

NORTHWEST EMC

Medtronic, Inc.

24970A CareLink SmartSync™ Device Manager Base

FCC 95I:2016

FCC 15.207:2016

MICS Radio

Report # MDTR0481



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. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: June 5, 2016
Medtronic, Inc.
Model: 24970A CareLink SmartSync™ Device Manager Base

Radio Equipment Testing

Standards

Specification	Method
FCC 95.1:2016	ANSI/TIA/EIA-603-D-2010
FCC 15.207:2016	ANSI C63.10:2013

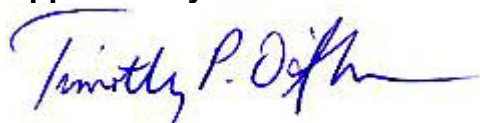
Results

Method Clause	Test Description	Applied	Results	Comments
FCC 95.633(e)(3)	Emission Bandwidth	Yes	Pass	
TIA-603-D 2.2.1	Conducted Output Power	Yes	Pass	
FCC 95.635(d)(4-5)	Emission Mask	Yes	Pass	
TIA-603-D 2.2.13	Spurious Conducted Emissions	Yes	Pass	
TIA-603-D 2.2.2	Frequency Stability	Yes	Pass	
FCC 95.627(a)	Frequency Monitoring	No	N/A	Not requested as the customer is responsible to handle this requirement.
TIA-603-D 2.2.17.2	Radiated Power (EIRP)	Yes	Pass	
TIA-603-D 2.2.12	Spurious Radiated Emissions	Yes	Pass	
ANSI C63.10-6.2	Powerline 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

Revision Number		Description	Date	Page Number
00		None		

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 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

Measurement Uncertainty

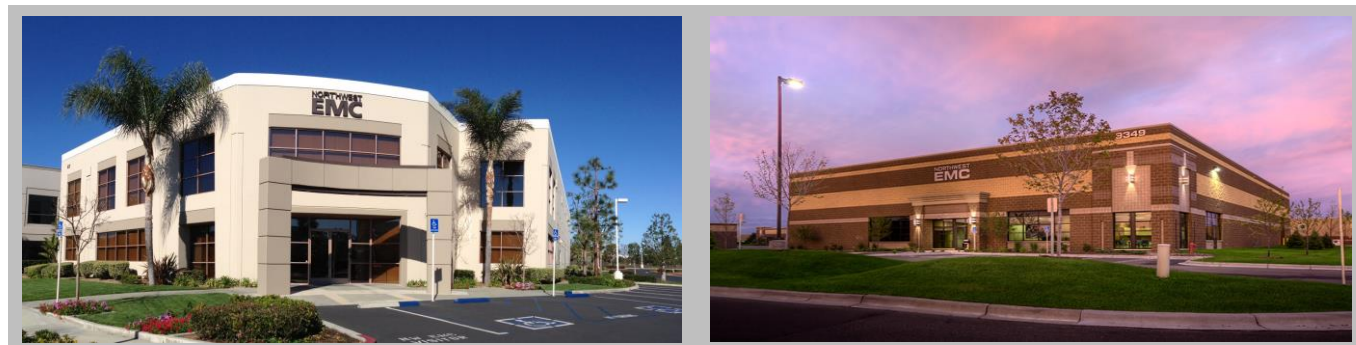
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement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

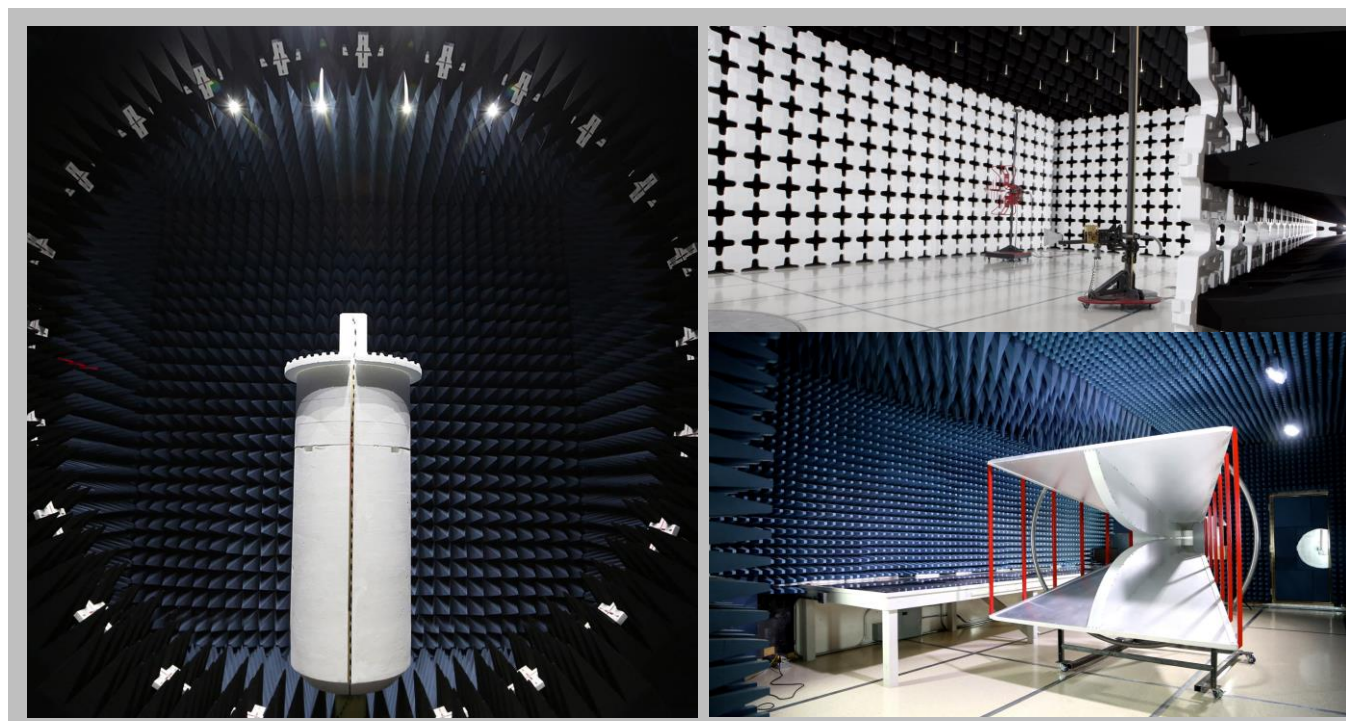
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

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



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th 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/RRR, 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:	Jay Axmann
Model:	24970A CareLink SmartSync™ Device Manager Base
First Date of Test:	June 2, 2016
Last Date of Test:	June 5, 2016
Receipt Date of Samples:	June 2, 2016
Equipment Design Stage:	Production equivalent
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The Sirius Programmer consists of a base unit, Model 24970A CareLink SmartSync™ Device Manager Base and a RF Telemetry Head, Model 24967. The base unit is AC powered, uses a MICS (Medical Implant Communication Service) radio module operating in the 402-405 MHz band, and a Bluetooth (BT) Classic pre-approved radio module operating in the 2.4 GHz band.

Testing Objective:

Seeking FCC authorization for the MedRadio transmitter in the Base Unit to FCC Part 95I.

CONFIGURATIONS

Configuration MDTR0481- 1

Software/Firmware Running during test	
Description	Version
MPI Command Tester	0.10.4.0

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
24970A CareLink SmartSync™ Device Manager Base	Medtronic, Inc.	24970A	SPM000321A

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Medical Power Supply	MR20A0540F03	None
Laptop	Dell	Latitude	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	Unknown	1.8m	No	AC/DC Power Supply	Base Station
AC Power Cable	Unknown	1.8m	No	AC/DC Power Supply	AC Mains
SWT SMA Test Cable	Yes	0.1m	No	Sirius Base Station	Spectrum Analyzer

CONFIGURATIONS

Configuration MDTR0481- 2

Software/Firmware Running during test					
Description				Version	
MPI Command Tester				0.10.4.0	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
24970A CareLink SmartSync™ Device Manager Base	Medtronic, Inc.	24970A	SPM000321A

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC/DC Power Supply	Medical Power Supply	MR20A0540F03	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude	Unknown

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable	Unknown	1.8m	No	AC/DC Power Supply	Base Station
AC Power Cable	Unknown	1.8m	No	AC/DC Power Supply	AC Mains
USB Cable	Unknown	3.0m	No	Unterminated	Sirius Base Station
EGM	Unknown	4.7m	No	Sirius Base Station	Not Terminated
PSA	Unknown	3.6m	No	Sirius Base Station	Not Terminated

CONFIGURATIONS

Configuration MDTR0481- 3

Software/Firmware Running during test						
Description			Version			
MPI Command Tester			0.10.4.0			
EUT						
Description		Manufacturer	Model/Part Number	Serial Number		
24970A CareLink SmartSync™ Device Manager Base		Medtronic, Inc.	24970A	SPM000300A		
Peripherals in test setup boundary						
Description		Manufacturer	Model/Part Number	Serial Number		
AC/DC Power Supply		Medical Power Supply	MR20A0540F03	None		
Remote Equipment Outside of Test Setup Boundary						
Description		Manufacturer	Model/Part Number	Serial Number		
Laptop		Dell	Latitude	Unknown		
Cables						
Cable Type		Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power Cable		Unknown	1.8m	No	AC/DC Power Supply	Base Station
AC Power Cable		Unknown	1.8m	No	AC/DC Power Supply	AC Mains
USB Cable		Unknown	3.0m	No	Unterminated	Sirius Base Station
EGM		Unknown	4.7m	No	Sirius Base Station	Not Terminated
PSA		Unknown	3.6m	No	Sirius Base Station	Not Terminated

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	6/3/2016	Emission Mask	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	6/3/2016	Frequency Stability	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	6/3/2016	Emission 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.
4	6/3/2016	Conducted 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.
5	6/3/2016	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.
6	6/4/2016	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.
7	6/4/2016	Radiated Power (EIRP)	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	6/5/2016	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

