



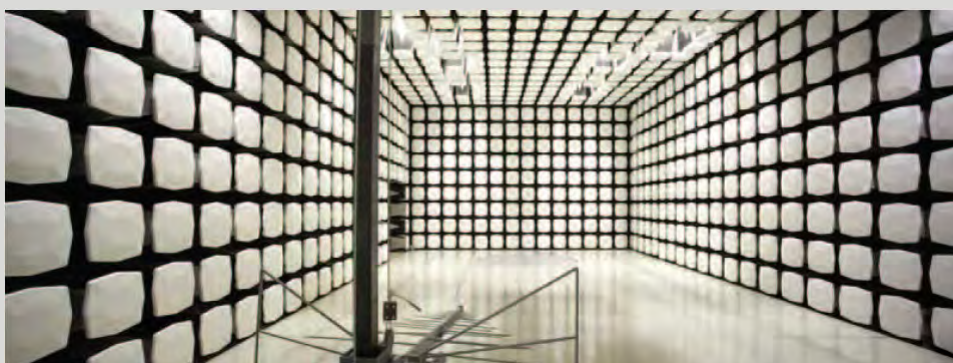
Medtronic Inc.
MyCareLink™ Patient Monitor
Model 24950

FCC 15.109:2012

FCC 95I:2012

FCC 15.207:2012

Report #: MDTR0183.7



Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: August 13, 2012
Medtronic Inc.
MyCareLink™ Patient Monitor
Model 24950

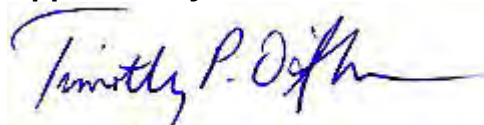
Emissions

Test Description	Specification	Test Method	Pass/Fail
Field Strength of Fundamental	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
Emission Mask	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
Emissions Bandwidth	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
Frequency Stability	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
Output Power	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
Receiver Spurious Emissions	FCC 15.109:2012 Class B	ANSI C63.4:2009	Pass
Spurious Radiated Emissions	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200881-0

Test Facility

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

Northwest EMC, Inc.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

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

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

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

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Hong Kong

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

Vietnam

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

Russia

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

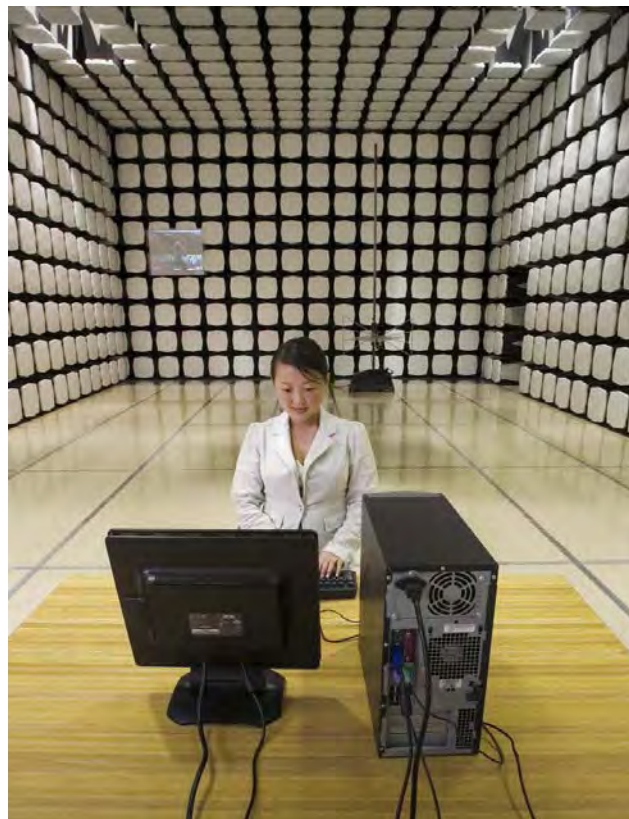
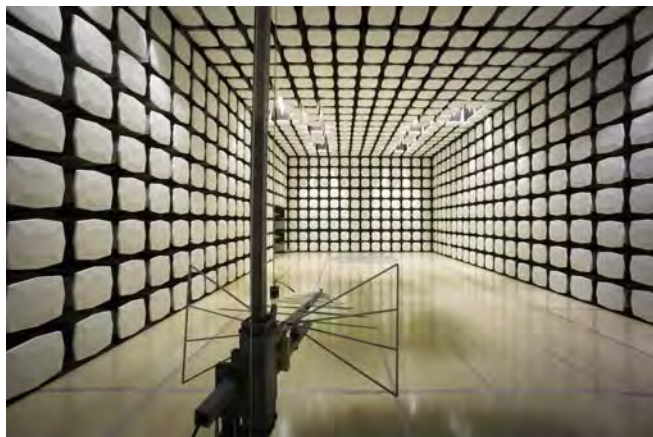
SCOPE

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

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



Oregon Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs SU01-SU07 14128 339 th Ave. SE Sultan, WA 98294 (360) 793-8675
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic Inc.
Address:	710 Medtronic Parkway, LS250
City, State, Zip:	Fridley, MN 55432
Test Requested By:	Thomas Kelly
Model:	MyCareLink™ Patient Monitor model 24950
First Date of Test:	July 13, 2012
Last Date of Test:	August 13, 2012
Receipt Date of Samples:	July 11, 2012
Equipment Design Stage:	Qualification Build
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The system consists of a home monitor base station and a handheld reader. The base station includes a MICS transmitter and Bluetooth transmitter. The reader has an inductive transmitter and a pre-certified Bluetooth transmitter.

Testing Objective:

To demonstrate compliance to FCC requirements for the MICS transmitter.

Configuration MDTR0183- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Base Station	Medtronic Inc.	24950	YDM000107A

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC adapter	SL Power	MENB1020A0502C02	SLP #20
Laptop	Dell	Latitude D620	19811181277
Laptop AC Adapter	Dell	DA90PS1-00	CN-0MM545-48661-815-0JIX
Reader	Medtronic Inc.	24955	RFH000105A

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	2.0m	Yes	Base Station	AC adapter
AC Power	No	1.8m	No	Laptop AC Adapter	AC Mains
DC Power	No	1.8m	Yes	Laptop	Laptop AC Adapter
USB	Yes	1.8m	No	Laptop	Base Station
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MDTR0183- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Base Station	Medtronic Inc.	24950	YDM000106A
Reader	Medtronic Inc.	24955	RFH000116A

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC adapter	SL Power	MENB1020A0502C02	SLP #20

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB to Phone	No	3.1m	No	Base Station	Unterminated
DC Power	No	2.0m	Yes	Base Station	AC adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/13/2012	Field Strength of Fundamental	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	7/18/2012	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.
3	7/18/2012	Emissions 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	7/18/2012	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	7/31/2012	Receiver Spurious 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	8/2/2012	AC Powerline 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.
7	8/8/2012	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.
8	8/13/2012	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Field Strength of Fundamental

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 MICS CW, Antenna 1, Channels 1, 5, 10: 402.15, 403.35, 404.85 MHz (See Comments)

Transmitting MICS CW, Antenna 0, Channels 1, 5, 10: 402.15, 403.35, 404.85 MHz (See Comments)

POWER SETTINGS INVESTIGATED

5VDC

CONFIGURATIONS INVESTIGATED

MDTR0183 - 2

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
Antenna, Bilog	Teseq	CBL 6141B	AYD	12/19/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	5/31/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	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

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Per 95.627(g)(3), the maximum radiated field strength for a MICS transmitter is 18.2 mV/m. This is equivalent to a radiated field strength of 85.2 dBuV/m at 3 meters when measured over a reference ground plane. $85.2 = 20 * \text{LOG}(18.2 * 1000)$

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.



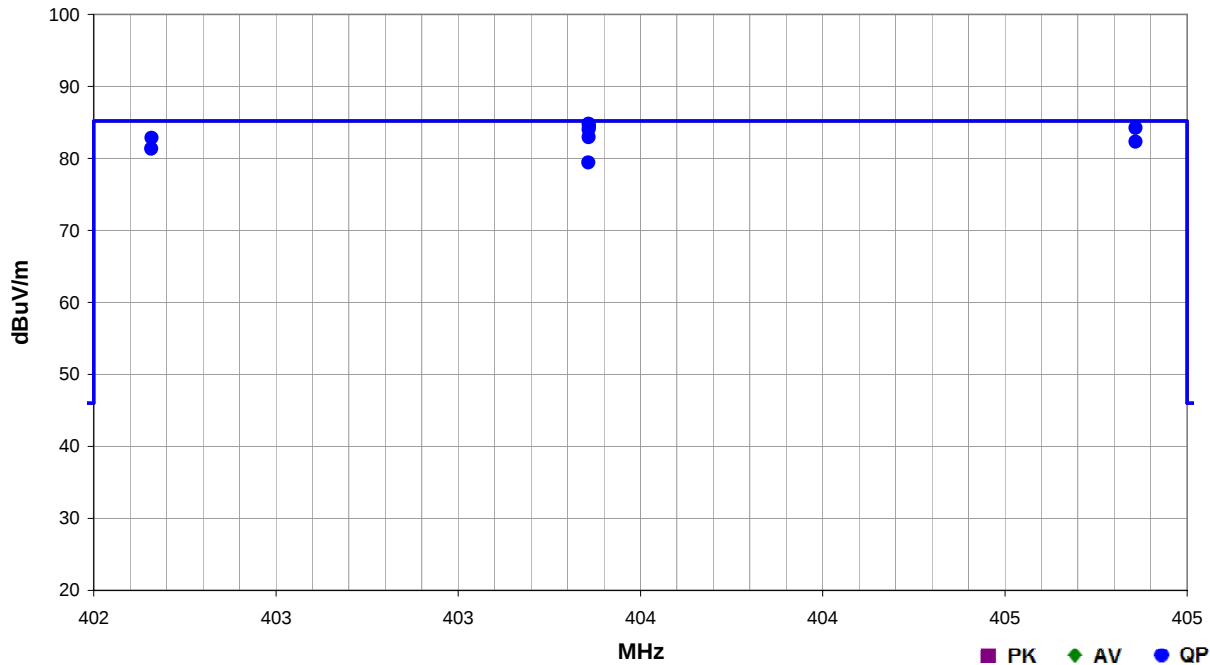
Field Strength of Fundamental

PSA-ESCI 2012.05.07
PSA-ESCI Version 2011.12.21

Work Order:	MDTR0183	Date:	07/13/12	<i>Trevor Buls</i>
Project:	None	Temperature:	22.9 °C	
Job Site:	MN05	Humidity:	55.84% RH	
Serial Number:	YDM000106A	Barometric Pres.:	1014.8 mbar	
Tested by: Trevor Buls				
EUT:	Base			
Configuration:	2			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5VDC			
Operating Mode:	Transmitting MICS CW, Antenna 0, Channels 1, 5, 10: 402.15, 403.35, 404.85 MHz (See Comments)			
Deviations:	None			
Comments:	Medtronic Test Plan Config 5.			

