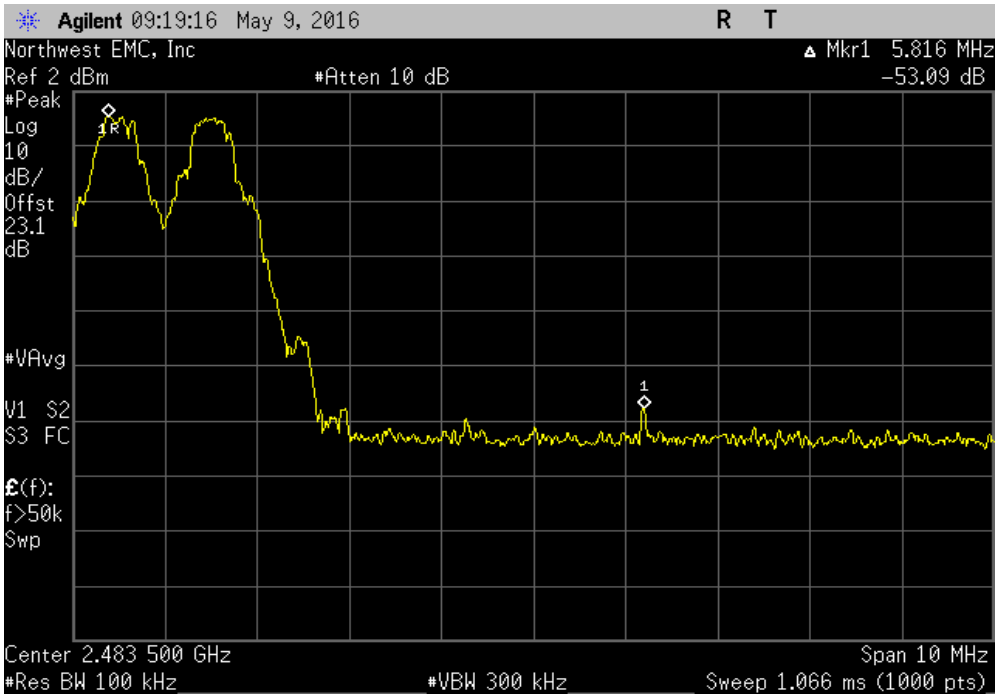
BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-57.41	-20	Pass



Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-53.09	-20	Pass



CARRIER FREQUENCY SEPARATION

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

CARRIER FREQUENCY SEPARATION

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/05/16
Customer:	Medtronic Inc.			**Temperature:**	23.2°C
Attendees:	Nick Blake			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	988.5
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

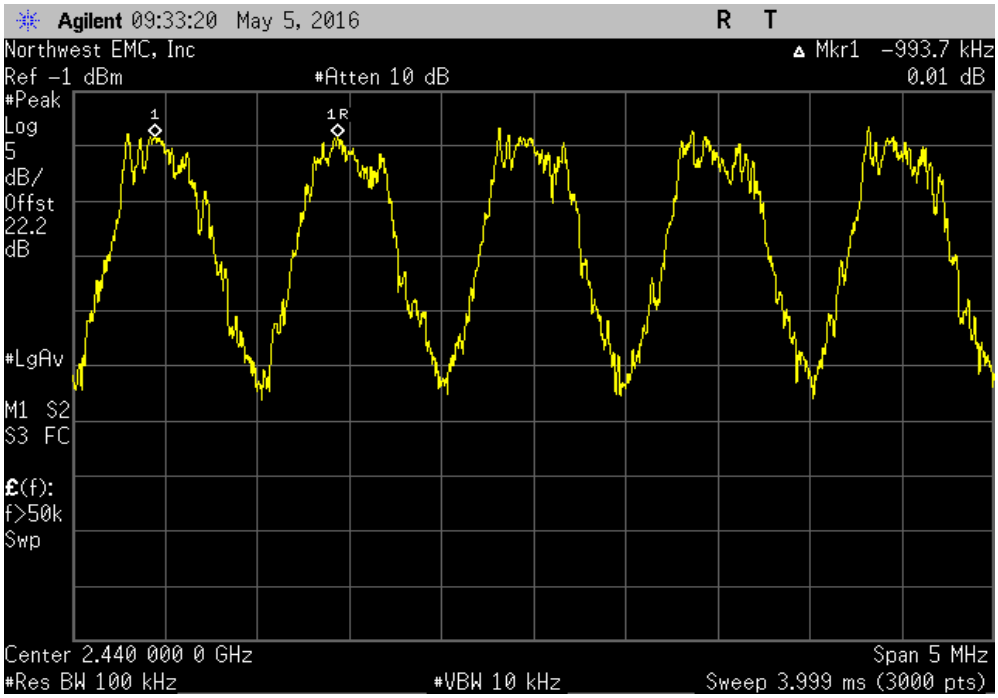
Configuration #	3	Signature	Trevor Buls

		Value	Limit (≥)	Results
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2440 MHz	1.0 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass



NUMBER OF HOPPING FREQUENCIES

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

NUMBER OF HOPPING FREQUENCIES

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/05/16
Customer:	Medtronic Inc.			**Temperature:**	23.2°C
Attendees:	Nick Blake			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	988.5
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