EMISSIONS BANDWIDTH

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


TEST EQUIPMENT

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

TEST DESCRIPTION

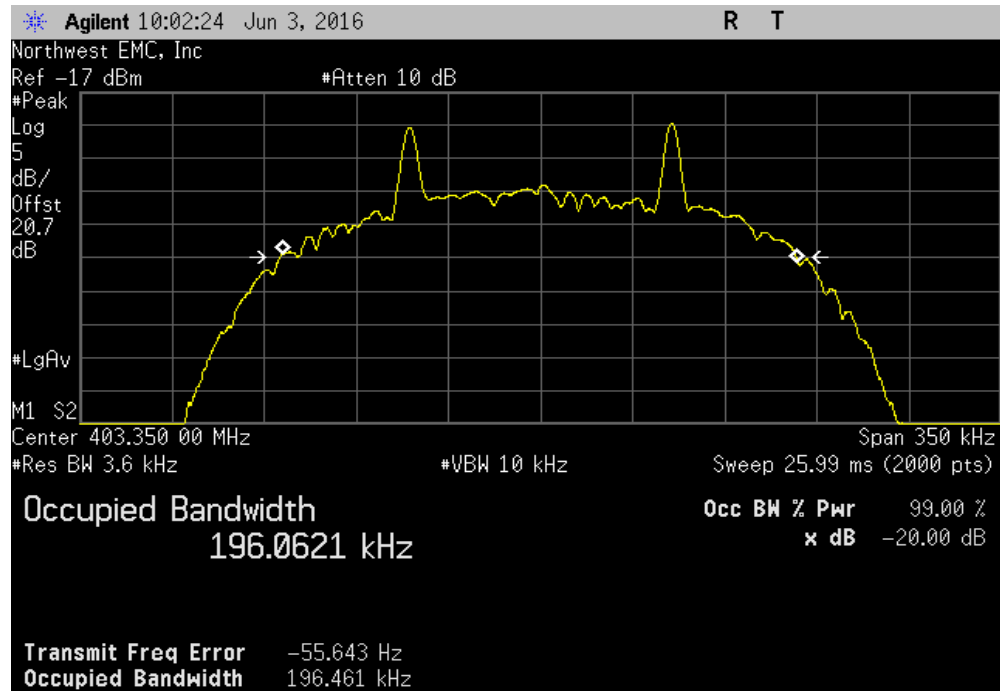
Per 47 CFR 95.633(e)(3), the emission bandwidth was determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT.

EMISSIONS BANDWIDTH

EUT: 24970A CareLink SmartSync™ Device Manager Base		Work Order: MDTR0481	
Serial Number: SPM000321A		Date: 06/03/16	
Customer: Medtronic, Inc.		Temperature: 22.6°C	
Attendees: Nick Blake		Humidity: 47%	
Project: None		Barometric Pres.: 984.1 mbar	
Tested by: Jared Ison	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 951:2016		Test Method: ANSI/TIA/EIA-603-D-2010	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature	
		Value	Limit (S) Result
Mid Channel, 403.35 MHz		196.461 kHz	300 kHz Pass

EMISSIONS BANDWIDTH

Mid Channel, 403.35 MHz						
				Value	Limit (S)	Result
				196.461 kHz	300 kHz	Pass



CONDUCTED 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 (mo)
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
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
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

Per FCC Part 2.1046, RSS-GEN, the output power shall be measured at the RF terminal. The peak output power was measured with the EUT configured in the modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate.

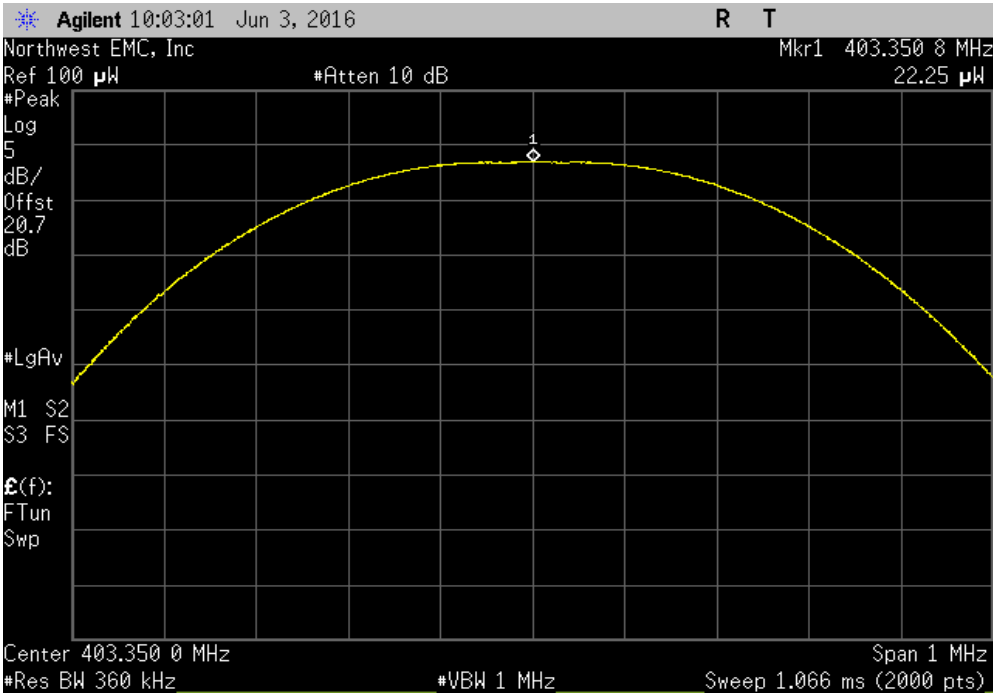
FCC Part 95 and RSS-243 have no conducted output power limit. It is a requirement to characterize this information and that data is contained within this datasheet.

OUTPUT POWER

EUT: 24970A CareLink SmartSync™ Device Manager Base		Work Order: MDTR0481	
Serial Number: SPM000321A		Date: 06/03/16	
Customer: Medtronic, Inc.		Temperature: 22.6°C	
Attendees: Nick Blake		Humidity: 47%	
Project: None		Barometric Pres.: 984.1 mbar	
Tested by: Jared Ison	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 951:2016		ANSI/TIA/EIA-603-D-2010	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value	Limit
Mid Channel, 403.35 MHz		22.254 uW	N/A
			Result
			N/A

CONDUCTED OUTPUT POWER

Mid Channel, 403.35 MHz						
				Value	Limit	Result
				22.254 uW	N/A	N/A



EMISSION MASK

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)
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
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

TEST DESCRIPTION

Per 47 CFR 95.635(d)(4) the emission mask was measured. Emissions more than 150 kHz away from the center frequency must be attenuated below the transmitter output power by at least 20 dB. This was evaluated by the Occupied Bandwidth measurement according to 47 CFR 95.633(e)(1). In addition, emissions 250 kHz or less above and below the MICS band (402 - 405 MHz) must be attenuated below the maximum permitted output power by at least 20 dB.

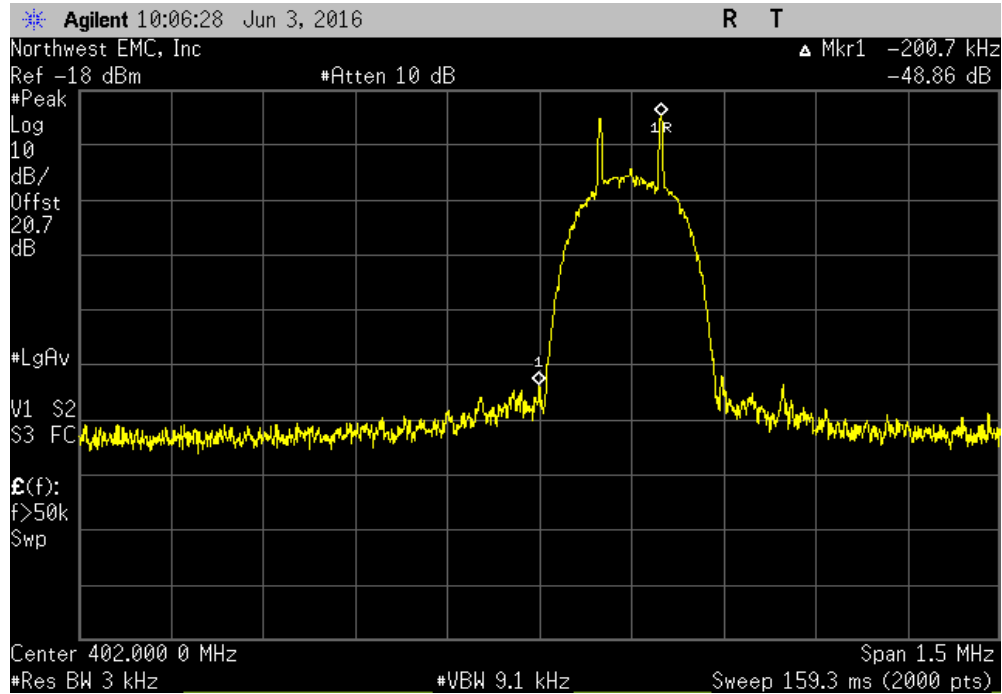
A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT. However, various plots were made using different frequency spans and resolution bandwidths in an attempt to not only satisfy the measurement criteria, but to also show that all emissions outside of the occupied band are greatly attenuated.