Test Specifications	Test Method
FCC 951:2012	ANSI/TIA/EIA-603-C:2004

Run #	36	Test Distance (m)	3	Antenna Height(s)	1-4m	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
403.358	62.7	22.1	1.8	144.0	3.0	0.0	Horz	QP	0.0	84.8	85.2	-0.4	EUT Vertical, Mid Ch
403.359	62.4	22.1	1.0	221.0	3.0	0.0	Vert	QP	0.0	84.5	85.2	-0.7	EUT Vertical, Mid Ch
403.359	62.2	22.1	1.1	233.0	3.0	0.0	Vert	QP	0.0	84.3	85.2	-0.9	EUT on Side, Mid Ch
404.859	62.0	22.2	1.6	132.0	3.0	0.0	Horz	QP	0.0	84.2	85.2	-1.0	EUT Vertical, High Ch
403.358	61.9	22.1	1.9	27.0	3.0	0.0	Horz	QP	0.0	84.0	85.2	-1.2	EUT Horizontal, Mid Ch
403.358	60.8	22.1	1.6	213.0	3.0	0.0	Horz	QP	0.0	82.9	85.2	-2.3	EUT on Side, Mid Ch
402.159	60.8	22.0	1.9	26.0	3.0	0.0	Horz	QP	0.0	82.8	85.2	-2.4	EUT Vertical, Low Ch
404.859	60.1	22.2	1.0	350.0	3.0	0.0	Vert	QP	0.0	82.3	85.2	-2.9	EUT Vertical, High Ch
402.158	59.3	22.0	1.0	247.0	3.0	0.0	Vert	QP	0.0	81.3	85.2	-3.9	EUT Vertical, Low Ch
403.358	57.3	22.1	1.0	199.0	3.0	0.0	Vert	QP	0.0	79.4	85.2	-5.8	EUT Horizontal, Mid Ch



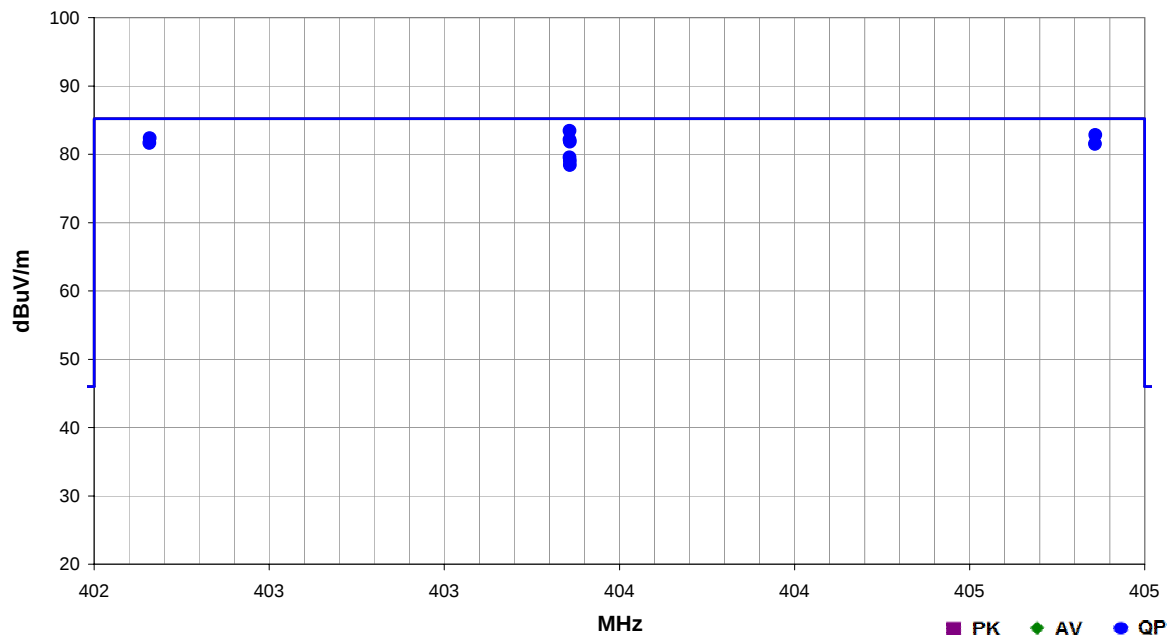
Field Strength of Fundamental

PSA-ESCI 2012.05.07
PSA-ESCI Version 2011.12.21

Work Order:	MDTR0183	Date:	07/13/12	<i>Trevor Buls</i>	
Project:	None	Temperature:	22.9 °C		
Job Site:	MN05	Humidity:	55.84% RH		
Serial Number:	YDM000106A	Barometric Pres.:	1014.8 mbar	Tested by:	Trevor Buls
EUT:	Base				
Configuration:	2				
Customer:	Medtronic Inc.				
Attendees:	None				
EUT Power:	5VDC				
Operating Mode:	Transmitting MICS CW, Antenna 1, Channels 1, 5, 10: 402.15, 403.35, 404.85 MHz (See Comments)				
Deviations:	None				
Comments:	Medtronic Test Plan Config 5.				

Test Specifications	Test Method
FCC 951:2012	ANSI/TIA/EIA-603-C:2004

Run #	37	Test Distance (m)	3	Antenna Height(s)	1-4m	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
403.358	61.3	22.1	1.9	283.0	3.0	0.0	Horz	QP	0.0	83.4	85.2	-1.8	EUT Horizontal, Mid Ch
404.859	60.6	22.2	1.9	114.0	3.0	0.0	Horz	QP	0.0	82.8	85.2	-2.4	EUT Horizontal, High Ch
402.159	60.3	22.0	1.8	116.0	3.0	0.0	Horz	QP	0.0	82.3	85.2	-2.9	EUT Horizontal, Low Ch
403.358	60.0	22.1	1.1	99.0	3.0	0.0	Vert	QP	0.0	82.1	85.2	-3.1	EUT Vertical, Mid Ch
403.359	59.7	22.1	1.1	193.0	3.0	0.0	Vert	QP	0.0	81.8	85.2	-3.4	EUT on Side, Mid Ch
402.158	59.6	22.0	1.0	59.0	3.0	0.0	Vert	QP	0.0	81.6	85.2	-3.6	EUT Vertical, Low Ch
404.859	59.3	22.2	1.0	60.0	3.0	0.0	Vert	QP	0.0	81.5	85.2	-3.7	EUT Vertical, High Ch
403.358	57.4	22.1	1.9	3.0	3.0	0.0	Horz	QP	0.0	79.5	85.2	-5.7	EUT on Side, Mid Ch
403.359	56.9	22.1	1.6	220.0	3.0	0.0	Horz	QP	0.0	79.0	85.2	-6.2	EUT Vertical, Mid Ch
403.359	56.3	22.1	1.8	217.0	3.0	0.0	Vert	QP	0.0	78.4	85.2	-6.8	EUT Horizontal, Mid Ch

Emissions 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
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/19/2012	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	24
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

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.



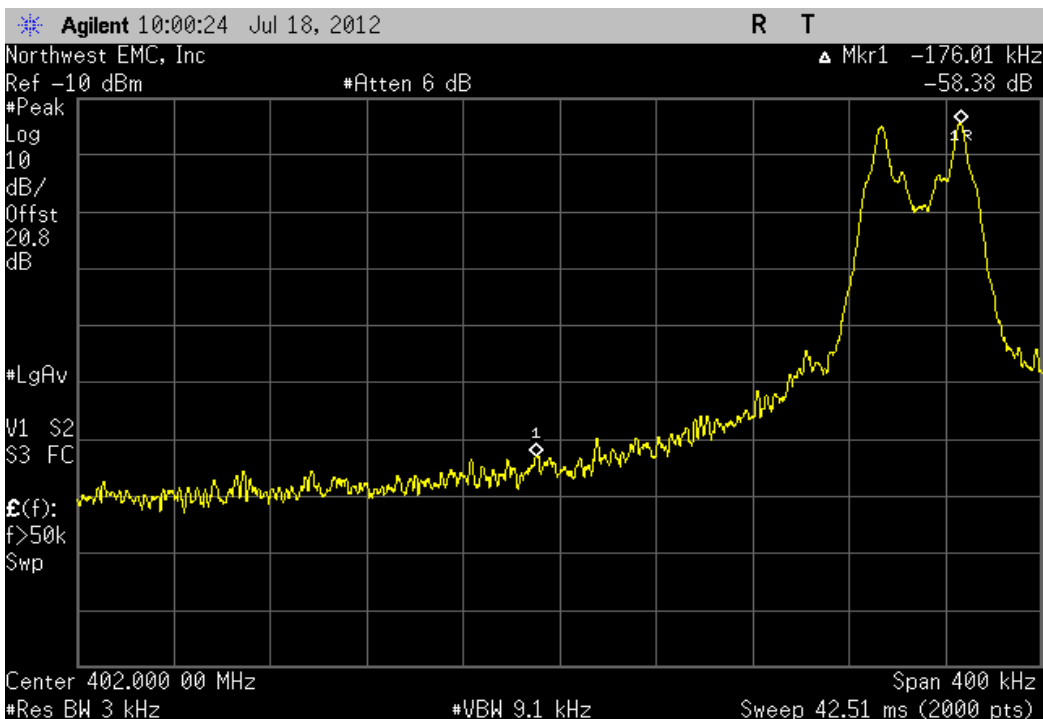
Emissions Mask

XMit 2012.05.09
PsaTx 2012.05.24

EUT: Base		Work Order: MDTR0183	
Serial Number: YDM000107A		Date: 07/18/12	
Customer: Medtronic Inc.		Temperature: 23.63°C	
Attendees: None		Humidity: 57%	
Project: None		Barometric Pres.: 1011.0	
Tested by: Trevor Buls		Power: 5VDC	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 95:2012		Test Method	
		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Per Medtronic Test Plan config 5			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Low Channel, 402.15 MHz		-58.38 dBc	≤ -20 dBc
High Channel, 404.85 MHz		-58.32 dBc	≤ -20 dBc
			Result
			Pass
			Pass

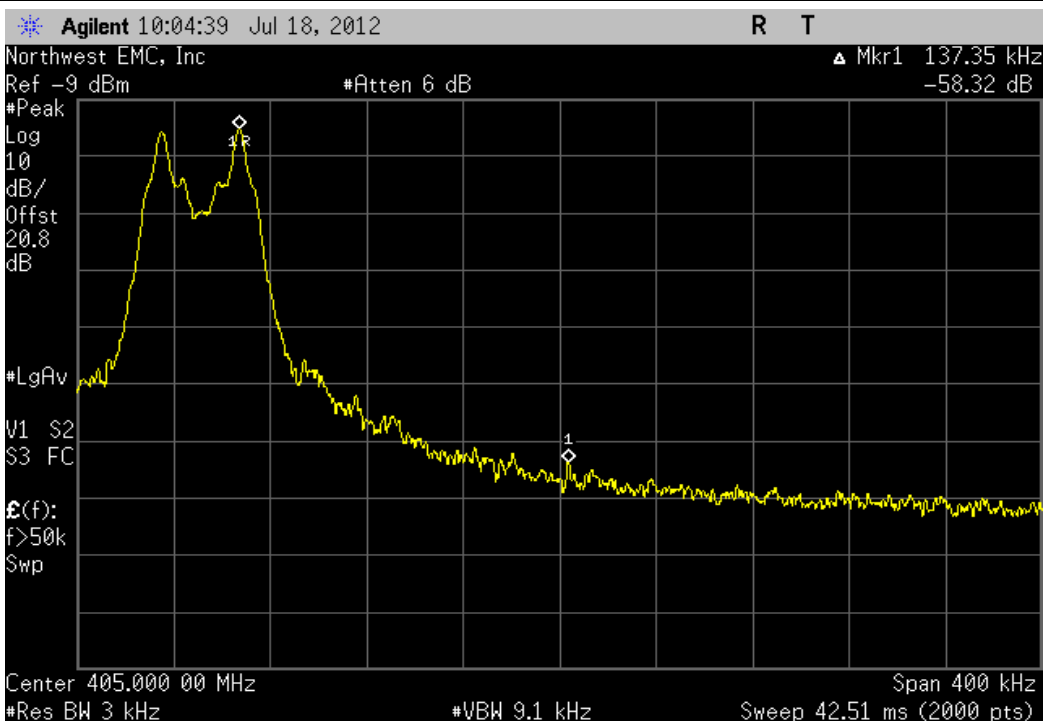
Low Channel, 402.15 MHz

	Value	Limit	Result
	-58.38 dBc	≤ -20 dBc	Pass



High Channel, 404.85 MHz

	Value	Limit	Result
	-58.32 dBc	≤ -20 dBc	Pass



Emission 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
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/19/2012	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	24
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

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.