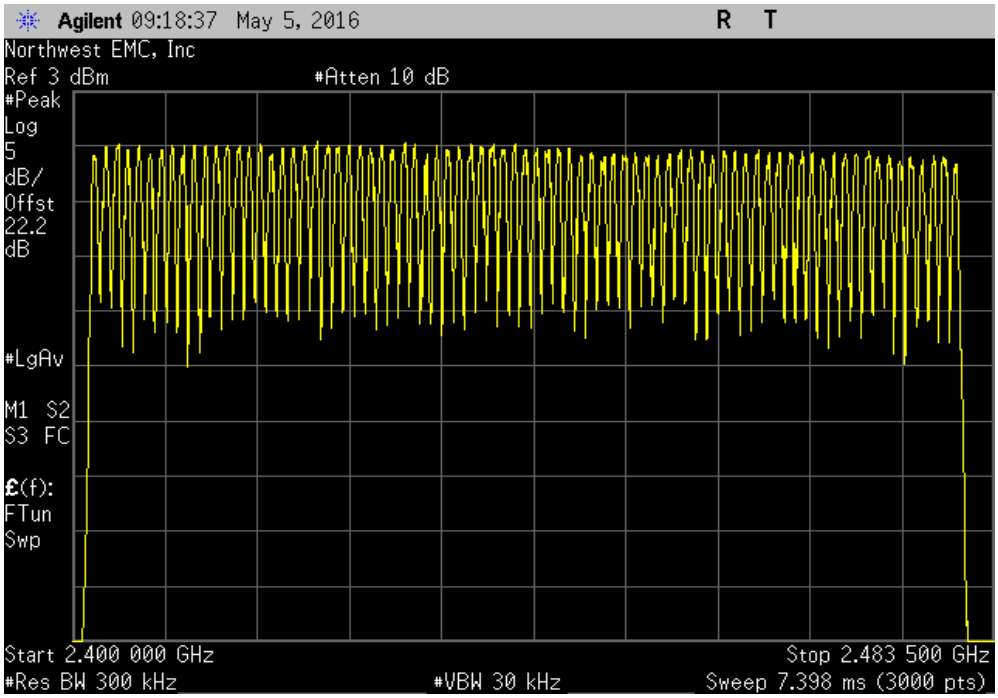
Configuration #	3	*Signature* Trevor Buls

		Number of Channels	Limit	Results
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2440 MHz	79	>15	Pass

NUMBER OF HOPPING FREQUENCIES

XMit 2015.01.14

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
				Number of Channels	Limit	Results
				79	15	Pass



DWELL TIME

XMit 2015.01.14

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 (mo)
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

The dwell time limit is based on the Number of Hopping Channels * 400 mS. For Bluetooth this would be 79 Channels * 400mS = 31.6 Sec.

On Time During 31.6 Sec = Pulse Width * Average Number of Pulses * Scale Factor

- Average Number of Pulses is based on 4 samples.

- Scale Factor = 31.6 Sec / Screen Capture Sweep Time = 31.6 Sec / 6.32 Sec = 5

DWELL TIME

NORTHWEST EMC

XMit 2015.01.14

EUT:	MyCareLink Monitor, Model 24950B			**Work Order:**	MDTR0462
Serial Number:	BTL000088A			**Date:**	05/05/16
Customer:	Medtronic Inc.			**Temperature:**	23.2°C
Attendees:	Nick Blake			**Humidity:**	25%
Project:	None			**Barometric Pres.:**	988.5
Tested by:	Dustin Sparks, Trevor Buls	**Power:**	5VDC	**Job Site:**	MN05