EMISSION MASK

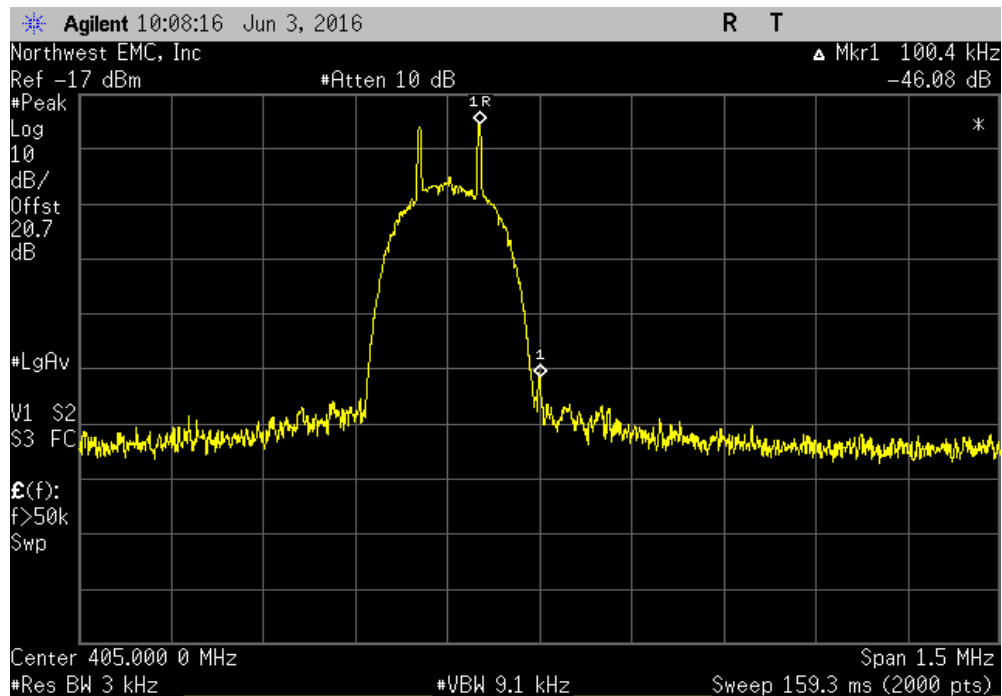
EUT: 24970A CareLink SmartSync™ Device Manager Base		Work Order: MDTR0481	
Serial Number: SPM000321A		Date: 06/03/16	
Customer: Medtronic, Inc.		Temperature: 22.6°C	
Attendees: Nick Blake		Humidity: 47%	
Project: None		Barometric Pres.: 984.1 mbar	
Tested by: Jared Ison	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 951:2016		Test Method: ANSI/TIA/EIA-603-D-2010	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature	
		Value (dBc)	Limit ≤ (dBc) Result
Low Channel, 402.15 MHz		-48.86	-20 Pass
High Channel, 404.85 MHz		-46.08	-20 Pass

EMISSION MASK

Low Channel, 402.15 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.86	-20	Pass



High Channel, 404.85 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-46.08	-20	Pass



SPURIOUS CONDUCTED 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.

TEST EQUIPMENT


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

TEST DESCRIPTION

Per FCC Part 2.1052, RSS-GEN, the spurious emissions shall be measured at the RF terminal. The peak spurious emissions were measured with the EUT configured to the modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate.

FCC Part 95 and RSS-243 have no conducted spurious emissions limit. It is a requirement to characterize this information and that data is contained within this datasheet.

SPURIOUS CONDUCTED EMISSIONS

EUT: 24970A CareLink SmartSync™ Device Manager Base		Work Order: MDTR0481	
Serial Number: SPM000321A		Date: 06/03/16	
Customer: Medtronic, Inc.		Temperature: 22.6°C	
Attendees: Nick Blake		Humidity: 47%	
Project: None		Barometric Pres.: 984.1 mbar	
Tested by: Jared Ison	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 951:2016		Test Method: ANSI/TIA/EIA-603-D-2010	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Frequency Range	Max Value (dBc) Limit A (dBc) Result
		30 MHz - 5 GHz	-42.25 N/A

Mid Channel, 403.35 MHz

30 MHz - 5 GHz

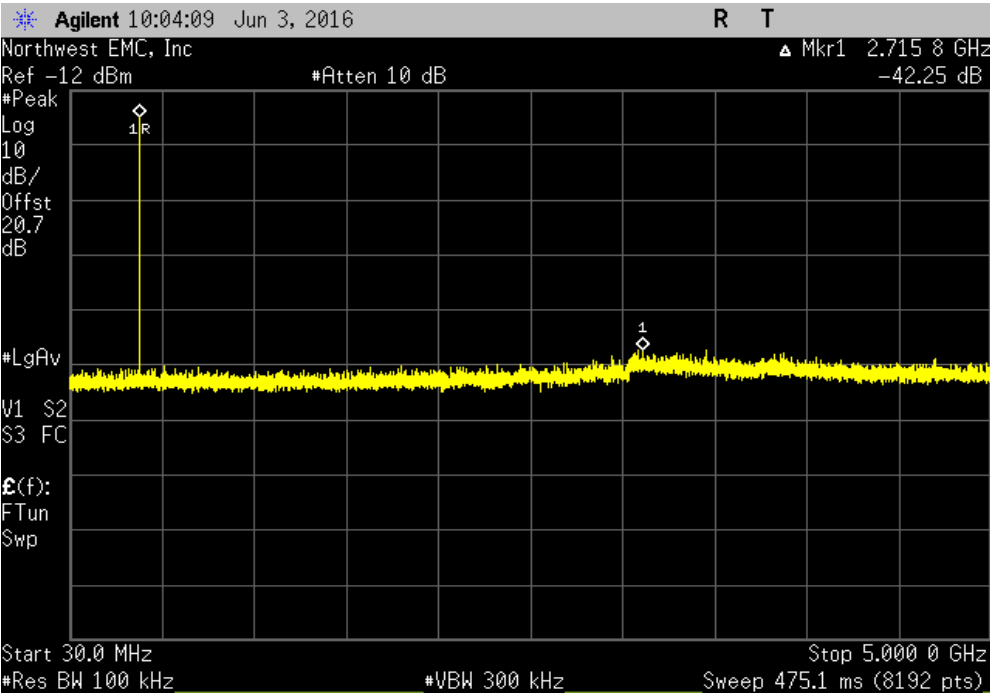
Max Value
(dBc)

Limit
A (dBc)

Result

SPURIOUS CONDUCTED EMISSIONS

Mid Channel, 403.35 MHz				
Frequency Range		Max Value (dBc)	Limit A (dBc)	Result
30 MHz - 5 GHz		-42.25		N/A



FREQUENCY STABILITY

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)
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	12
Thermometer	Omega Engineering, Inc.	HH311	DUB	11/3/2014	36
Chamber - Temperature/Humidity	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	10/21/2015	12
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	12
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	12

TEST DESCRIPTION

Variation of Supply Voltage


The primary supply voltage was varied from 85% to 115% of the nominal voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range.

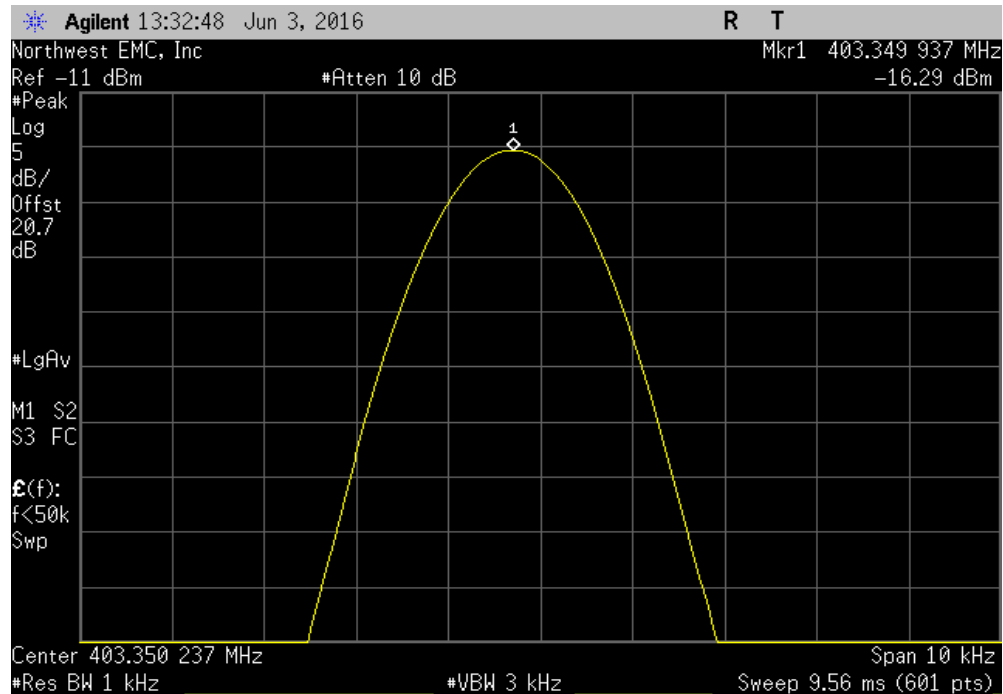
The Frequency Stability was measured using a direct connection between the EUT and a spectrum analyzer. The spectrum analyzer is configured with a precision frequency reference that exceeds the stability requirement of the transmitter. The EUT was placed inside a temperature / humidity chamber. The near-field probe was placed near the transmitter. A low-loss coaxial cable connected the near-field probe to the spectrum analyzer outside of the chamber.