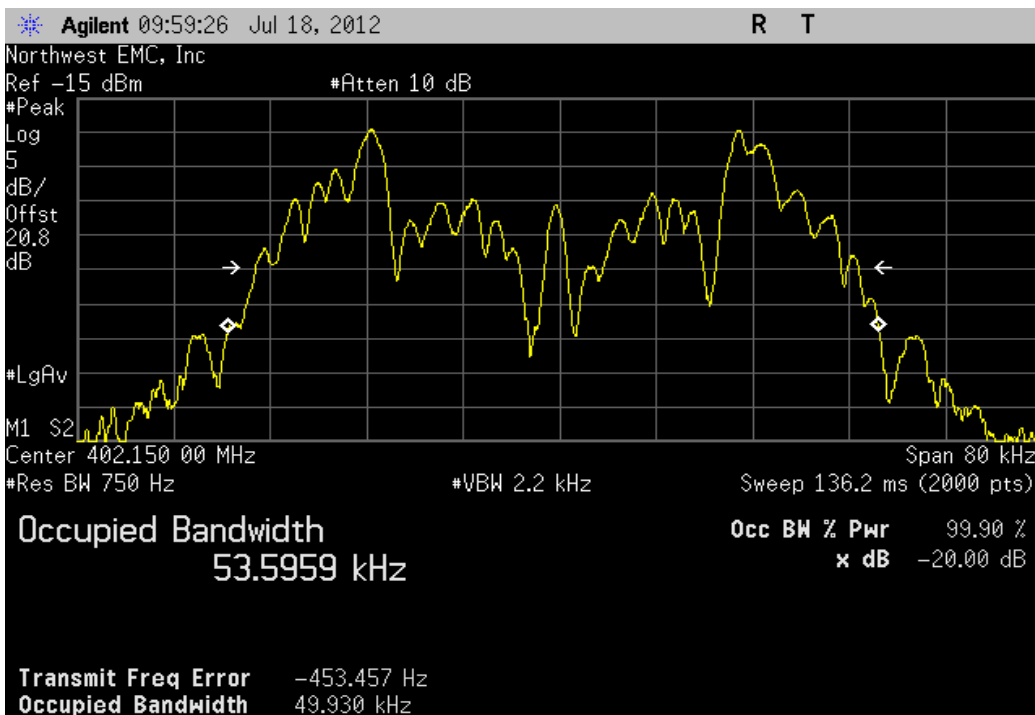
Emission Bandwidth

XMit 2012.05.09
PsaTx 2012.05.24

EUT: Base		Work Order: MDTR0183	
Serial Number: YDM000107A		Date: 07/18/12	
Customer: Medtronic Inc.		Temperature: 23.63°C	
Attendees: None		Humidity: 57%	
Project: None		Barometric Pres.: 1011.0	
Tested by: Trevor Buls		Power: 5VDC	
		Job Site: MN08	
TEST SPECIFICATIONS			
		Test Method	
FCC 95:2012		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Per Medtronic Test Plan config 5			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Low Channel, 402.15 MHz		49.93 kHz	≤ 300 kHz
Mid Channel, 403.35 MHz		49.835 kHz	≤ 300 kHz
High Channel, 404.85 MHz		49.778 kHz	≤ 300 kHz
			Result
			Pass
			Pass
			Pass

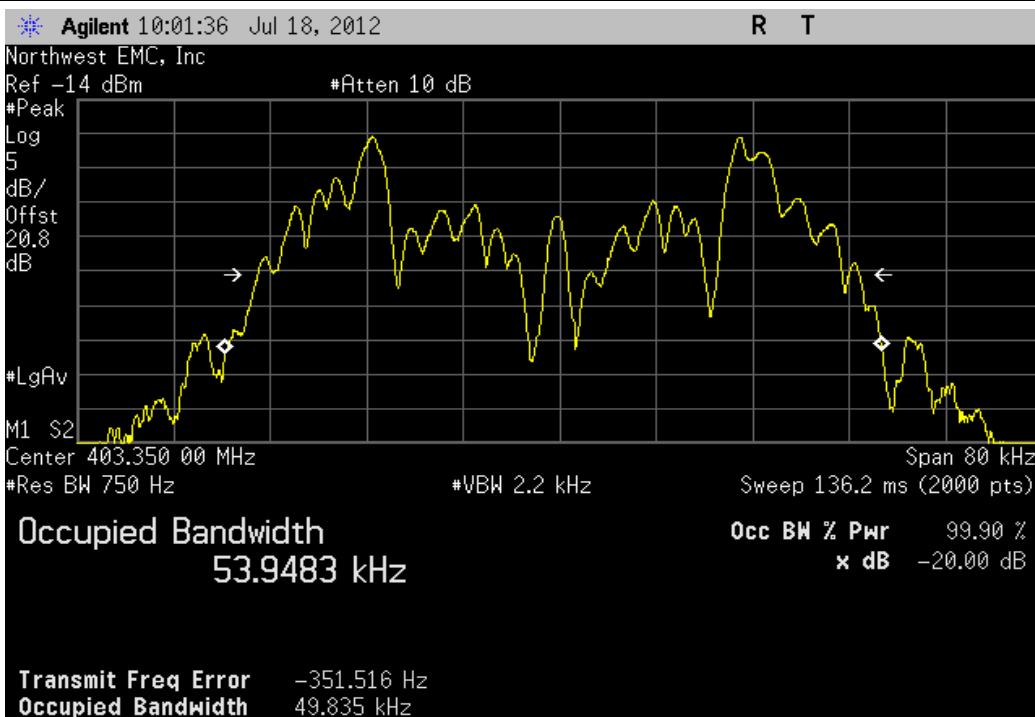
Low Channel, 402.15 MHz

	Value	Limit	Result
	49.93 kHz	≤ 300 kHz	Pass



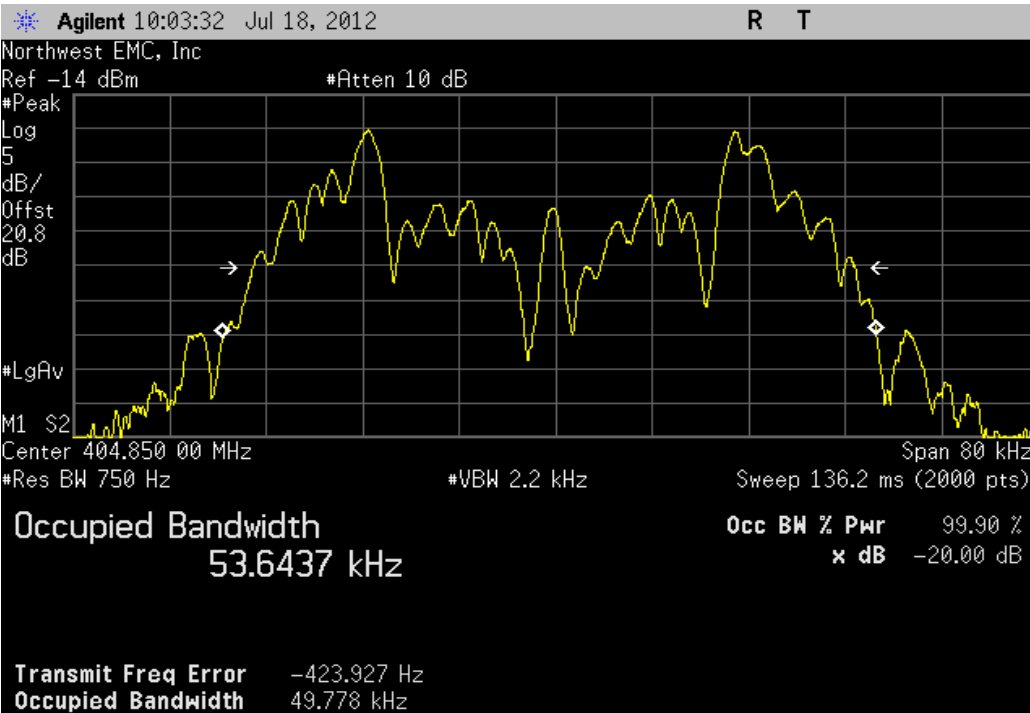
Mid Channel, 403.35 MHz

	Value	Limit	Result
	49.835 kHz	≤ 300 kHz	Pass



High Channel, 404.85 MHz

Value	Limit	Result
49.778 kHz	≤ 300 kHz	Pass



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
Variable Transformer	Powerstat	236B	XFF	NCR	0
Multimeter	Fluke	117	MNN	2/3/2012	24
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	24
Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of the nominal voltage (102VAC to 138VAC). A Variable Transformer was used to vary the supply voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (+55° to 0°C at 10° C intervals).

The Frequency Stability was measured using a direct connection to 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.