TEST SPECIFICATIONS	Test Method
FCC 15.247:2016	ANSI C63.10:2013

COMMENTS

None

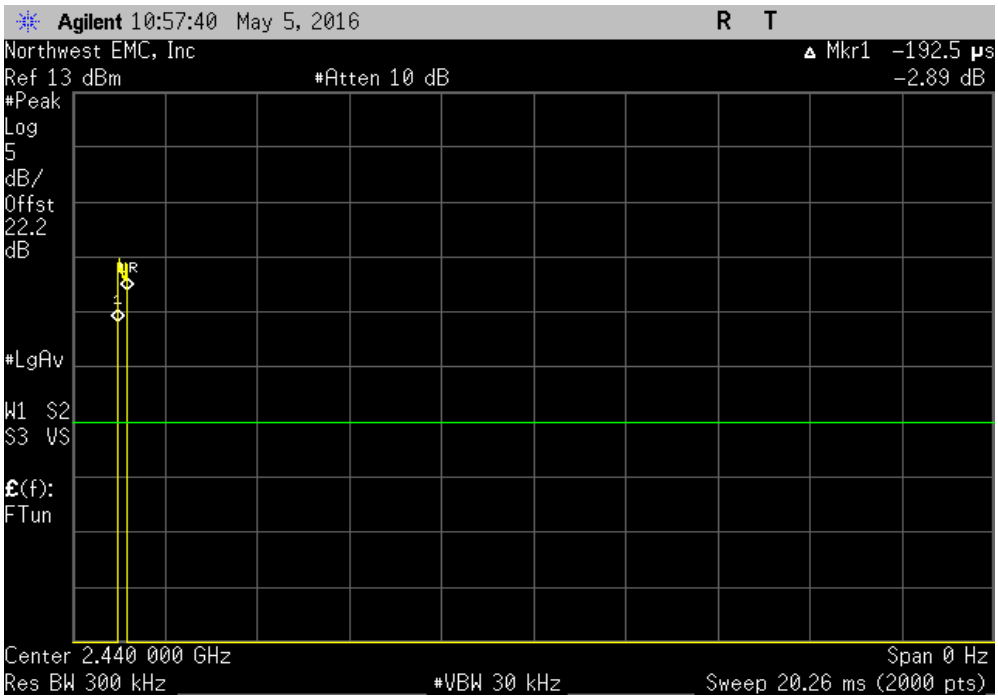
DEVIATIONS FROM TEST STANDARD

None

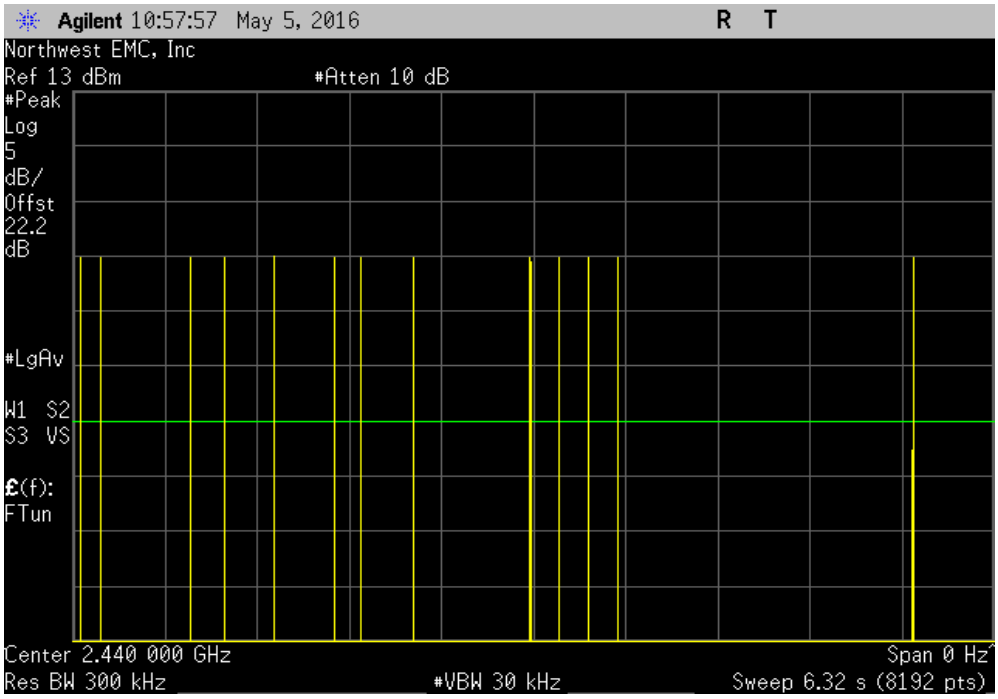
Configuration #	3	Signature	Trevor Buls

		Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
Hopping Mode								
	DH5, GFSK							
	Mid Channel, 2440 MHz	0.193	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	13	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	25	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	29	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	0.193	N/A	22.25	5	21.47	400	Pass

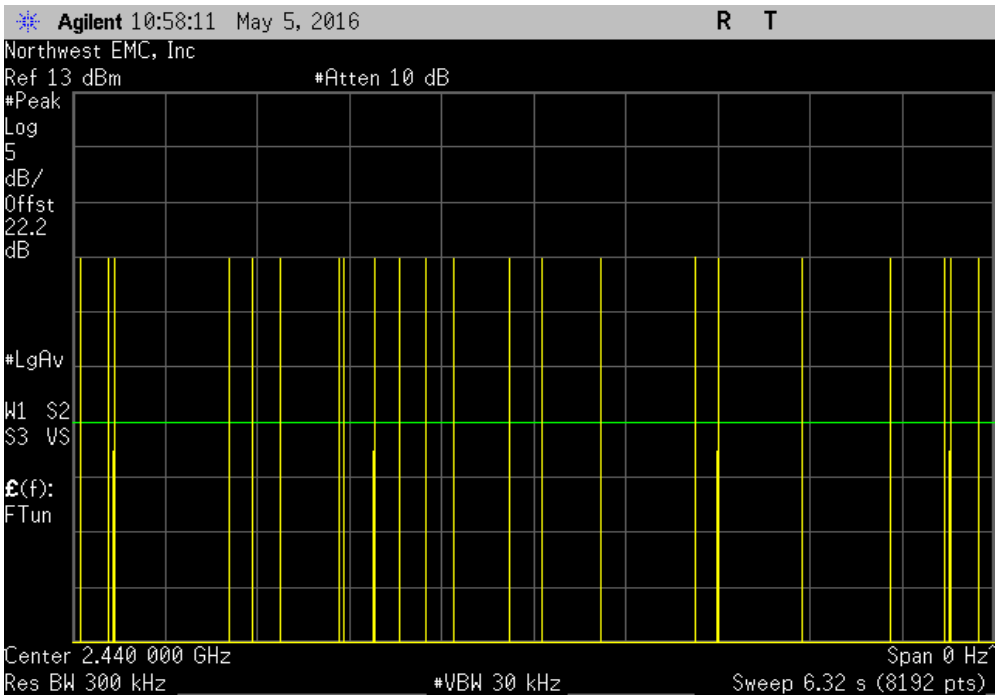
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
0.193	N/A	N/A	N/A	N/A	N/A	N/A