FREQUENCY STABILITY

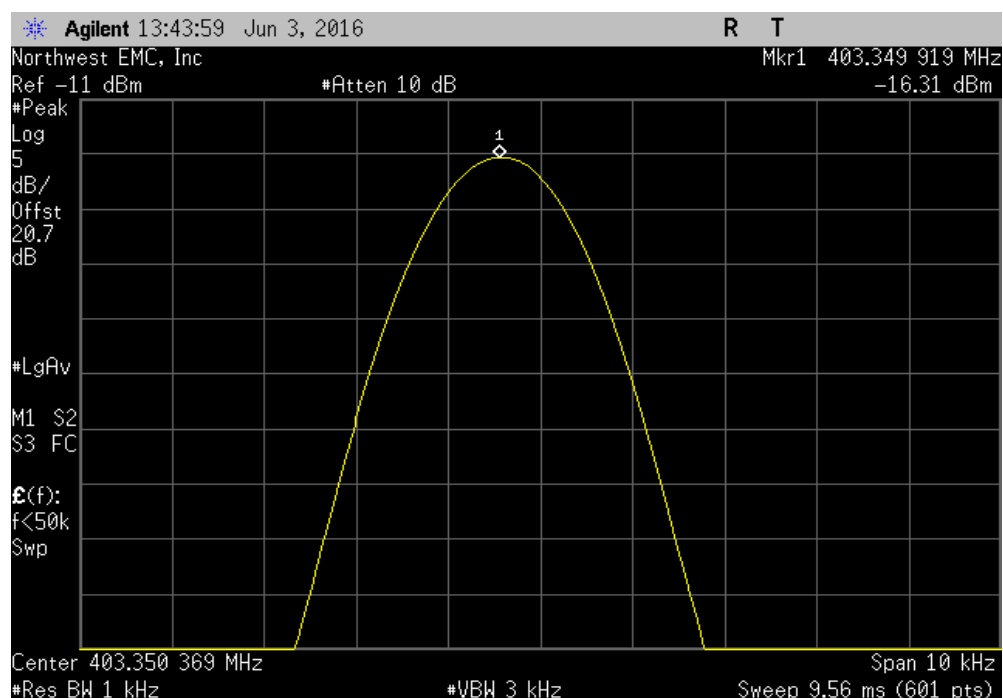
EUT: 24970A CareLink SmartSync™ Device Manager Base		Work Order: MDTR0481				
Serial Number: SPM000321A		Date: 06/03/16				
Customer: Medtronic, Inc.		Temperature: 22.6°C				
Attendees: Nick Blake		Humidity: 47%				
Project: None		Barometric Pres.: 984.1 mbar				
Tested by: Jared Ison	Power: 110VAC/60Hz	Job Site: MN08				
TEST SPECIFICATIONS		Test Method				
FCC 951.2016		ANSI/TIA/EIA-603-D-2010				
COMMENTS						
None						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature 				
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
Normal Voltage						
	Mid Channel, 403.35 MHz	403.349937	403.35	0.2	100	Pass
Extreme Voltage +15%						
	Mid Channel, 403.35 MHz	403.349919	403.35	0.2	100	Pass
Extreme Voltage -15%						
	Mid Channel, 403.35 MHz	403.349936	403.35	0.2	100	Pass
Extreme Temperature +55°C						
	Mid Channel, 403.35 MHz	403.350387	403.35	1	100	Pass
Extreme Temperature +50°C						
	Mid Channel, 403.35 MHz	403.350103	403.35	0.3	100	Pass
Extreme Temperature +40°C						
	Mid Channel, 403.35 MHz	403.349785	403.35	0.5	100	Pass
Extreme Temperature +30°C						
	Mid Channel, 403.35 MHz	403.349869	403.35	0.3	100	Pass
Extreme Temperature +20°C						
	Mid Channel, 403.35 MHz	403.349902	403.35	0.2	100	Pass
Extreme Temperature +10°C						
	Mid Channel, 403.35 MHz	403.349668	403.35	0.8	100	Pass
Extreme Temperature 0°C						
	Mid Channel, 403.35 MHz	403.348801	403.35	3	100	Pass

FREQUENCY STABILITY

Normal Voltage, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349937	403.35	0.2	100	Pass	

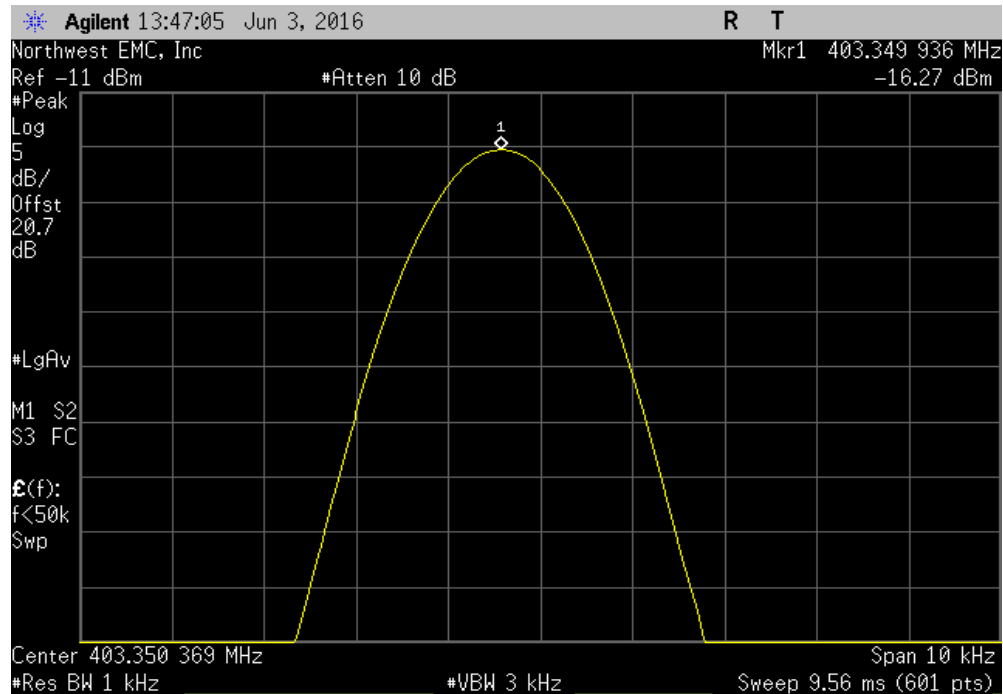


Extreme Voltage +15%, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349919	403.35	0.2	100	Pass	

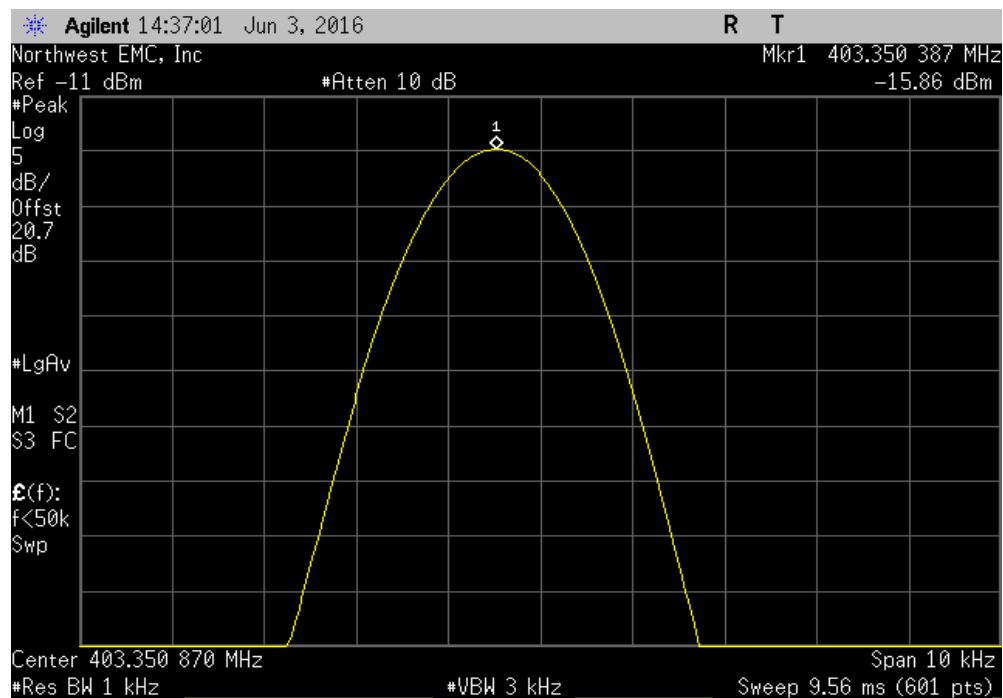


FREQUENCY STABILITY

Extreme Voltage -15%, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349936	403.35	0.2	100	Pass	

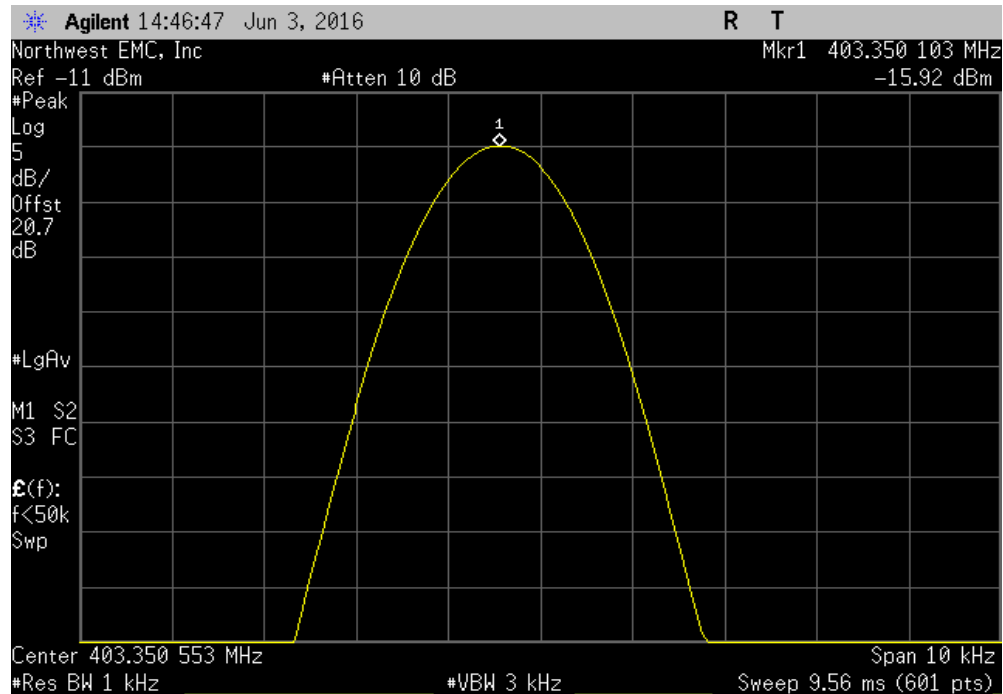


Extreme Temperature +55°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.350387	403.35	1	100	Pass	