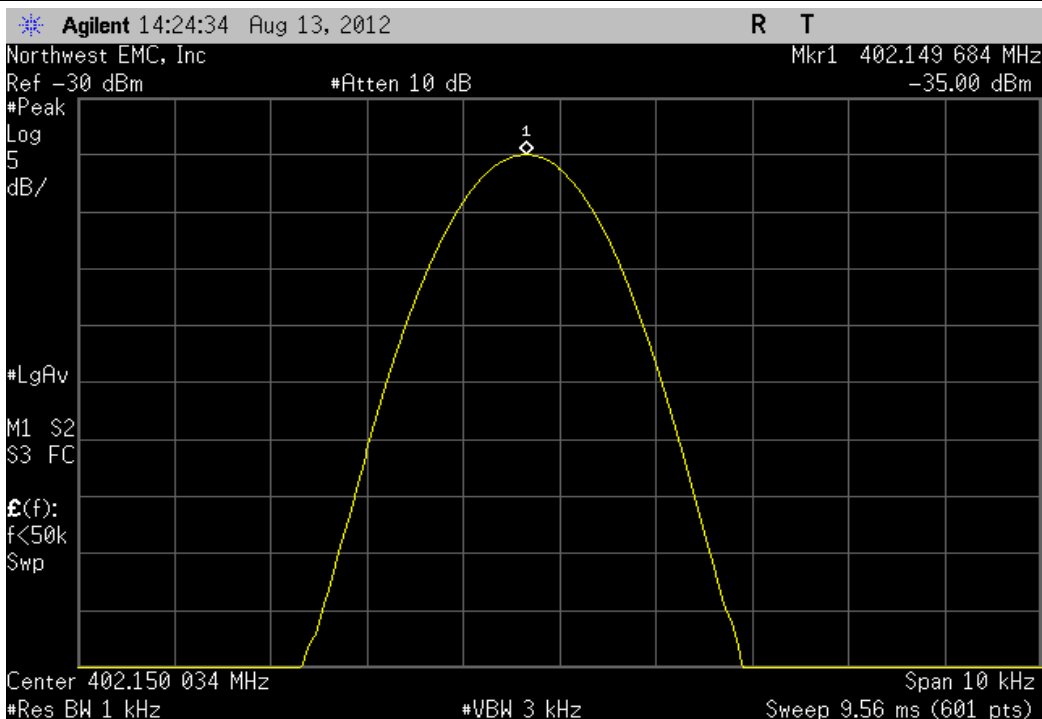


Frequency Stability

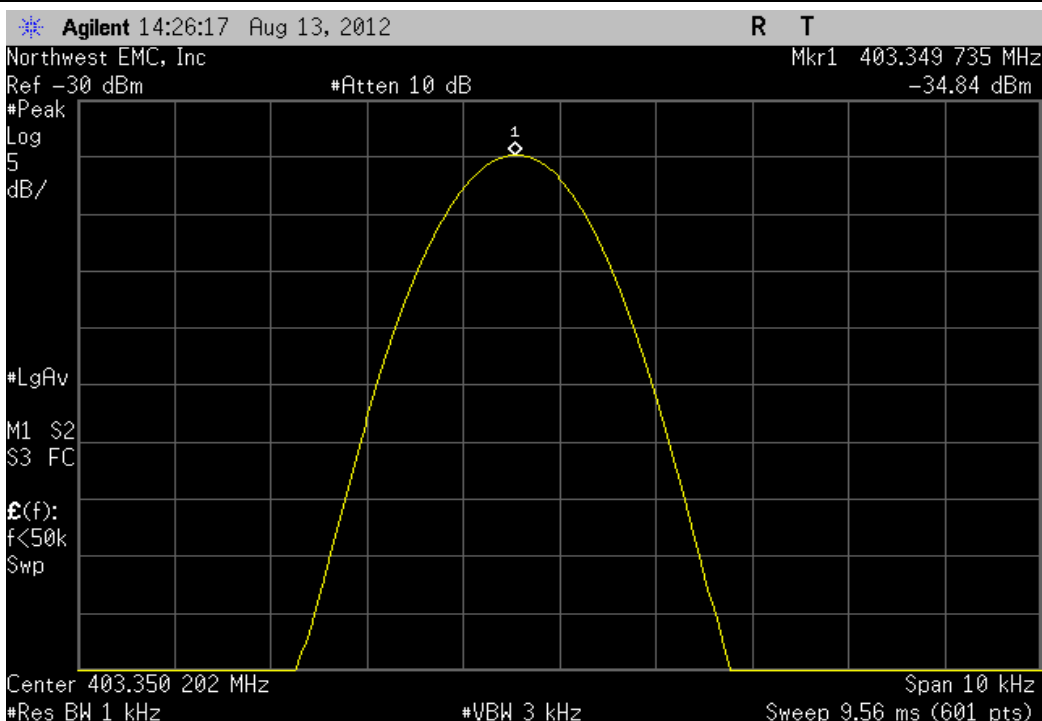
XMit 2012.07.31
PsaTx 2012.08.02

EUT: Base		Work Order: MDTR0183	
Serial Number: YDM000107A		Date: 08/13/12	
Customer: Medtronic Inc.		Temperature: 23.63°C	
Attendees: None		Humidity: 50%	
Project: None		Barometric Pres.: 1014.1	
Tested by: Trevor Buls		Power: 120VAC/60Hz	
		Job Site: MN05	
TEST SPECIFICATIONS		Test Method	
FCC 951:2012		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Per Medtronic Test Plan config 5			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Measured Value (MHz)	Assigned Value (MHz)
		Error (ppm)	Limit (ppm)
			Result
Normal Voltage			
	Low Channel, 402.15 MHz	402.149684	402.15
	Mid Channel, 403.35 MHz	403.349735	403.35
	High Channel, 404.85 MHz	404.849704	404.85
Extreme Voltage +15%			
	Low Channel, 402.15 MHz	402.149684	402.15
	Mid Channel, 403.35 MHz	403.349769	403.35
	High Channel, 404.85 MHz	404.849737	404.85
Extreme Voltage -15%			
	Low Channel, 402.15 MHz	402.149651	402.15
	Mid Channel, 403.35 MHz	403.349736	403.35
	High Channel, 404.85 MHz	404.84972	404.85
Extreme Temperature +55°C			
	Low Channel, 402.15 MHz	402.15087	402.15
	Mid Channel, 403.35 MHz	403.350971	403.35
	High Channel, 404.85 MHz	404.85094	404.85
Extreme Temperature +45°C			
	Low Channel, 402.15 MHz	402.150052	402.15
	Mid Channel, 403.35 MHz	403.350136	403.35
	High Channel, 404.85 MHz	404.850105	404.85
Extreme Temperature +35°C			
	Low Channel, 402.15 MHz	402.149702	402.15
	Mid Channel, 403.35 MHz	403.349786	403.35
	High Channel, 404.85 MHz	404.84977	404.85
Extreme Temperature +25°C			
	Low Channel, 402.15 MHz	402.149669	402.15
	Mid Channel, 403.35 MHz	403.349752	403.35
	High Channel, 404.85 MHz	404.84972	404.85
Extreme Temperature +15°C			
	Low Channel, 402.15 MHz	402.149601	402.15
	Mid Channel, 403.35 MHz	403.349685	403.35
	High Channel, 404.85 MHz	404.849653	404.85
Extreme Temperature +5°C			
	Low Channel, 402.15 MHz	402.149184	402.15
	Mid Channel, 403.35 MHz	403.349269	403.35
	High Channel, 404.85 MHz	404.849237	404.85
Extreme Temperature 0°C			
	Low Channel, 402.15 MHz	402.148817	402.15
	Mid Channel, 403.35 MHz	403.348901	403.35
	High Channel, 404.85 MHz	404.848853	404.85

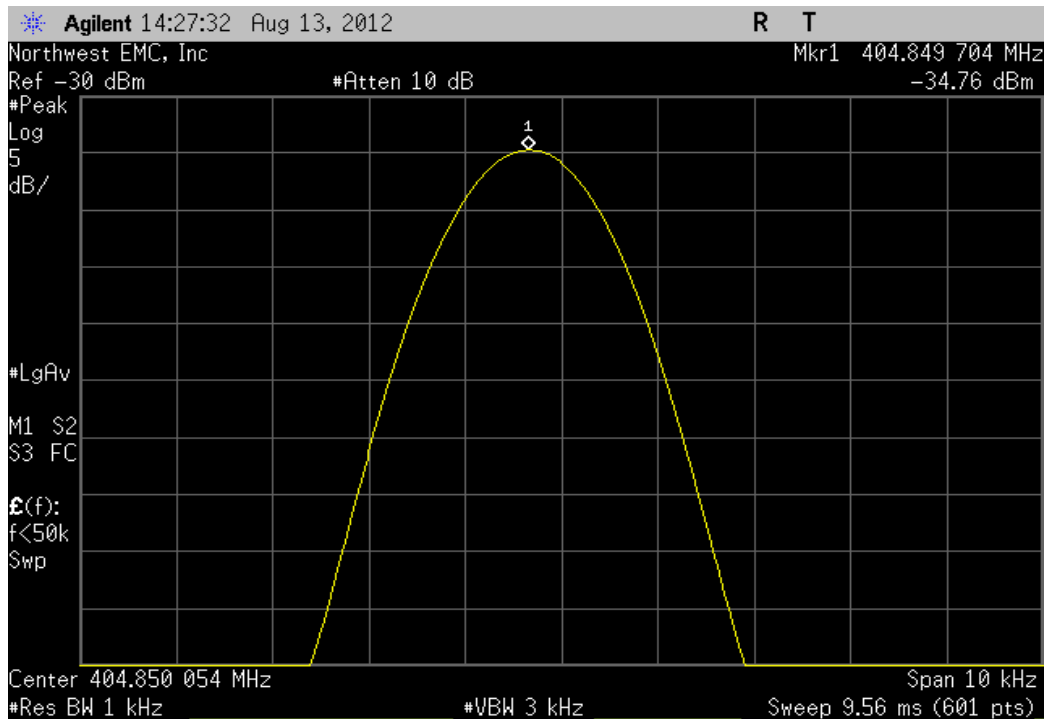
Normal Voltage, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	402.149684	402.15	0.79	100	Pass	



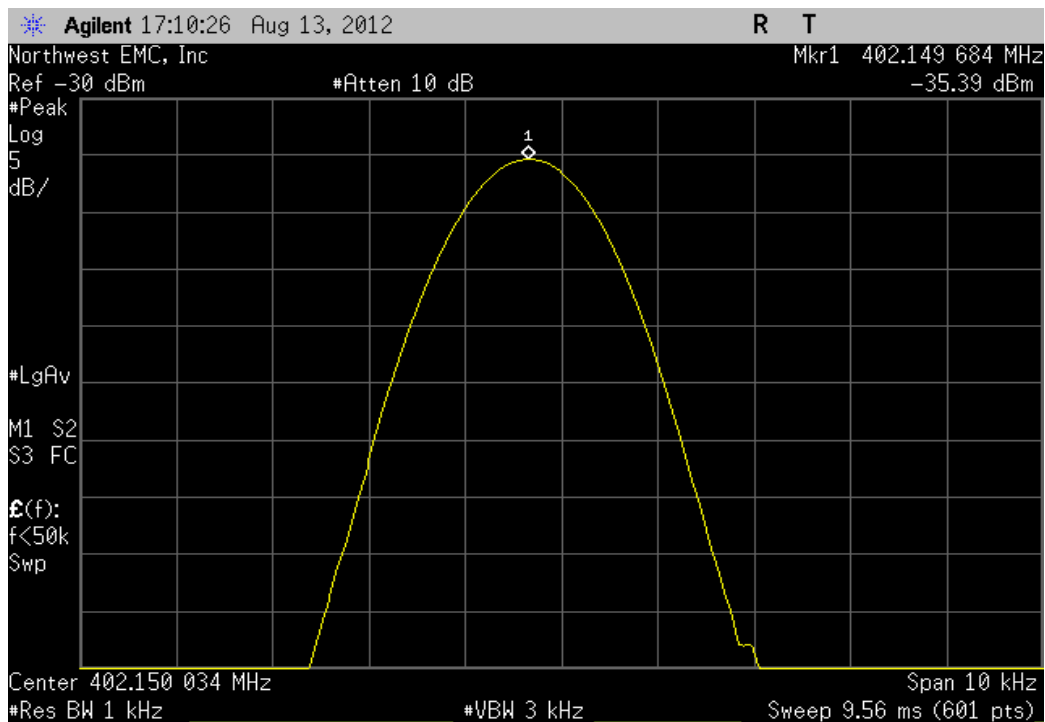
Normal Voltage, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	403.349735	403.35	0.66	100	Pass	



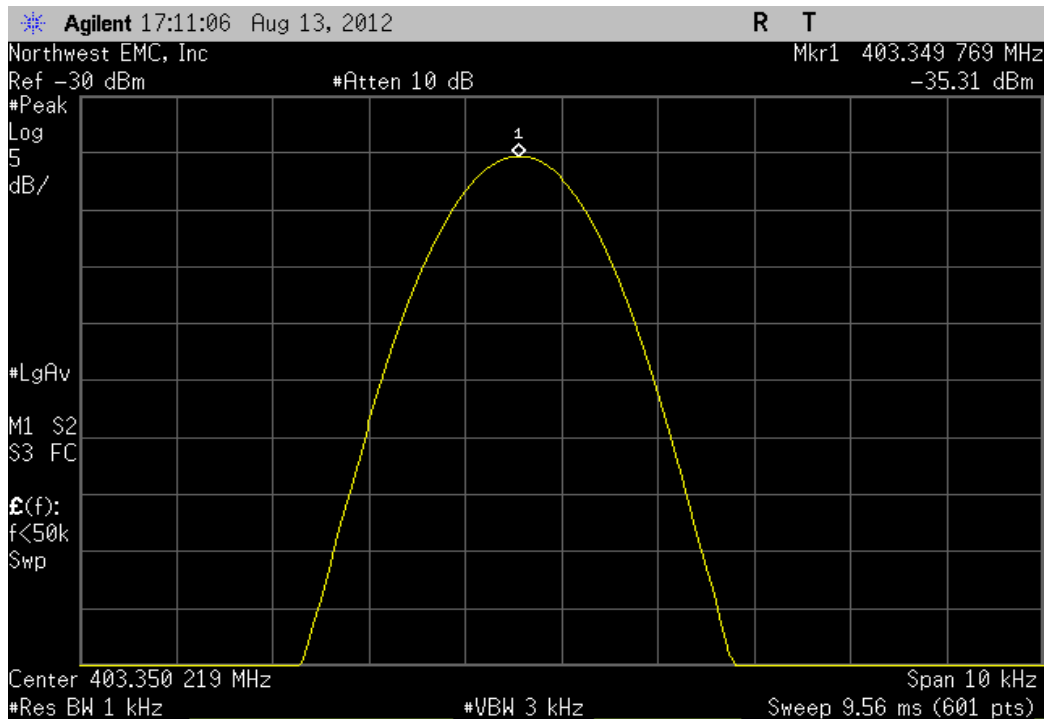
Normal Voltage, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849704	404.85	0.73	100	Pass