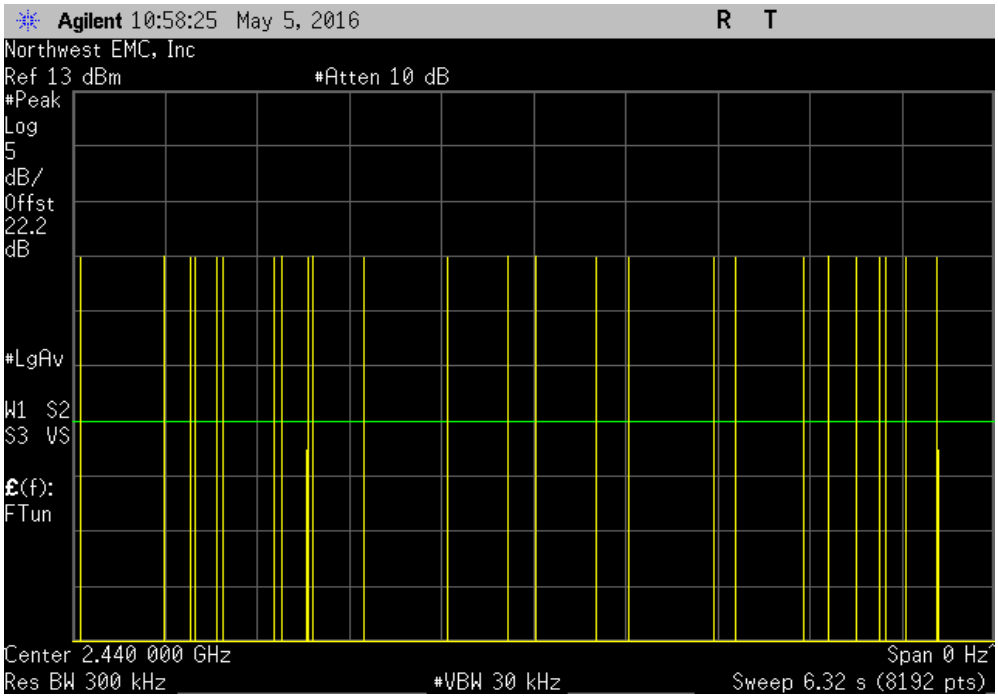
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	13	N/A	N/A	N/A	N/A	N/A



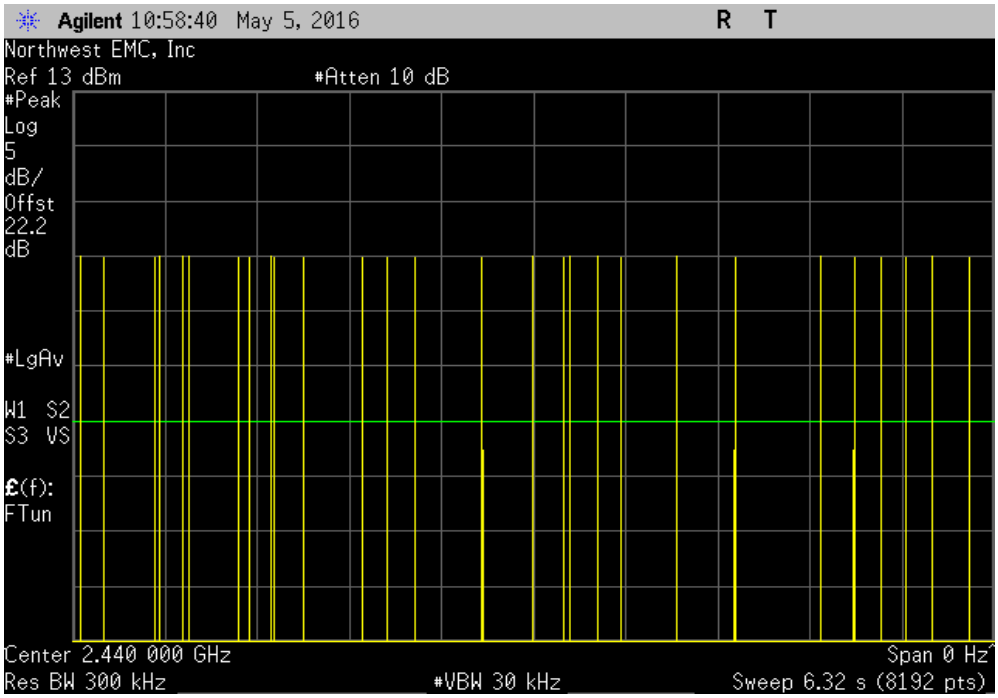
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	25	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	29	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
0.193	N/A	22.25	5	21.47	400	Pass