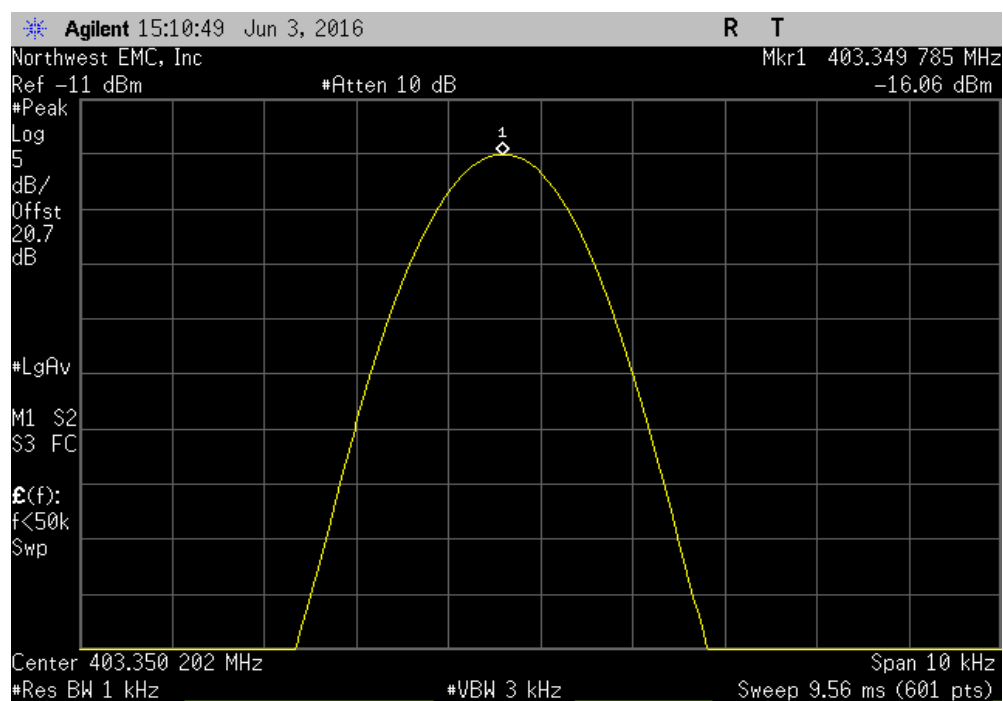


FREQUENCY STABILITY

Extreme Temperature +50°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.350103	403.35	0.3	100	Pass	

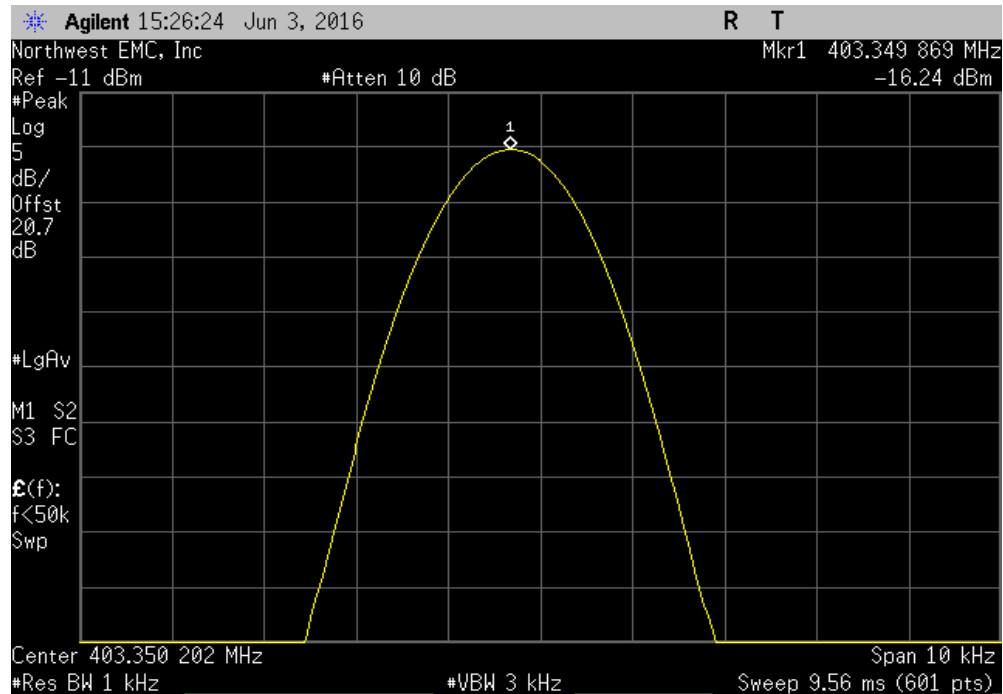


Extreme Temperature +40°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349785	403.35	0.5	100	Pass	

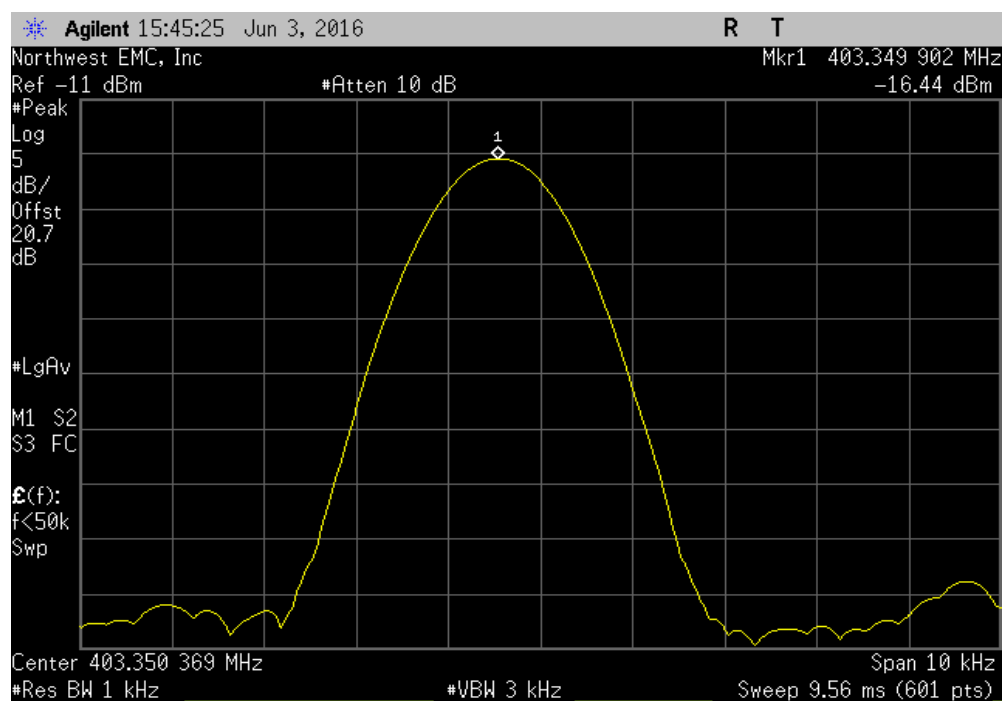


FREQUENCY STABILITY

Extreme Temperature +30°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349869	403.35	0.3	100	Pass	

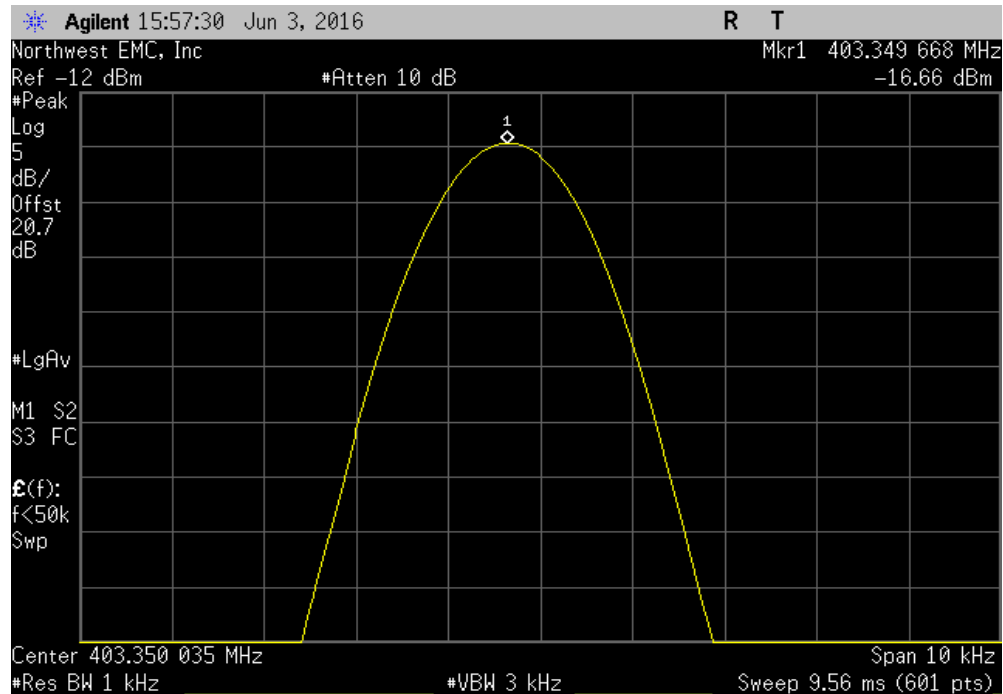


Extreme Temperature +20°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349902	403.35	0.2	100	Pass	