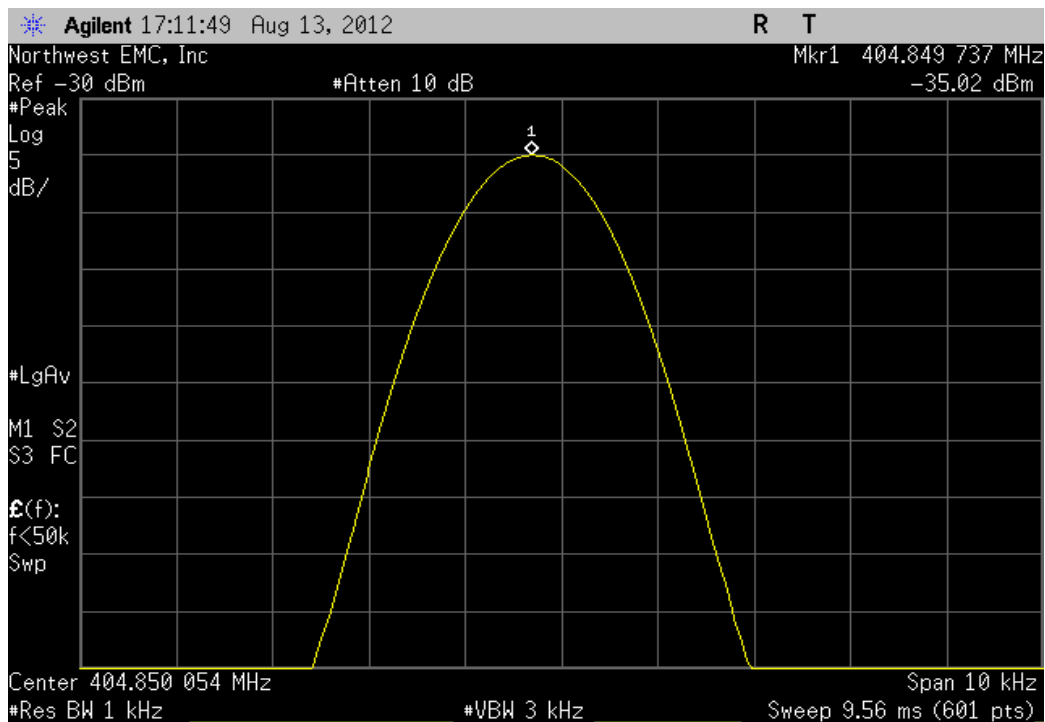
Extreme Voltage +15%, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149684	402.15	0.79	100	Pass



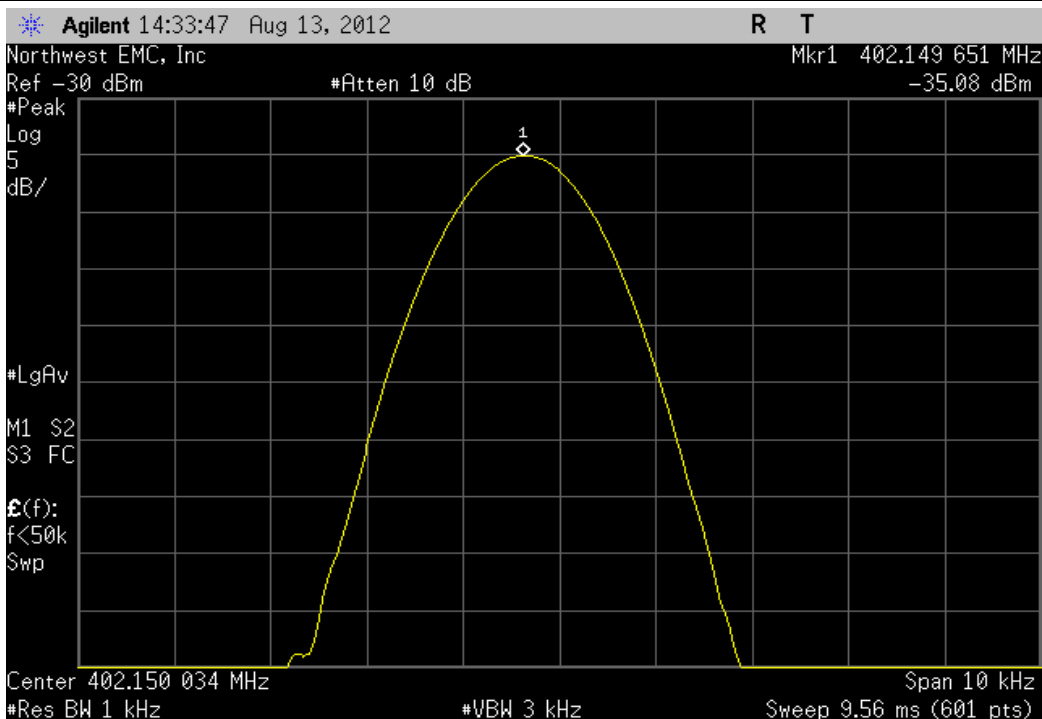
Extreme Voltage +15%, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349769	403.35	0.57	100	Pass



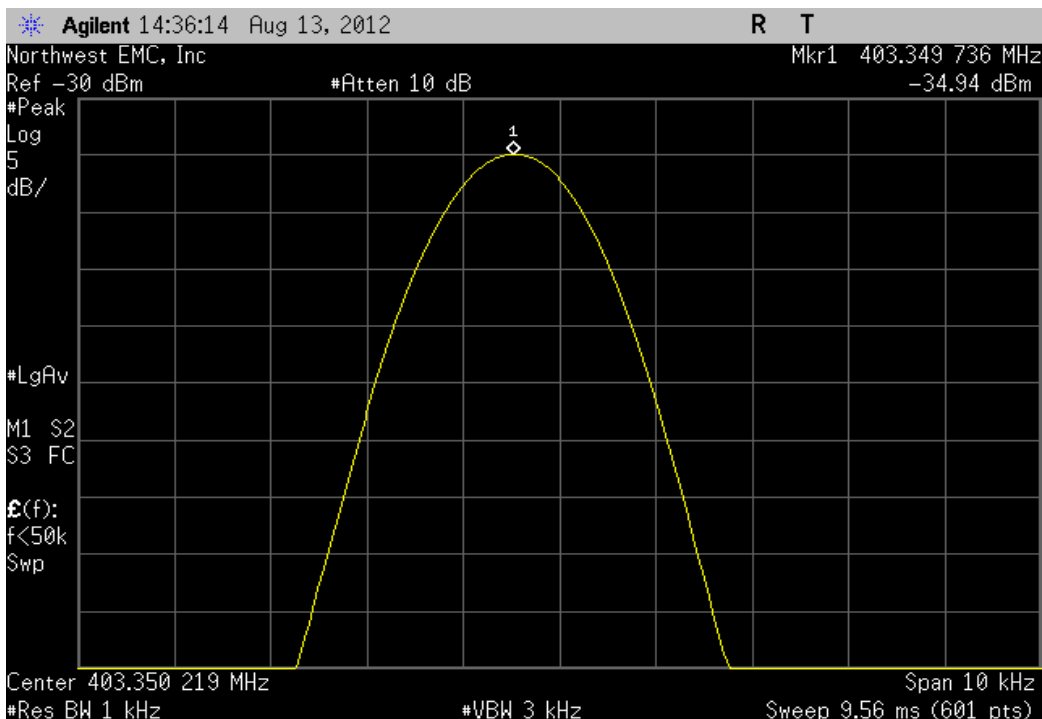
Extreme Voltage +15%, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849737	404.85	0.65	100	Pass



Extreme Voltage -15%, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149651	402.15	0.87	100	Pass

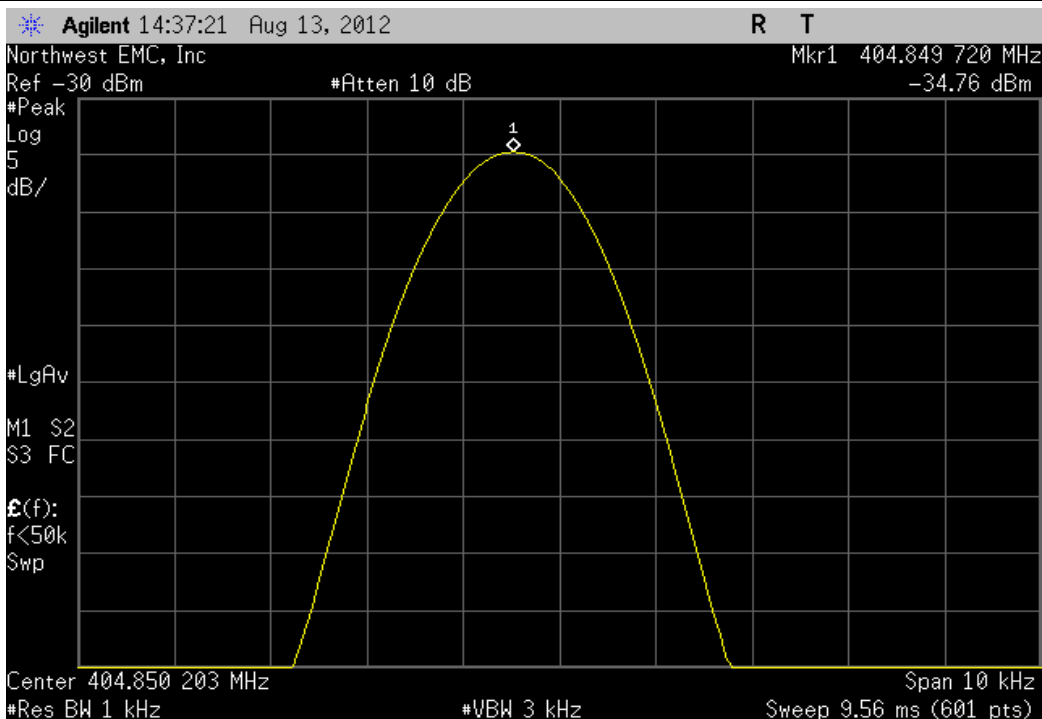


Extreme Voltage -15%, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349736	403.35	0.65	100	Pass



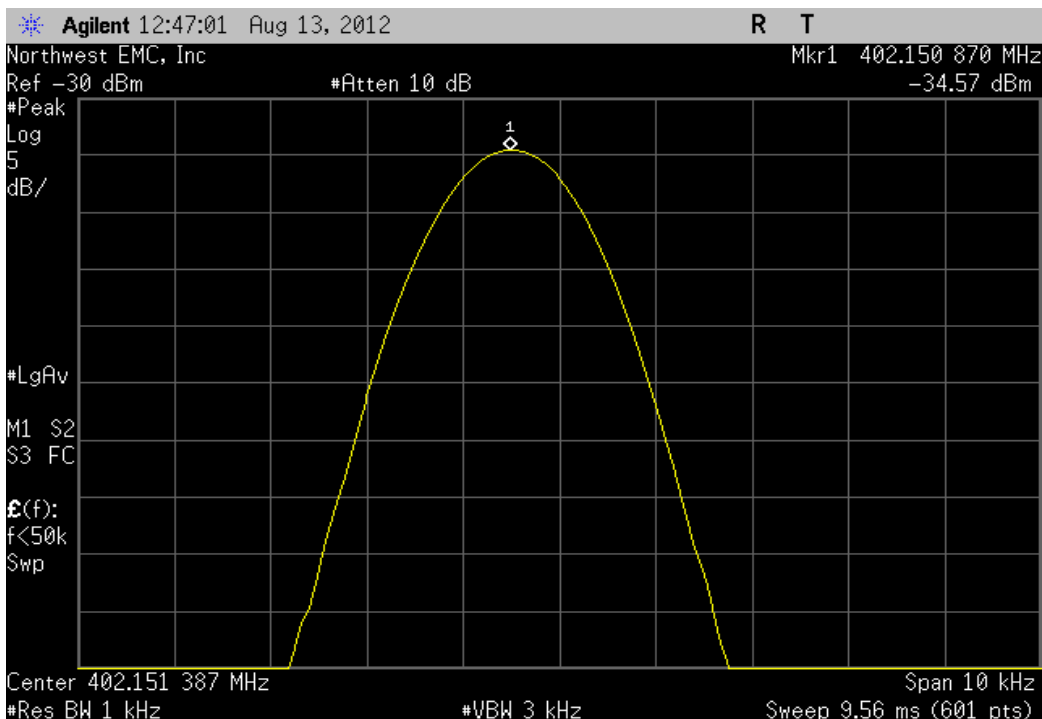
Extreme Voltage -15%, High Channel, 404.85 MHz

Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
404.84972	404.85	0.69	100	Pass

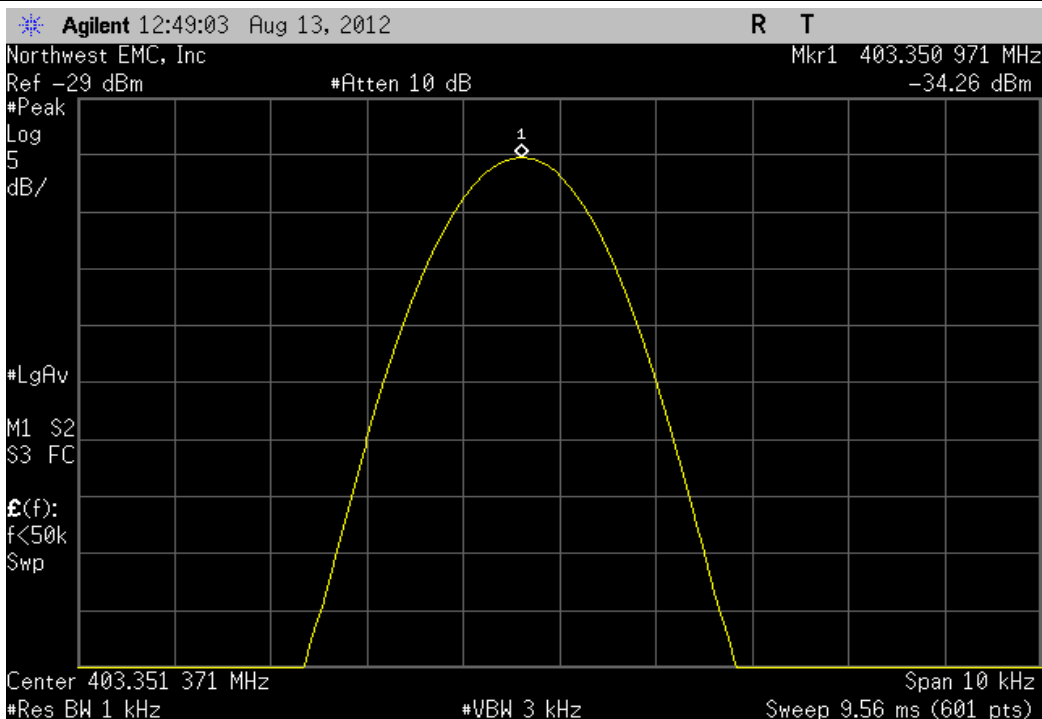


Extreme Temperature +55°C, Low Channel, 402.15 MHz

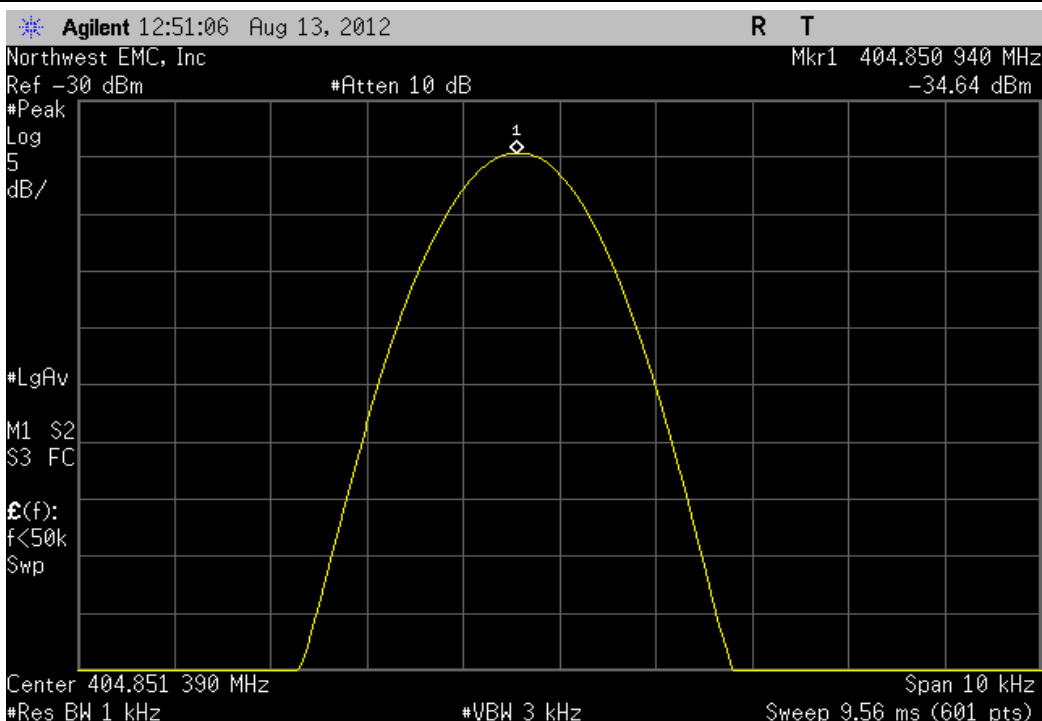
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
402.15087	402.15	2.16	100	Pass



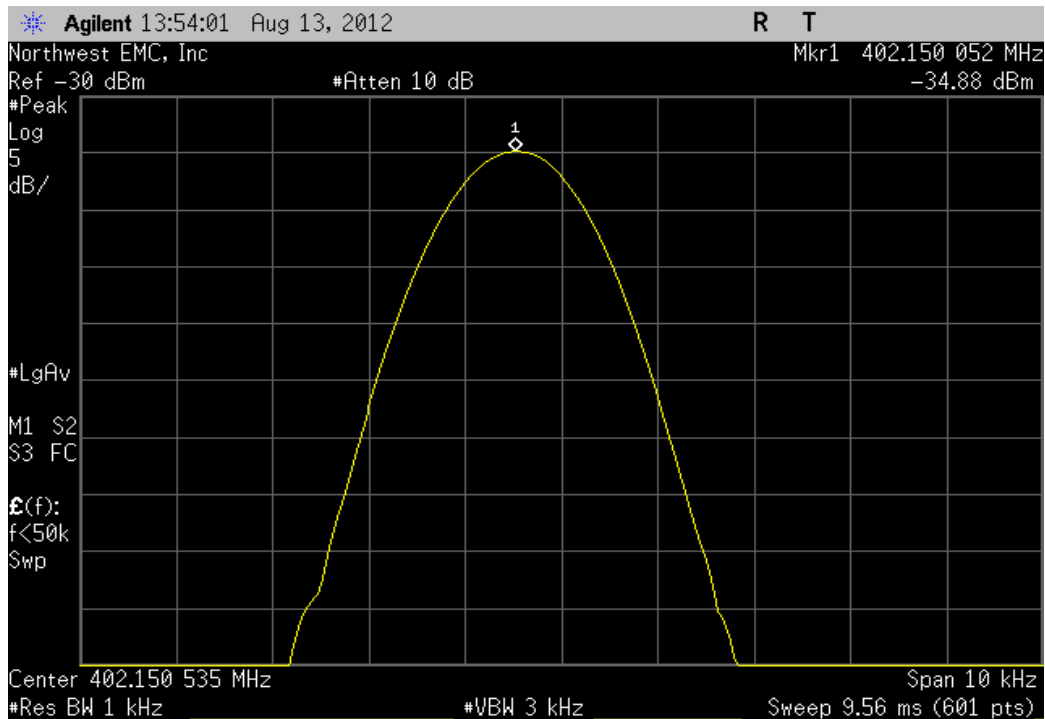
Extreme Temperature +55°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.350971	403.35	2.41	100	Pass



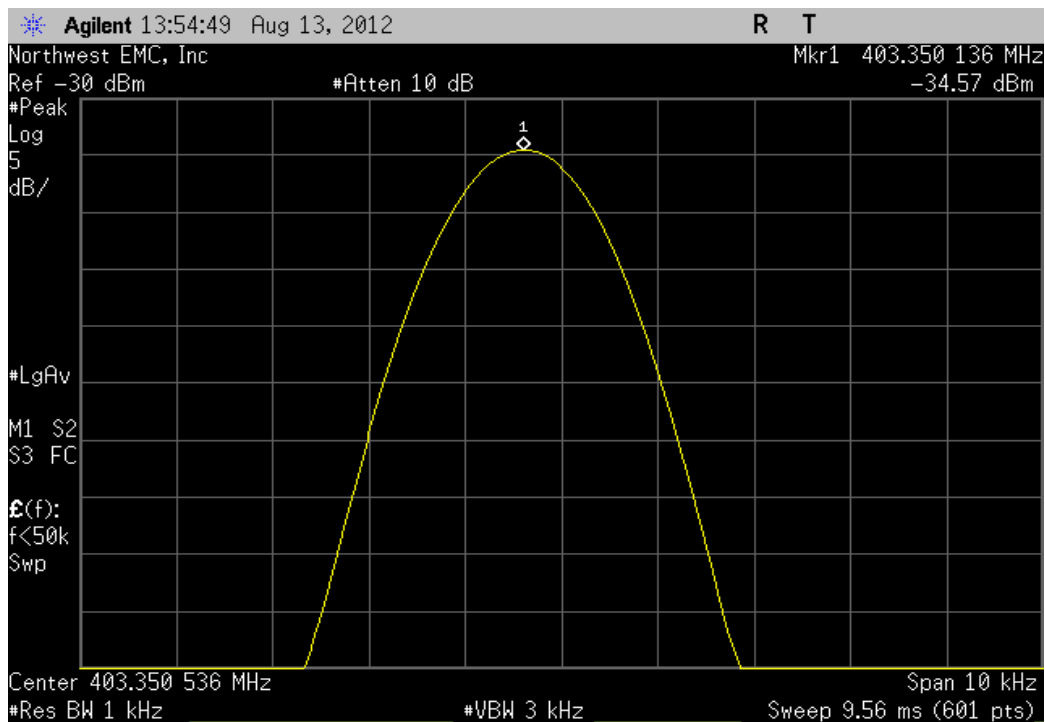
Extreme Temperature +55°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.85094	404.85	2.32	100	Pass



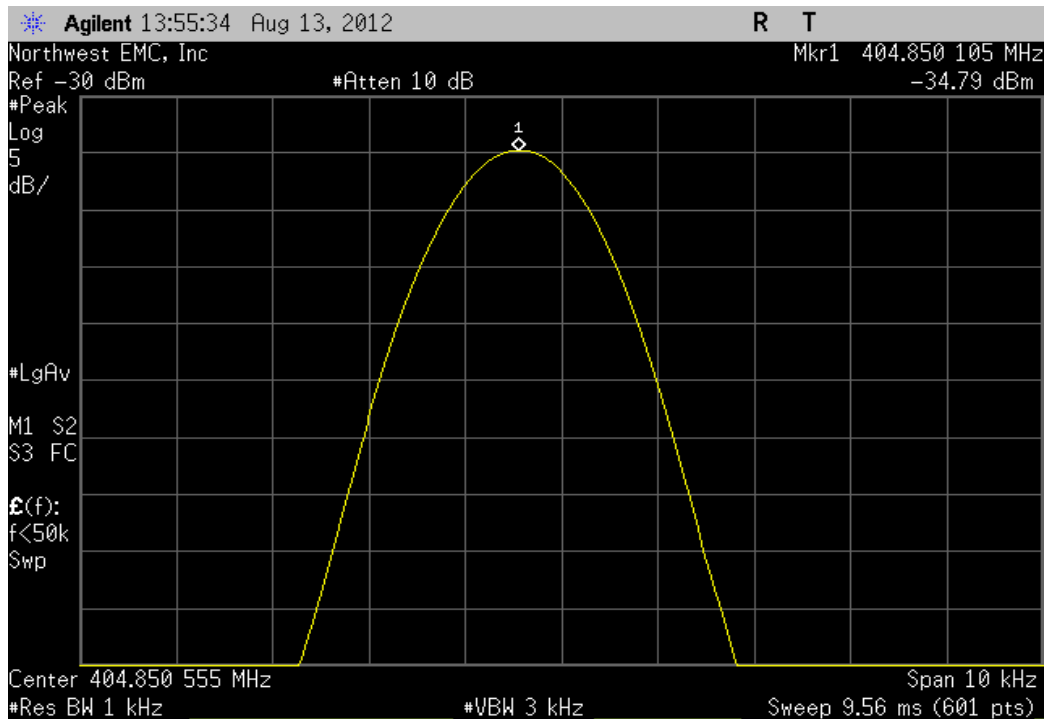
Extreme Temperature +45°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.150052	402.15	0.13	100	Pass