Calculation Only

No Screen Capture Required

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 BT - 2402 MHz (low channel), 2440 MHz (mid channel), and 2480 MHz (high channel); DH5 data rate.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0462 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 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 (mo)
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	10/21/2015	12
Filter - High Pass	Micro-Tronics	HPM50111	LFN	10/21/2015	12
Attenuator	Fairview Microwave	SA18E-20	TWZ	10/21/2015	12
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/18/2015	12
Cable	Northwest EMC	18-26GHz Standard Gain Horn Cable	MNP	9/18/2015	12
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/1/2016	12
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12/7/2015	12
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/1/2016	12
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	3/1/2016	12
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	12/7/2015	12
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/3/2014	24
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	12/10/2015	12
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2016	12

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

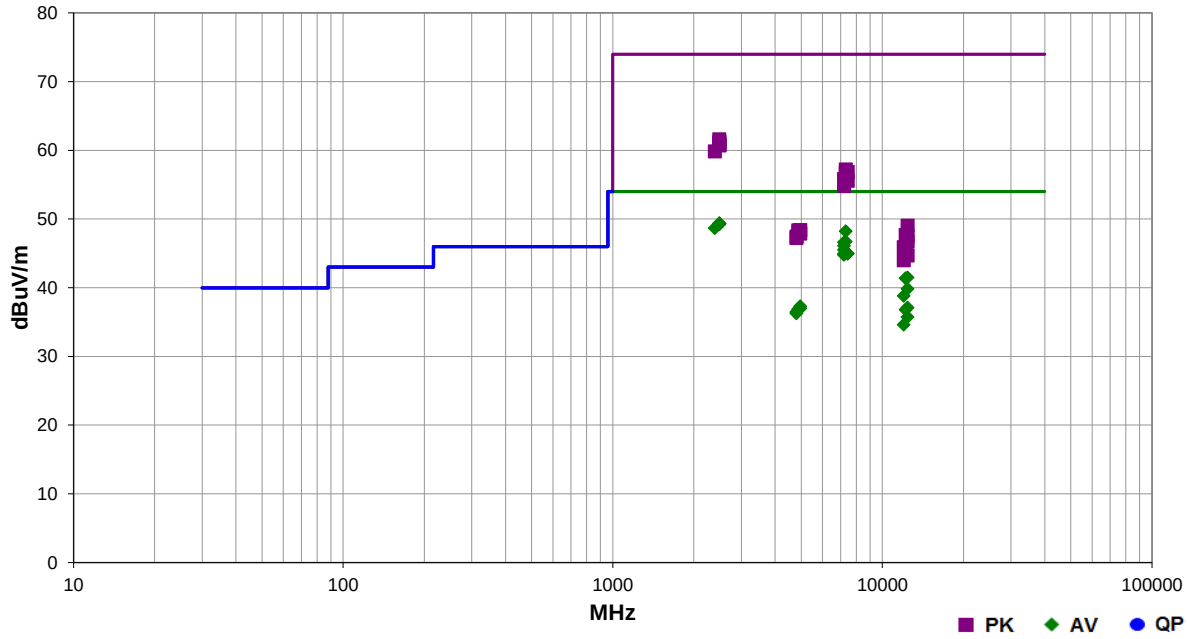
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify 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:	MDTR0462	**Date:**	04/29/16		
Project:	None	**Temperature:**	21.2 °C		
Job Site:	MN05	**Humidity:**	33.9% RH		
Serial Number:	BTL000088A	**Barometric Pres.:**	1025 mbar	**Tested by:**	Dustin Sparks
EUT:	MyCareLink Monitor, Model 24950B				
Configuration:	1				
Customer:	Medtronic Inc.				
Attendees:	Nick Blake				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting BT - 2402 MHz (low channel), 2440 MHz (mid channel), and 2480 MHz (high channel); DH5 data rate.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2016	ANSI C63.10:2013