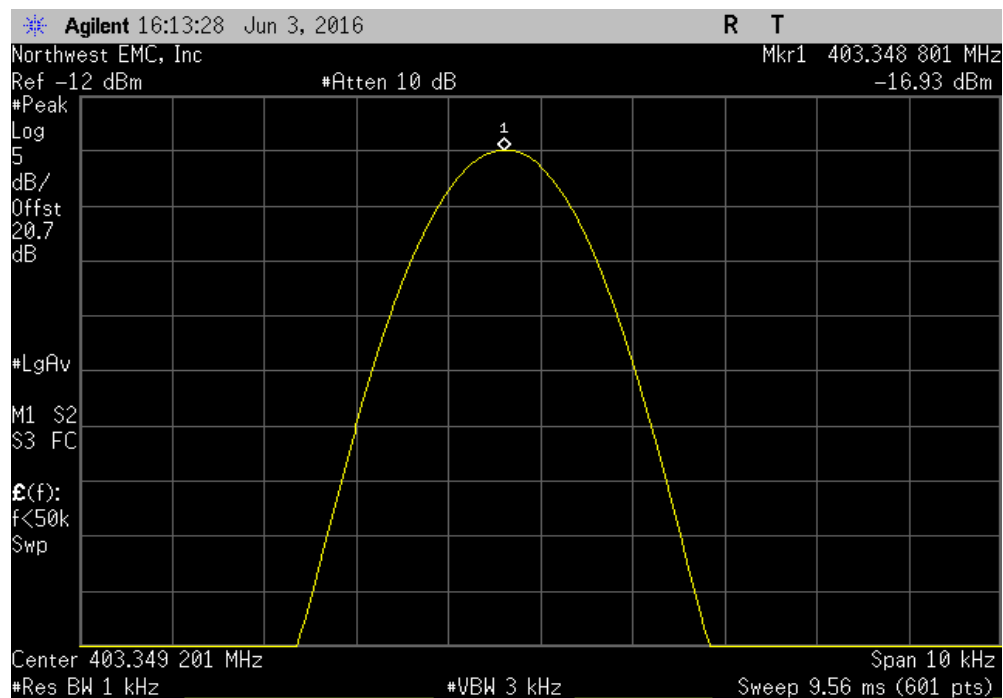


FREQUENCY STABILITY

Extreme Temperature +10°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.349668	403.35	0.8	100	Pass	



Extreme Temperature 0°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.348801	403.35	3	100	Pass	



RADIATED POWER (EIRP)

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

CW, 402.15 MHz

CW, 403.35 MHz

CW, 404.85 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0481 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	402 MHz	Stop Frequency	405 MHz
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SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Power Sensor	Agilent	N8481A	SQN	8/17/2015	12 mo
Meter - Power	Agilent	N1913A	SQL	8/17/2015	12 mo
Antenna - Dipole	EMCO	3121C-DB4	ADI	2/10/2016	36 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24 mo
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	36 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2016	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

Per 95.627(g)(3), the maximum radiated field strength for a MICS transmitter is 25uW EIRP. The Field Strength of the Fundamental data was converted to EIRP with the formula based upon the Friis transmission equation with 6 dB removed due to reflections from the ground plane: $EIRP = ((E/2)*d)^2/30$ where E is V/m and d = distance = 3m, and EIRP = W.

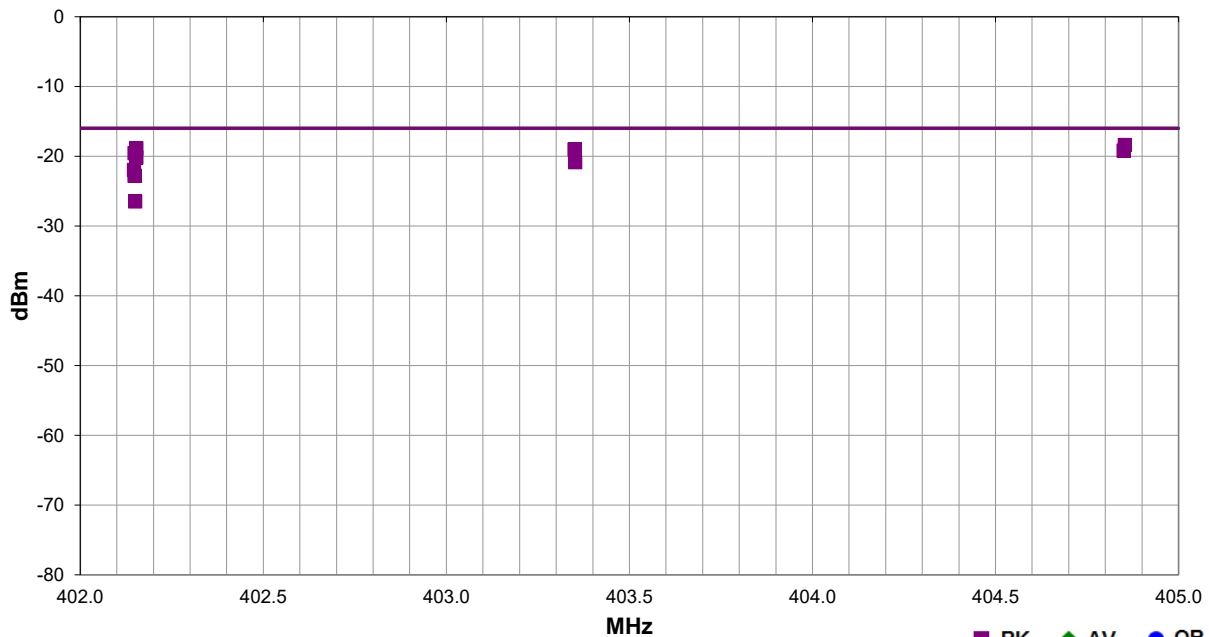
The Field Strength of the Fundamental was measured in the far-field at an FCC Listed Semi-anechoic Chamber. Spectrum analyzer and linearly polarized antennas were used to measure the radiated field strength of the fundamental.

The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The turntable azimuth was varied to maximize the level of radiated emissions. The height of the measurement antenna was also varied from 1 to 4 meters. The amplitude and frequency of the emissions were noted.


Work Order:	MDTR0481	Date:	06/04/16	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	55.7% RH	
Serial Number:	SPM000321A	Barometric Pres.:	1011 mbar	
EUT:	24970A CareLink SmartSync™ Device Manager Base			
Configuration:	1			
Customer:	Medtronic, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting using an unmodulated carrier.			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 951:2016	ANSI/TIA/EIA-603-D-2010

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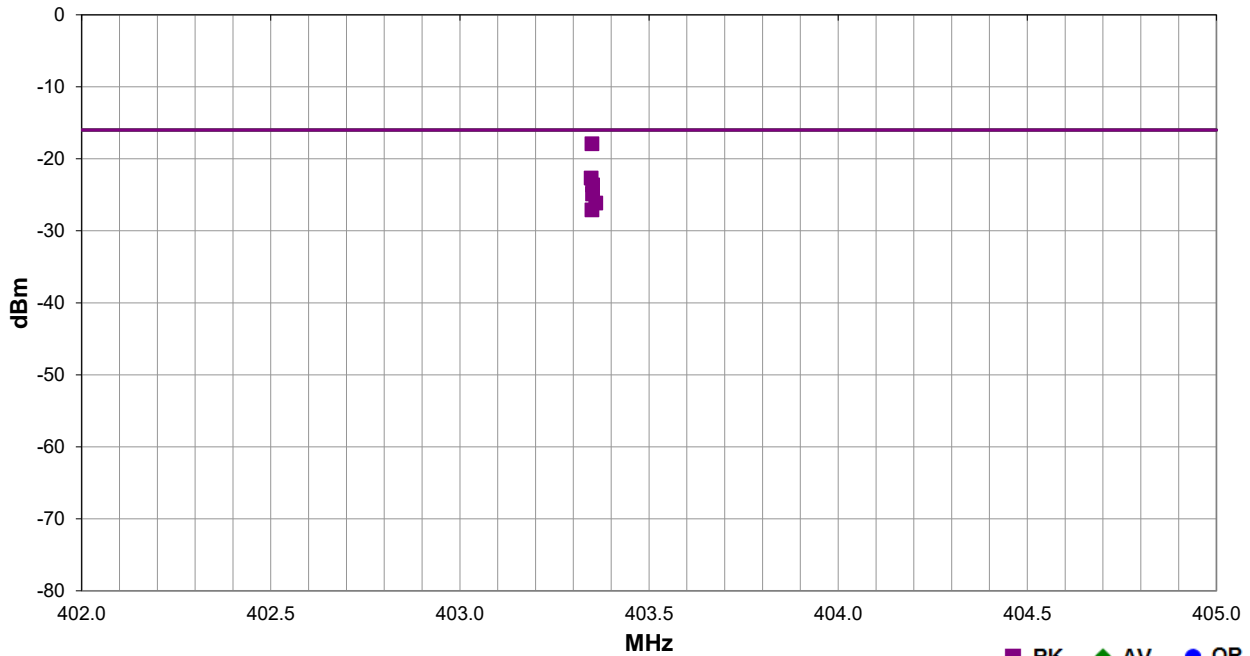


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
404.853	1.1	202.1	Vert	PK	1.44E-05	-18.4	-16.0	-2.4	High Ch. 404.85 MHz, EUT On Side
402.153	2.3	317.0	Horz	PK	1.30E-05	-18.9	-16.0	-2.9	Low Ch. 402.15 MHz, EUT Horz
403.350	1.0	209.1	Vert	PK	1.25E-05	-19.0	-16.0	-3.0	Mid Ch. 403.35 MHz, EUT On Side
404.850	2.3	321.0	Horz	PK	1.20E-05	-19.2	-16.0	-3.2	High Ch. 404.85 MHz, EUT Horz
402.148	1.0	197.0	Vert	PK	1.10E-05	-19.6	-16.0	-3.6	Low Ch. 402.15 MHz, EUT On Side
402.153	1.1	57.0	Vert	PK	9.61E-06	-20.2	-16.0	-4.2	Low Ch. 402.15 MHz, EUT Vert
403.352	1.0	148.1	Horz	PK	8.24E-06	-20.8	-16.0	-4.8	Mid Ch. 403.35 MHz, EUT Horz
402.147	1.9	211.0	Horz	PK	6.35E-06	-22.0	-16.0	-6.0	Low Ch. 402.15 MHz, EUT Vert
402.148	1.9	174.1	Horz	PK	5.28E-06	-22.8	-16.0	-6.8	Low Ch. 402.15 MHz, EUT On Side
402.150	1.2	159.1	Vert	PK	2.25E-06	-26.5	-16.0	-10.5	Low Ch. 402.15 MHz, EUT Horz