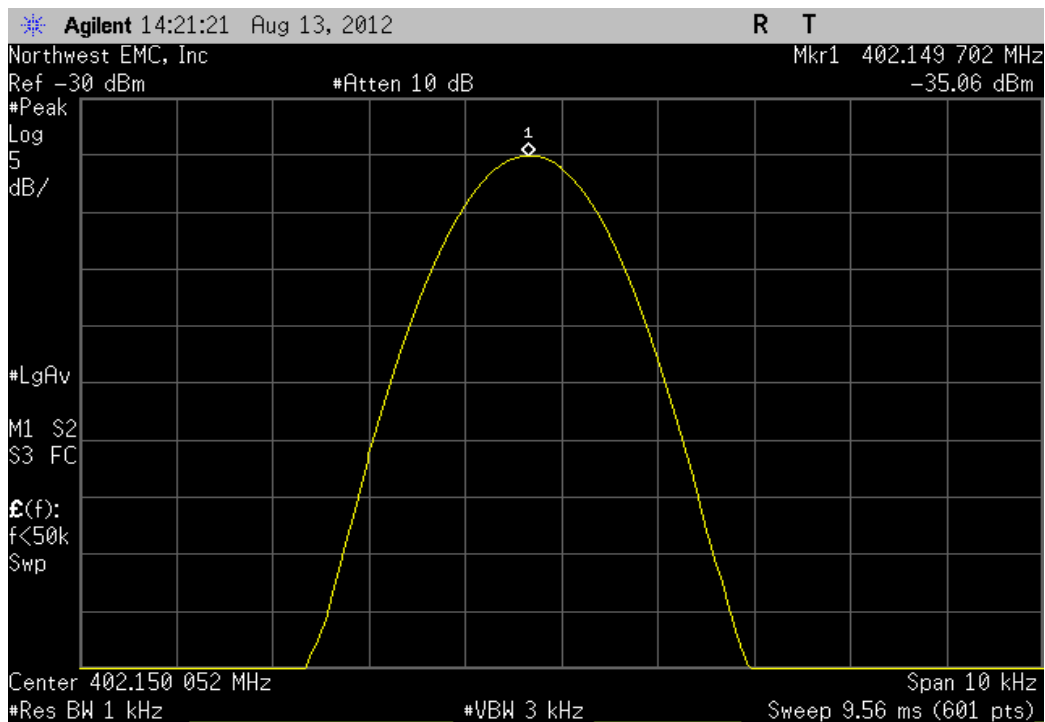
Extreme Temperature +45°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.350136	403.35	0.34	100	Pass



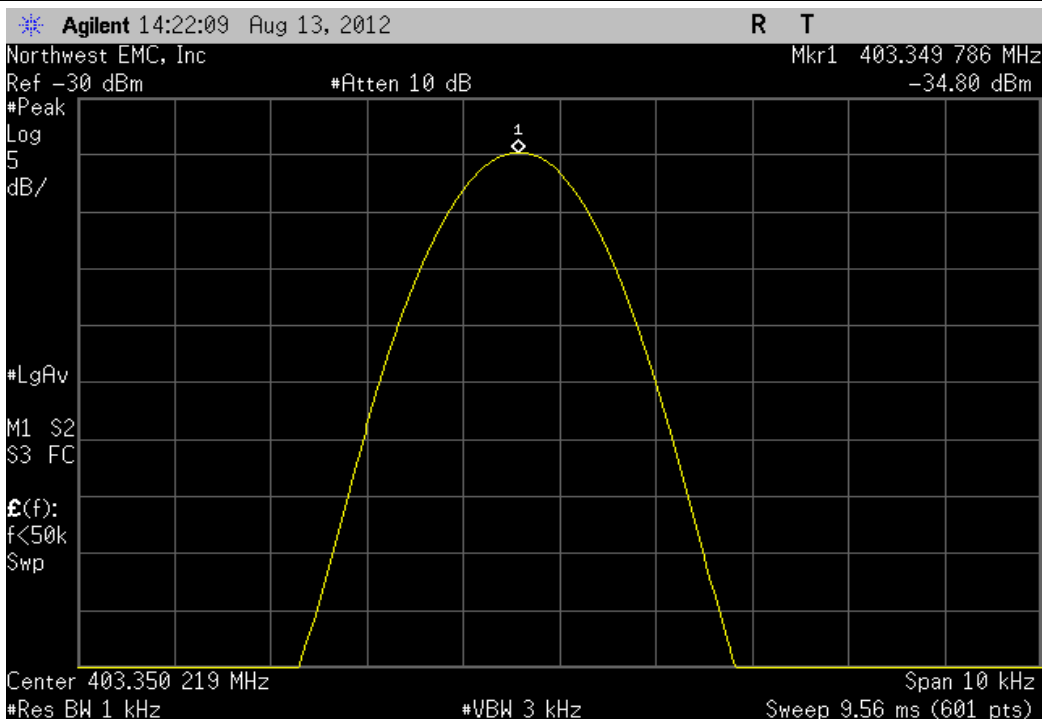
Extreme Temperature +45°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.850105	404.85	0.26	100	Pass



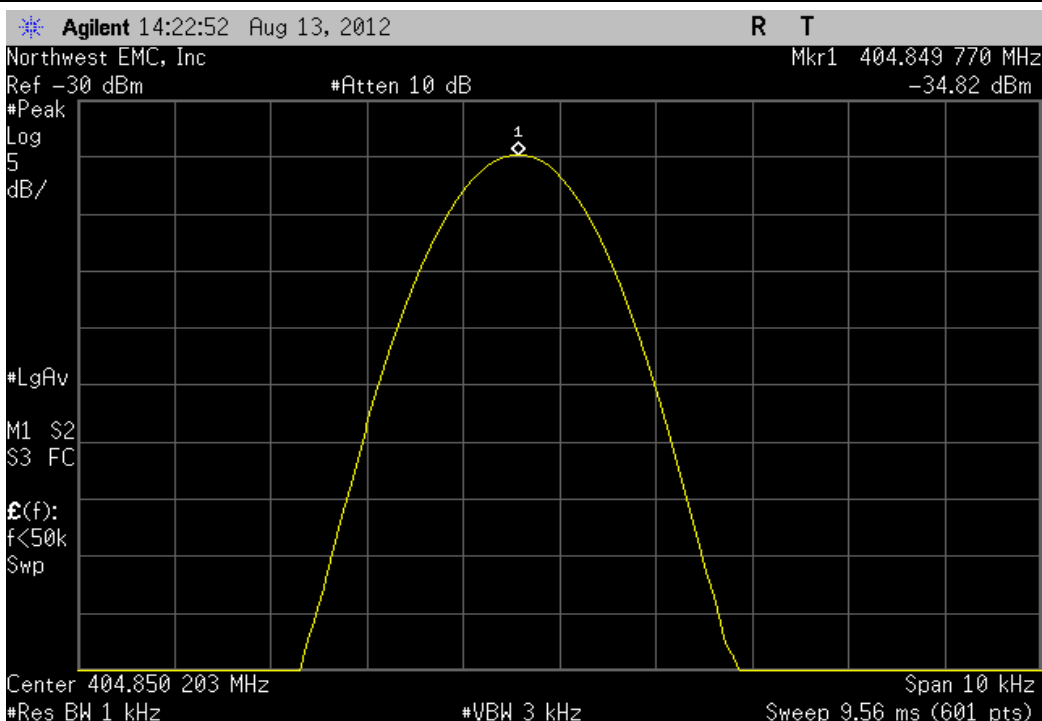
Extreme Temperature +35°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149702	402.15	0.74	100	Pass



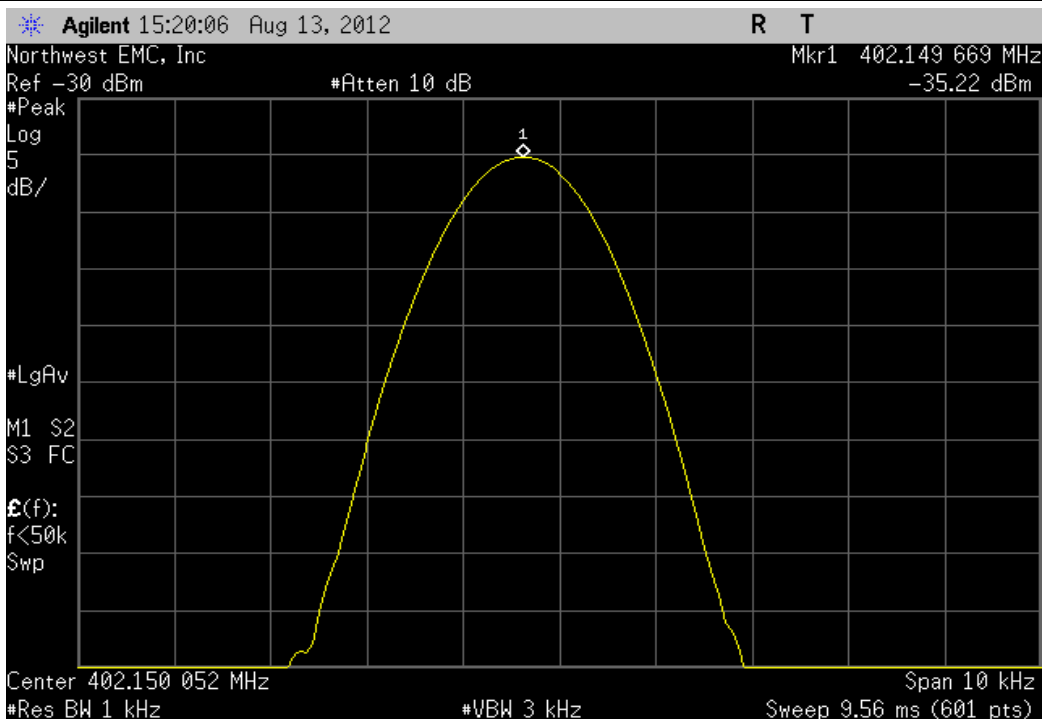
Extreme Temperature +35°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	403.349786	403.35	0.53	100	Pass	