Run #	12	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**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
2488.442	32.7	-3.4	1.0	207.0	3.0	20.0	Horz	AV	0.0	49.3	54.0	-4.7	High ch, EUT on side
2488.367	32.7	-3.4	1.0	321.0	3.0	20.0	Vert	AV	0.0	49.3	54.0	-4.7	High ch, EUT horz
2488.342	32.7	-3.4	3.4	232.0	3.0	20.0	Horz	AV	0.0	49.3	54.0	-4.7	High ch, EUT horz
2488.267	32.7	-3.4	1.0	47.1	3.0	20.0	Vert	AV	0.0	49.3	54.0	-4.7	High ch, EUT vert
2486.883	32.7	-3.4	1.0	14.0	3.0	20.0	Horz	AV	0.0	49.3	54.0	-4.7	High ch, EUT vert
2483.942	32.6	-3.4	2.9	270.0	3.0	20.0	Vert	AV	0.0	49.2	54.0	-4.8	High ch, EUT on side
2389.950	32.4	-3.7	1.0	235.0	3.0	20.0	Horz	AV	0.0	48.7	54.0	-5.3	Low ch, EUT on side
7320.050	34.9	13.3	2.9	130.1	3.0	0.0	Vert	AV	0.0	48.2	54.0	-5.8	Mid ch, EUT horz
7319.808	33.4	13.3	3.0	336.9	3.0	0.0	Horz	AV	0.0	46.7	54.0	-7.3	Mid ch, EUT horz
7206.000	34.1	12.5	2.4	135.0	3.0	0.0	Vert	AV	0.0	46.6	54.0	-7.4	Low ch, EUT horz
7205.942	33.6	12.5	1.1	41.1	3.0	0.0	Vert	AV	0.0	46.1	54.0	-7.9	Low ch, EUT on side
7205.967	33.0	12.5	2.0	32.0	3.0	0.0	Vert	AV	0.0	45.5	54.0	-8.5	Low ch, EUT vert
7440.042	31.5	13.5	1.0	43.0	3.0	0.0	Horz	AV	0.0	45.0	54.0	-9.0	High ch, EUT horz
7439.842	31.5	13.5	1.4	208.0	3.0	0.0	Vert	AV	0.0	45.0	54.0	-9.0	High ch, EUT horz
7205.925	32.4	12.5	2.4	43.0	3.0	0.0	Horz	AV	0.0	44.9	54.0	-9.1	Low ch, EUT horz
7206.083	32.3	12.5	1.0	84.1	3.0	0.0	Horz	AV	0.0	44.8	54.0	-9.2	Low ch, EUT on side
7206.025	32.3	12.5	1.0	360.0	3.0	0.0	Horz	AV	0.0	44.8	54.0	-9.2	Low ch, EUT vert
2483.967	45.0	-3.4	1.0	207.0	3.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	High ch, EUT on side
12399.340	41.5	0.0	2.5	98.1	3.0	0.0	Vert	AV	0.0	41.5	54.0	-12.5	High ch, EUT horz
12199.330	42.1	-0.7	2.9	109.1	3.0	0.0	Vert	AV	0.0	41.4	54.0	-12.6	Mid ch, EUT horz
2487.592	44.6	-3.4	2.9	270.0	3.0	20.0	Vert	PK	0.0	61.2	74.0	-12.8	High ch, EUT on side
2484.717	44.4	-3.4	1.0	321.0	3.0	20.0	Vert	PK	0.0	61.0	74.0	-13.0	High ch, EUT horz

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
2484.550	44.3	-3.4	3.4	232.0	3.0	20.0	Horz	PK	0.0	60.9	74.0	-13.1	High ch, EUT horz
2485.225	44.2	-3.4	1.0	47.1	3.0	20.0	Vert	PK	0.0	60.8	74.0	-13.2	High ch, EUT vert
2486.100	44.1	-3.4	1.0	14.0	3.0	20.0	Horz	PK	0.0	60.7	74.0	-13.3	High ch, EUT vert
2389.900	43.6	-3.7	1.0	235.0	3.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1	Low ch, EUT on side
12400.490	34.3	5.5	1.0	127.1	3.0	0.0	Vert	AV	0.0	39.8	54.0	-14.2	High ch, EUT horz
12009.290	40.2	-1.4	2.0	324.0	3.0	0.0	Vert	AV	0.0	38.8	54.0	-15.2	Low ch, EUT horz
4961.617	31.7	5.6	1.0	83.1	3.0	0.0	Horz	AV	0.0	37.3	54.0	-16.7	High ch, EUT horz
7320.675	43.9	13.3	2.9	130.1	3.0	0.0	Vert	PK	0.0	57.2	74.0	-16.8	Mid ch, EUT horz
12399.400	37.1	0.0	2.6	112.1	3.0	0.0	Horz	AV	0.0	37.1	54.0	-16.9	High ch, EUT horz
4962.233	31.4	5.6	2.8	51.1	3.0	0.0	Vert	AV	0.0	37.0	54.0	-17.0	High ch, EUT horz
7439.442	43.4	13.5	1.4	208.0	3.0	0.0	Vert	PK	0.0	56.9	74.0	-17.1	High ch, EUT horz
4880.900	31.5	5.4	1.0	235.9	3.0	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Mid ch, EUT horz
7320.258	43.5	13.3	3.0	336.9	3.0	0.0	Horz	PK	0.0	56.8	74.0	-17.2	Mid ch, EUT horz
12199.330	37.5	-0.7	1.8	55.1	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Mid ch, EUT horz
4877.817	31.4	5.4	1.7	135.0	3.0	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Mid ch, EUT horz
4801.533	31.3	5.2	1.0	274.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Low ch, EUT horz
4801.742	31.1	5.2	1.0	147.0	3.0	0.0	Vert	AV	0.0	36.3	54.0	-17.7	Low ch, EUT horz
7206.483	43.3	12.5	1.1	41.1	3.0	0.0	Vert	PK	0.0	55.8	74.0	-18.2	Low ch, EUT on side
12400.550	30.2	5.5	1.0	224.1	3.0	0.0	Horz	AV	0.0	35.7	54.0	-18.3	High ch, EUT horz
7206.033	43.2	12.5	2.4	135.0	3.0	0.0	Vert	PK	0.0	55.7	74.0	-18.3	Low ch, EUT horz
7440.392	42.1	13.5	1.0	43.0	3.0	0.0	Horz	PK	0.0	55.6	74.0	-18.4	High ch, EUT horz
7206.733	43.0	12.5	1.0	360.0	3.0	0.0	Horz	PK	0.0	55.5	74.0	-18.5	Low ch, EUT vert
7206.442	42.9	12.5	2.0	32.0	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	Low ch, EUT vert
7206.200	42.5	12.5	1.0	84.1	3.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	Low ch, EUT on side
7205.700	42.3	12.5	2.4	43.0	3.0	0.0	Horz	PK	0.0	54.8	74.0	-19.2	Low ch, EUT horz
12009.240	36.0	-1.4	1.0	56.0	3.0	0.0	Horz	AV	0.0	34.6	54.0	-19.4	Low ch, EUT horz
12400.670	43.5	5.5	1.0	127.1	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	High ch, EUT horz
4958.742	42.8	5.6	1.0	83.1	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	High ch, EUT horz
4877.875	43.0	5.4	1.0	235.9	3.0	0.0	Vert	PK	0.0	48.4	74.0	-25.6	Mid ch, EUT horz
4879.383	42.8	5.4	1.7	135.0	3.0	0.0	Horz	PK	0.0	48.2	74.0	-25.8	Mid ch, EUT horz
4961.517	42.3	5.6	2.8	51.1	3.0	0.0	Vert	PK	0.0	47.9	74.0	-26.1	High ch, EUT horz
12199.280	48.4	-0.7	2.9	109.1	3.0	0.0	Vert	PK	0.0	47.7	74.0	-26.3	Mid ch, EUT horz
12398.990	47.5	0.0	2.5	98.1	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	High ch, EUT horz
4804.917	42.3	5.2	1.0	147.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Low ch, EUT horz
4801.742	42.1	5.2	1.0	274.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	Low ch, EUT horz
12400.600	41.2	5.5	1.0	224.1	3.0	0.0	Horz	PK	0.0	46.7	74.0	-27.3	High ch, EUT horz
12010.600	47.3	-1.4	2.0	324.0	3.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	Low ch, EUT horz
12199.150	45.8	-0.7	1.8	55.1	3.0	0.0	Horz	PK	0.0	45.1	74.0	-28.9	Mid ch, EUT horz
12399.130	44.7	0.0	2.6	112.1	3.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	High ch, EUT horz
12009.300	45.4	-1.4	1.0	56.0	3.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	Low ch, EUT horz