Work Order:	MDTR0481	Date:	06/08/16	
Project:	None	Temperature:	22.8 °C	
Job Site:	MN05	Humidity:	42.2% RH	
Serial Number:	SPM000300A	Barometric Pres.:	1018 mbar	
EUT:	24970A CareLink SmartSync™ Device Manager Base			
Configuration:	3			
Customer:	Medtronic, Inc.			
Attendees:	Nick Blake			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting using an unmodulated carrier.			
Deviations:	None			
Comments:	Antenna 2			

Test Specifications	Test Method
FCC 95I:2016	ANSI/TIA/EIA-603-D-2010

Run #	35	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	403.349	1.0	169.0	Vert	PK	1.62E-05	-17.90	-16.0	-1.9	Mid Ch 403.35 MHz, EUT On Side Ant 2
	403.347	1.0	201.0	Horz	PK	5.40E-06	-22.68	-16.0	-6.7	Mid Ch 403.35 MHz, EUT Horz, Ant 2
	403.350	1.3	250.0	Vert	PK	4.34E-06	-23.63	-16.0	-7.6	Mid Ch 403.35 MHz, EUT Vert Ant 2
	403.351	1.9	127.1	Horz	PK	3.25E-06	-24.88	-16.0	-8.9	Mid Ch 403.35 MHz, EUT Vert Ant 2
	403.359	1.0	310.0	Vert	PK	2.43E-06	-26.14	-16.0	-10.1	Mid Ch 403.35 MHz, EUT Horz, Ant 2
	403.349	1.0	193.0	Horz	PK	1.96E-06	-27.08	-16.0	-11.1	Mid Ch 403.35 MHz, EUT On Side Ant 2

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

Mid Channel 403.35 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0481 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 5000 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

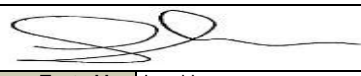
Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	3/1/2016	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	12/7/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	8/12/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	12/10/2015	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2016	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

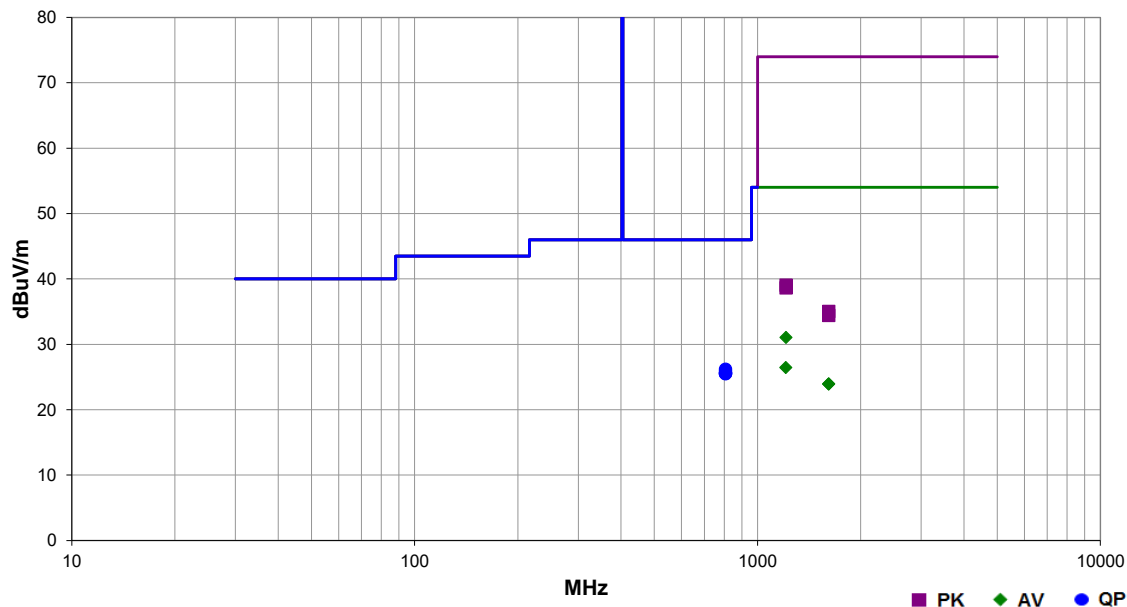
TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured in the modes listed in the datasheet. For each configuration, the spectrum was scanned throughout the specified range. 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, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10). A preamp was used for this test in order to provide sufficient measurement sensitivity.


Work Order:	MDTR0481	Date:	06/04/16	
Project:	None	Temperature:	22.6 °C	
Job Site:	MN05	Humidity:	49% RH	
Serial Number:	SPM000321A	Barometric Pres.:	1008 mbar	
EUT:	24970A CareLink SmartSync™ Device Manager Base			
Configuration:	1			
Customer:	Medtronic, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmit			
Deviations:	None			
Comments:	Antenna 1			

Test Specifications	Test Method
FCC 951:2016	ANSI/TIA/EIA-603-D-2010

Run #	30	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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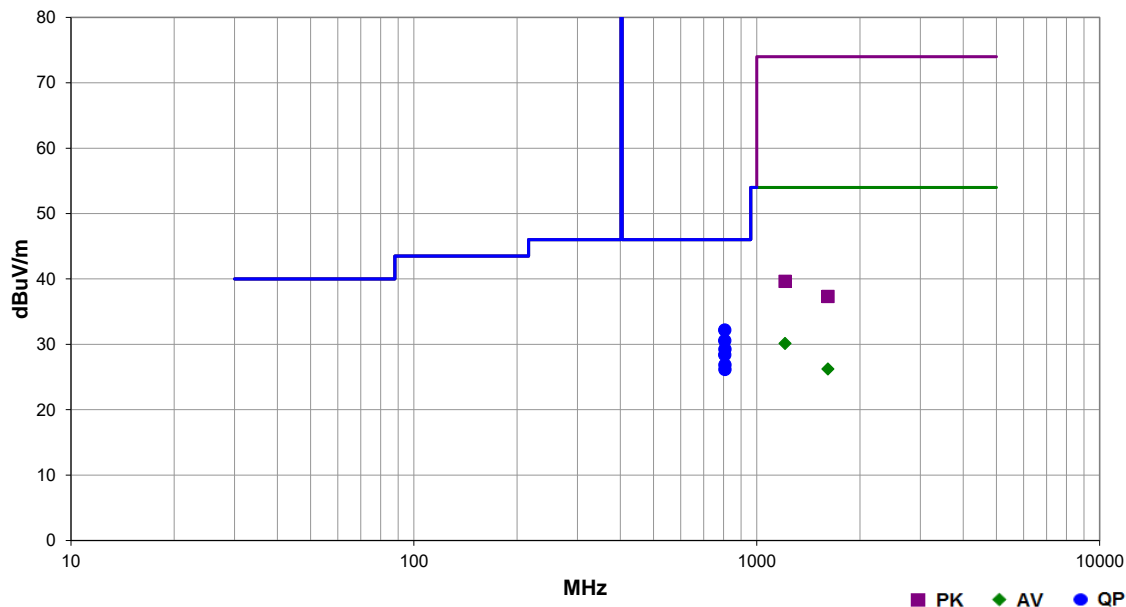


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
806.432	16.1	10.1	1.0	200.0	3.0	0.0	Horz	QP	0.0	26.2	46.0	-19.8	Mid Ch. 403.35 MHz, EUT On Side
806.405	15.8	10.1	2.0	164.0	3.0	0.0	Vert	QP	0.0	25.9	46.0	-20.1	Mid Ch. 403.35 MHz, EUT On Side
806.380	15.5	10.1	1.0	258.9	3.0	0.0	Horz	QP	0.0	25.6	46.0	-20.4	Mid Ch. 403.35 MHz, EUT Vert
806.407	15.5	10.1	1.9	276.9	3.0	0.0	Vert	QP	0.0	25.6	46.0	-20.4	Mid Ch. 403.35 MHz, EUT Horz
806.437	15.5	10.1	1.9	53.0	3.0	0.0	Horz	QP	0.0	25.6	46.0	-20.4	Mid Ch. 403.35 MHz, EUT Horz
806.317	15.4	10.1	3.0	96.0	3.0	0.0	Vert	QP	0.0	25.5	46.0	-20.5	Mid Ch. 403.35 MHz, EUT Vert
1211.015	38.6	-7.6	3.9	209.1	3.0	0.0	Horz	AV	0.0	31.0	54.0	-23.0	Mid Ch. 403.35 MHz, EUT On Side
1209.495	34.0	-7.6	1.0	301.9	3.0	0.0	Vert	AV	0.0	26.4	54.0	-27.6	Mid Ch. 403.35 MHz, EUT On Side
1612.920	30.1	-6.2	1.0	286.9	3.0	0.0	Vert	AV	0.0	23.9	54.0	-30.1	Mid Ch. 403.35 MHz, EUT On Side
1612.705	30.1	-6.2	1.0	45.0	3.0	0.0	Horz	AV	0.0	23.9	54.0	-30.1	Mid Ch. 403.35 MHz, EUT On Side
1211.100	46.6	-7.6	3.9	209.1	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	Mid Ch. 403.35 MHz, EUT On Side
1210.490	46.2	-7.6	1.0	301.9	3.0	0.0	Vert	PK	0.0	38.6	74.0	-35.4	Mid Ch. 403.35 MHz, EUT On Side
1614.205	41.2	-6.2	1.0	45.0	3.0	0.0	Horz	PK	0.0	35.0	74.0	-39.0	Mid Ch. 403.35 MHz, EUT On Side
1612.525	40.6	-6.2	1.0	286.9	3.0	0.0	Vert	PK	0.0	34.4	74.0	-39.6	Mid Ch. 403.35 MHz, EUT On Side