AC - POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, TYK	MNCA	1/29/2016	1/29/2017
Receiver	Rohde & Schwarz	ESR7	ARI	5/21/2015	5/21/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/21/2016	3/21/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MDTR0462-1

MODES INVESTIGATED

Transmitting BT mid channel (2440 MHz)

AC - POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	MyCareLink Monitor, Model 24950B	Work Order:	MDTR0462
Serial Number:	BTL000088A	Date:	05/12/2016
Customer:	Medtronic Inc.	Temperature:	22.3°C
Attendees:	Taylor Dowden	Relative Humidity:	43.1%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0462-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

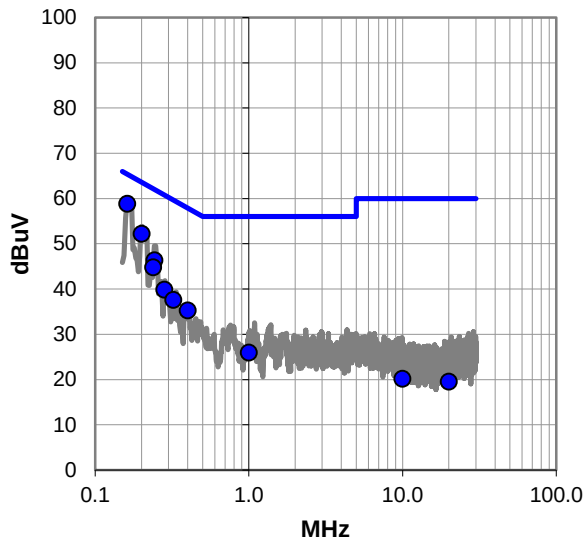
EUT OPERATING MODES

Transmitting BT mid channel (2440 MHz)

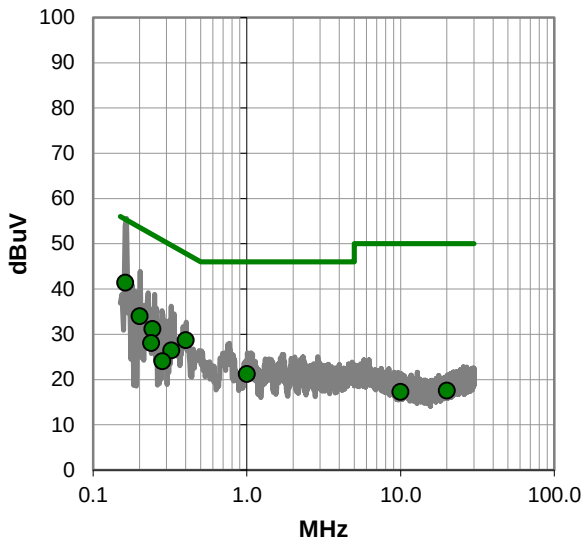
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC - POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.162	38.4	20.4	58.8	65.4	-6.6
0.201	31.9	20.3	52.2	63.6	-11.4
0.243	26.1	20.2	46.3	62.0	-15.6
0.238	24.5	20.2	44.7	62.2	-17.4
0.282	19.6	20.2	39.8	60.7	-20.9
0.323	17.4	20.2	37.6	59.6	-22.0
0.402	15.1	20.2	35.3	57.8	-22.6
1.002	5.8	20.1	25.9	56.0	-30.1
9.998	-0.5	20.7	20.2	60.0	-39.8
19.994	-2.0	21.5	19.5	60.0	-40.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.162	21.0	20.4	41.4	55.4	-14.0
0.402	8.5	20.2	28.7	47.8	-19.2
0.201	13.7	20.3	34.0	53.6	-19.6
0.243	10.9	20.2	31.1	52.0	-20.8
0.323	6.2	20.2	26.4	49.6	-23.2
0.238	7.8	20.2	28.0	52.2	-24.1
1.002	1.1	20.1	21.2	46.0	-24.8
0.282	3.8	20.2	24.0	50.7	-26.7
19.994	-4.0	21.5	17.5	50.0	-32.5
9.998	-3.4	20.7	17.3	50.0	-32.7

CONCLUSION

Pass

Tested By

AC - POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	MyCareLink Monitor, Model 24950B	Work Order:	MDTR0462
Serial Number:	BTL000088A	Date:	05/12/2016
Customer:	Medtronic Inc.	Temperature:	22.3°C
Attendees:	Taylor Dowden	Relative Humidity:	43.1%
Customer Project:	None	Bar. Pressure:	1017 mb
Tested By:	Dustin Sparks	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0462-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

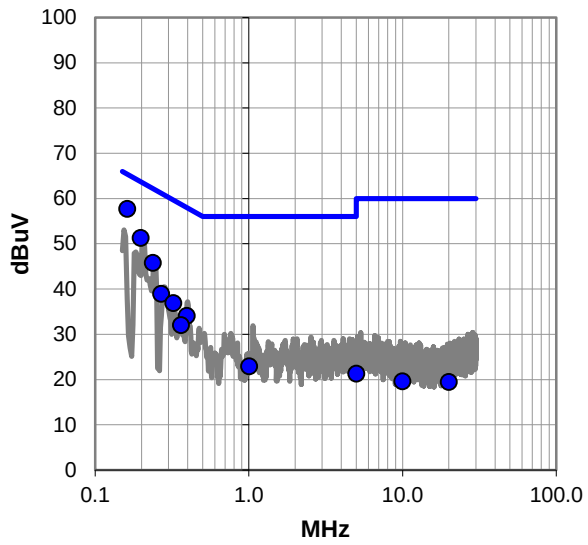
EUT OPERATING MODES

Transmitting BT mid channel (2440 MHz)

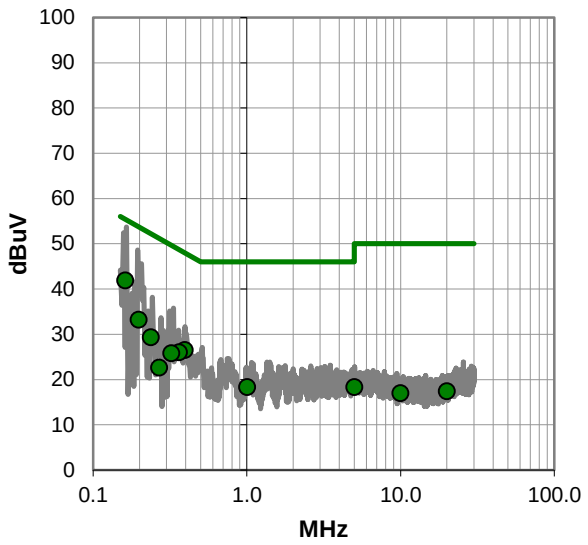
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC - POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.162	37.3	20.4	57.7	65.4	-7.7
0.198	31.0	20.3	51.3	63.7	-12.4
0.237	25.5	20.3	45.8	62.2	-16.4
0.269	18.7	20.2	38.9	61.1	-22.2
0.323	16.7	20.2	36.9	59.6	-22.7
0.395	13.9	20.2	34.1	58.0	-23.9
0.362	11.8	20.2	32.0	58.7	-26.7
1.006	2.8	20.1	22.9	56.0	-33.1
5.005	0.9	20.4	21.3	60.0	-38.7
10.004	-1.1	20.7	19.6	60.0	-40.4
19.999	-2.1	21.5	19.4	60.0	-40.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.162	21.5	20.4	41.9	55.4	-13.5
0.198	12.9	20.3	33.2	53.7	-20.5
0.395	6.3	20.2	26.5	48.0	-21.5
0.362	5.8	20.2	26.0	48.7	-22.7
0.237	9.1	20.3	29.4	52.2	-22.8
0.323	5.6	20.2	25.8	49.6	-23.8
1.006	-1.8	20.1	18.3	46.0	-27.7
0.269	2.4	20.2	22.6	51.1	-28.5
5.005	-2.1	20.4	18.3	50.0	-31.7
19.999	-4.1	21.5	17.4	50.0	-32.6
10.004	-3.7	20.7	17.0	50.0	-33.0

CONCLUSION

Pass

Tested By