Work Order:	MDTR0481	Date:	06/11/16		
Project:	None	Temperature:	22.6 °C		
Job Site:	MN05	Humidity:	61.2% RH		
Serial Number:	SPM000300A	Barometric Pres.:	1017 mbar		
EUT:	24970A CareLink SmartSync™ Device Manager Base			Tested by:	Jared Ison
Configuration:	3				
Customer:	Medtronic, Inc.				
Attendees:	Nick Blake				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmit				
Deviations:	None				
Comments:	Antenna 2				

Test Specifications	FCC 951:2016	Test Method	ANSI/TIA/EIA-603-D-2010
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Run #	40	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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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
806.590	22.1	10.1	2.0	211.0	3.0	0.0	Horz	QP	0.0	32.2	46.0	-13.8	Mid Ch. 403.35 MHz, EUT Horz
806.922	20.5	10.1	1.0	193.0	3.0	0.0	Horz	QP	0.0	30.6	46.0	-15.4	Mid Ch. 403.35 MHz, EUT Vert
807.087	19.2	10.1	1.1	186.0	3.0	0.0	Horz	QP	0.0	29.3	46.0	-16.7	Mid Ch. 403.35 MHz, EUT On Side
806.555	18.3	10.1	1.7	189.0	3.0	0.0	Vert	QP	0.0	28.4	46.0	-17.6	Mid Ch. 403.35 MHz, EUT On Side
807.075	16.8	10.1	1.0	199.1	3.0	0.0	Vert	QP	0.0	26.9	46.0	-19.1	Mid Ch. 403.35 MHz, EUT Horz
807.017	16.1	10.1	1.0	315.0	3.0	0.0	Vert	QP	0.0	26.2	46.0	-19.8	Mid Ch. 403.35 MHz, EUT Vert
1210.255	37.7	-7.6	1.0	351.9	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9	Mid Ch. 403.35 MHz, EUT Horz
1612.680	32.4	-6.2	1.0	219.0	3.0	0.0	Horz	AV	0.0	26.2	54.0	-27.8	Mid Ch. 403.35 MHz, EUT Horz
1210.060	47.2	-7.6	1.0	351.9	3.0	0.0	Horz	PK	0.0	39.6	74.0	-34.4	Mid Ch. 403.35 MHz, EUT Horz
1612.635	43.5	-6.2	1.0	219.0	3.0	0.0	Horz	PK	0.0	37.3	74.0	-36.7	Mid Ch. 403.35 MHz, EUT Horz

POWERLINE CONDUCTED EMISSIONS

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
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/21/2016	3/21/2017
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, TYK	MNCA	1/29/2016	1/29/2017
Analyzer - Spectrum Analyzer	Agilent	E4443A	AAS	3/8/2016	3/8/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MDTR0481-2

MODES INVESTIGATED

Transmit, Mid Channel 403.35 MHz

POWERLINE CONDUCTED EMISSIONS

EUT:	24970A CareLink SmartSync™ Device Manager Base	Work Order:	MDTR0481
Serial Number:	SPM000321A	Date:	06/05/2016
Customer:	Medtronic, Inc.	Temperature:	22.7°C
Attendees:	None	Relative Humidity:	49.1%
Customer Project:	None	Bar. Pressure:	1008 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0481-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

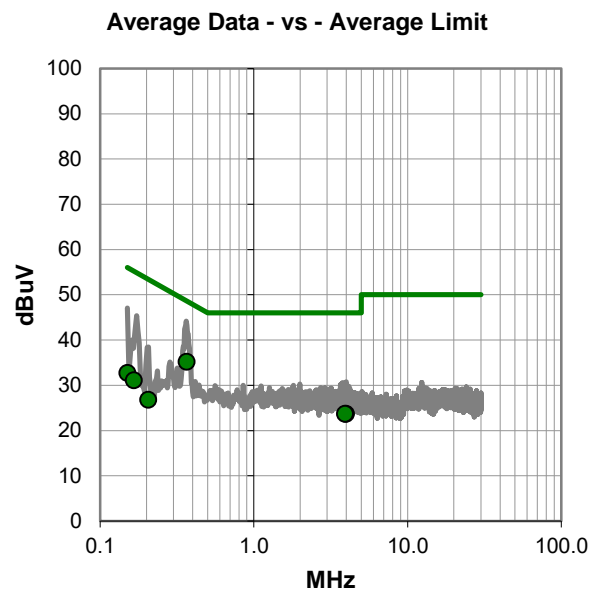
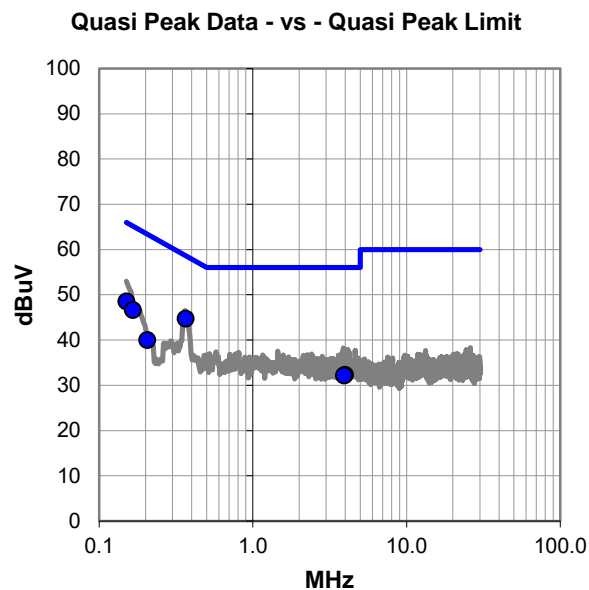
None

EUT OPERATING MODES

Transmit, Mid Channel 403.35 MHz

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

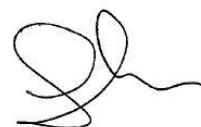
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.366	24.5	20.2	44.7	58.6	-13.9
0.151	28.1	20.4	48.5	66.0	-17.5
0.166	26.2	20.4	46.6	65.2	-18.6
0.206	19.7	20.3	40.0	63.4	-23.4
3.982	12.0	20.3	32.3	56.0	-23.7
3.918	11.9	20.3	32.2	56.0	-23.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.366	15.0	20.2	35.2	48.6	-13.4
3.982	3.4	20.3	23.7	46.0	-22.3
3.918	3.4	20.3	23.7	46.0	-22.3
0.151	12.3	20.4	32.7	56.0	-23.3
0.166	10.7	20.4	31.1	55.2	-24.1
0.206	6.5	20.3	26.8	53.4	-26.6

CONCLUSION

Pass



Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	24970A CareLink SmartSync™ Device Manager Base	Work Order:	MDTR0481
Serial Number:	SPM000321A	Date:	06/05/2016
Customer:	Medtronic, Inc.	Temperature:	22.7°C
Attendees:	None	Relative Humidity:	49.1%
Customer Project:	None	Bar. Pressure:	1008 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0481-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

None

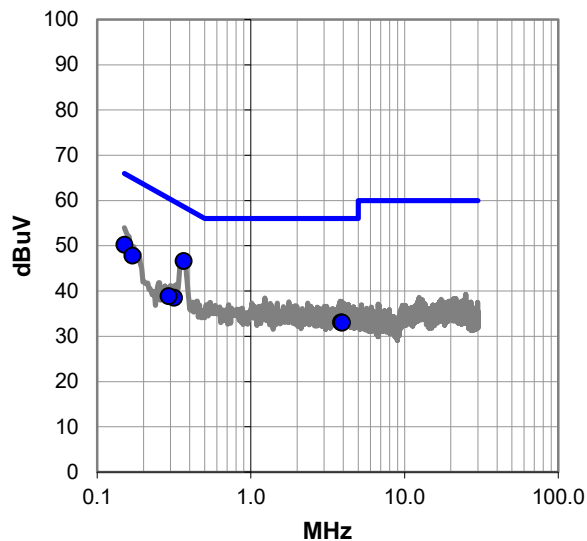
EUT OPERATING MODES

Transmit, Mid Channel 403.35 MHz

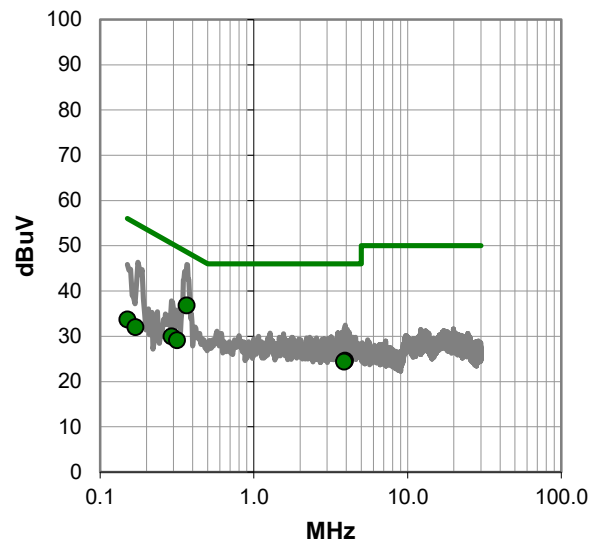
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

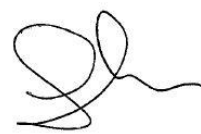
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.366	26.4	20.2	46.6	58.6	-12.0
0.150	29.8	20.4	50.2	66.0	-15.8
0.170	27.4	20.4	47.8	65.0	-17.2
0.316	18.3	20.2	38.5	59.8	-21.3
0.293	18.6	20.2	38.8	60.5	-21.6
3.877	12.8	20.3	33.1	56.0	-22.9
3.928	12.7	20.3	33.0	56.0	-23.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.366	16.6	20.2	36.8	48.6	-11.8
0.293	9.7	20.2	29.9	50.5	-20.5
0.316	8.9	20.2	29.1	49.8	-20.7
3.928	4.3	20.3	24.6	46.0	-21.4
3.877	4.1	20.3	24.4	46.0	-21.6
0.150	13.3	20.4	33.7	56.0	-22.3
0.170	11.6	20.4	32.0	55.0	-23.0

CONCLUSION

Pass



Tested By