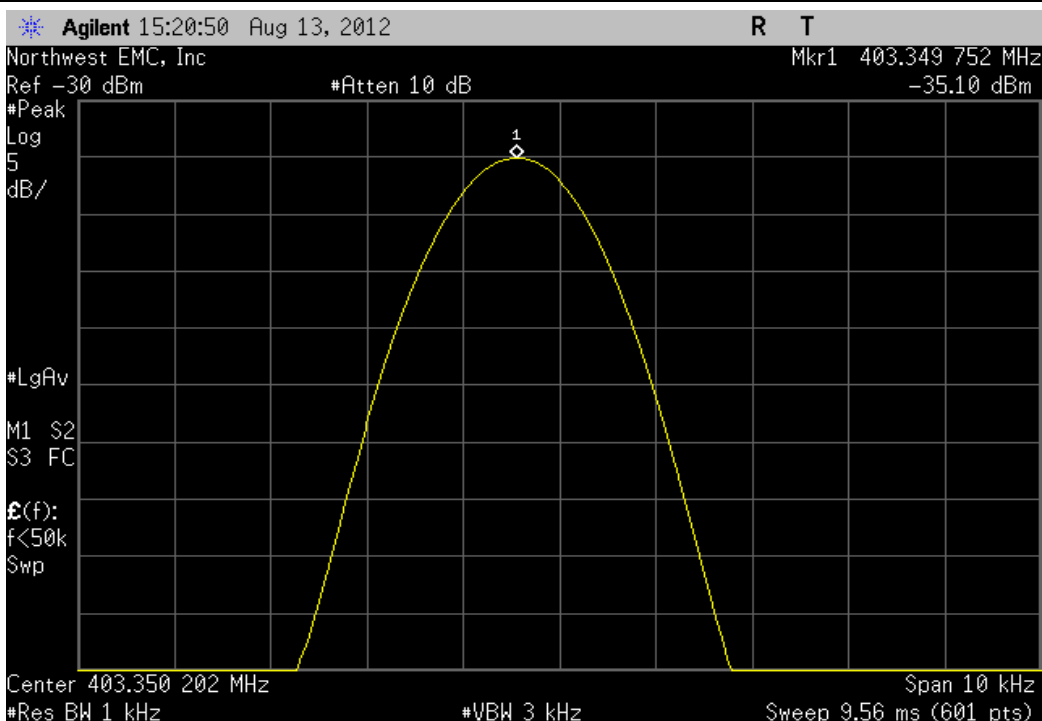
Extreme Temperature +35°C, High Channel, 404.85 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	404.84977	404.85	0.57	100	Pass	



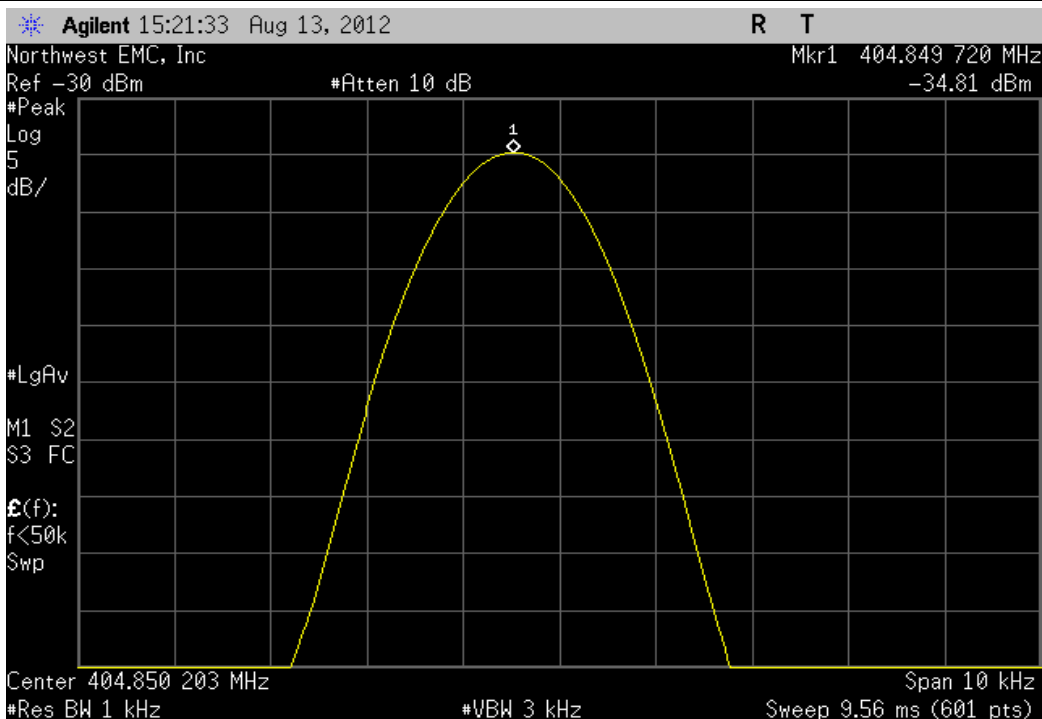
Extreme Temperature +25°C, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	402.149669	402.15	0.82	100	Pass	



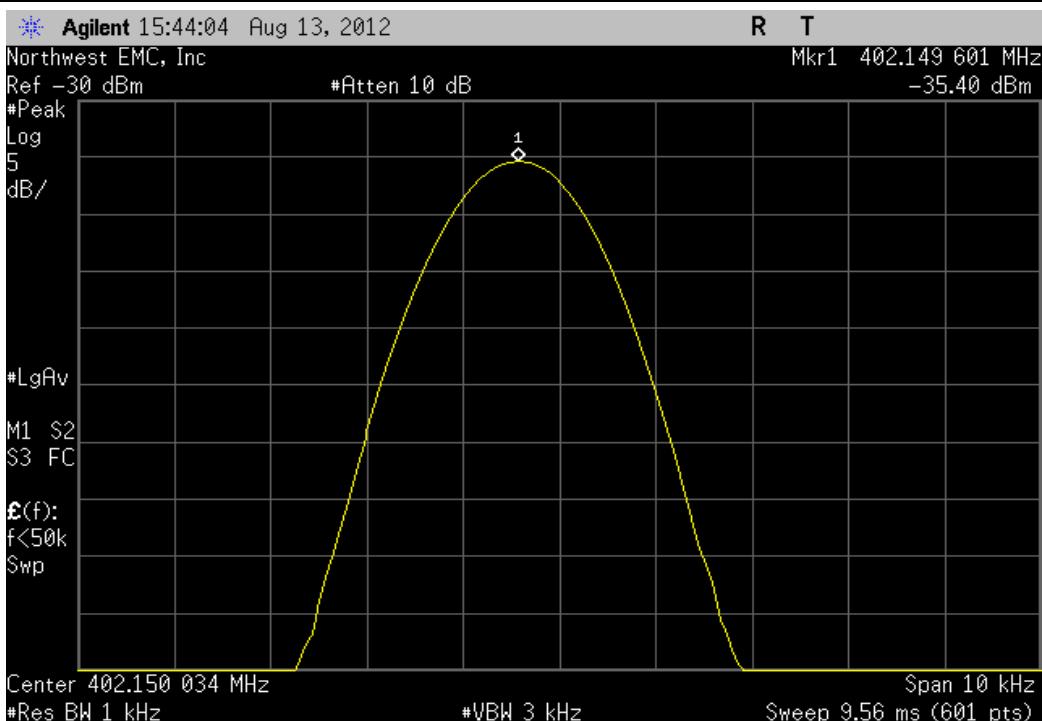
Extreme Temperature +25°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	403.349752	403.35	0.61	100	Pass	



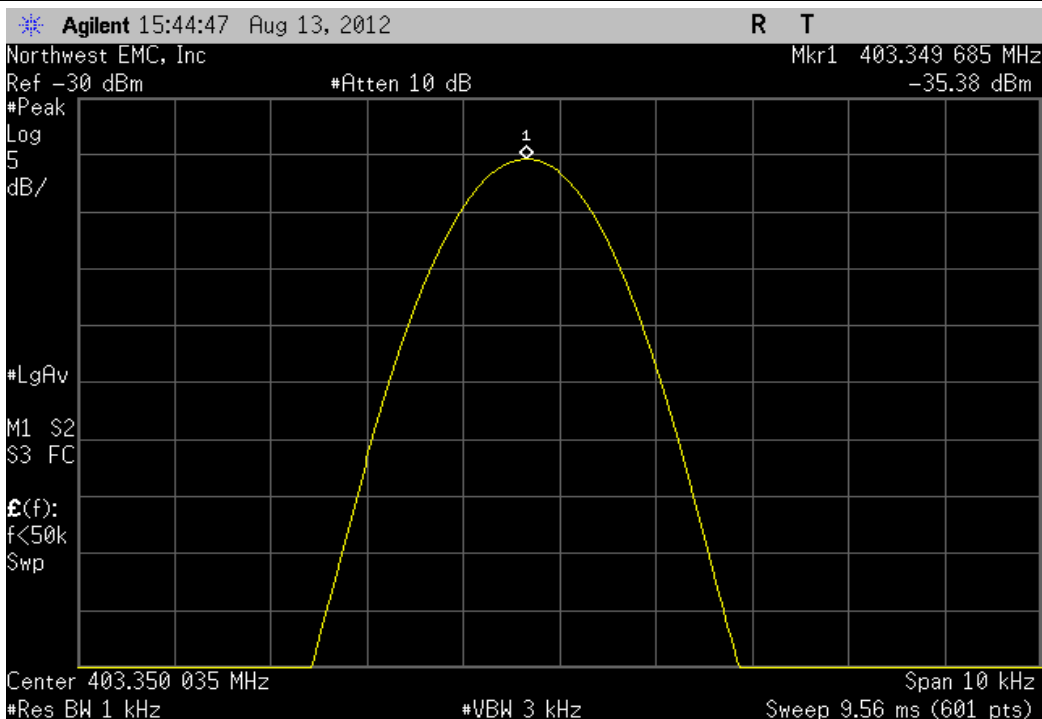
Extreme Temperature +25°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.84972	404.85	0.69	100	Pass



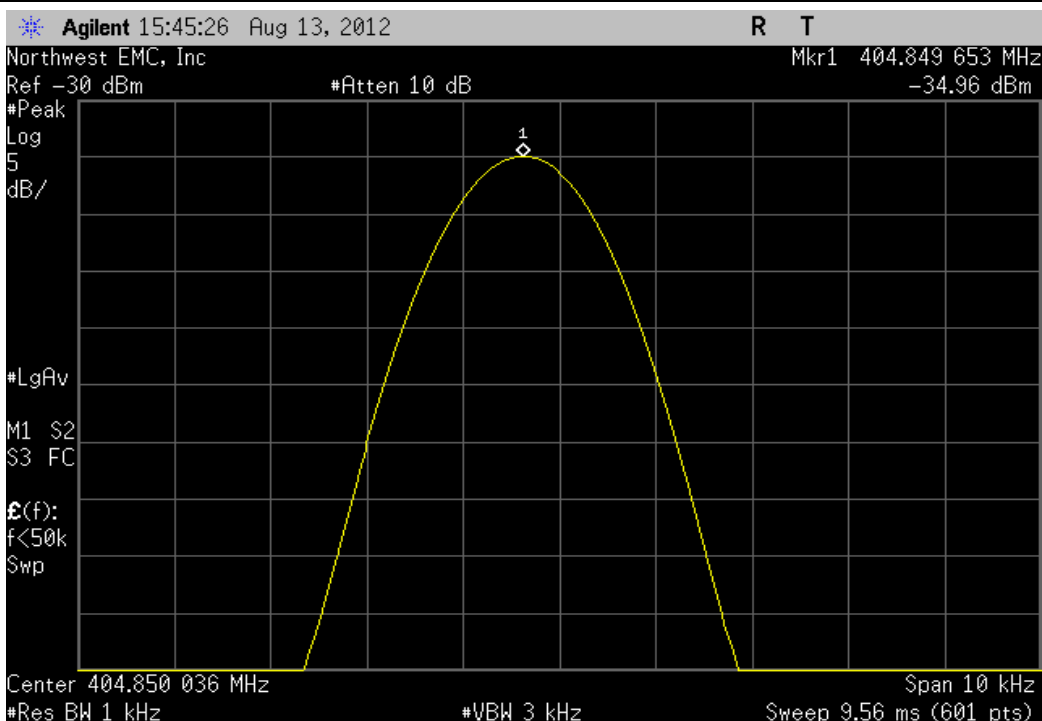
Extreme Temperature +15°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149601	402.15	0.99	100	Pass



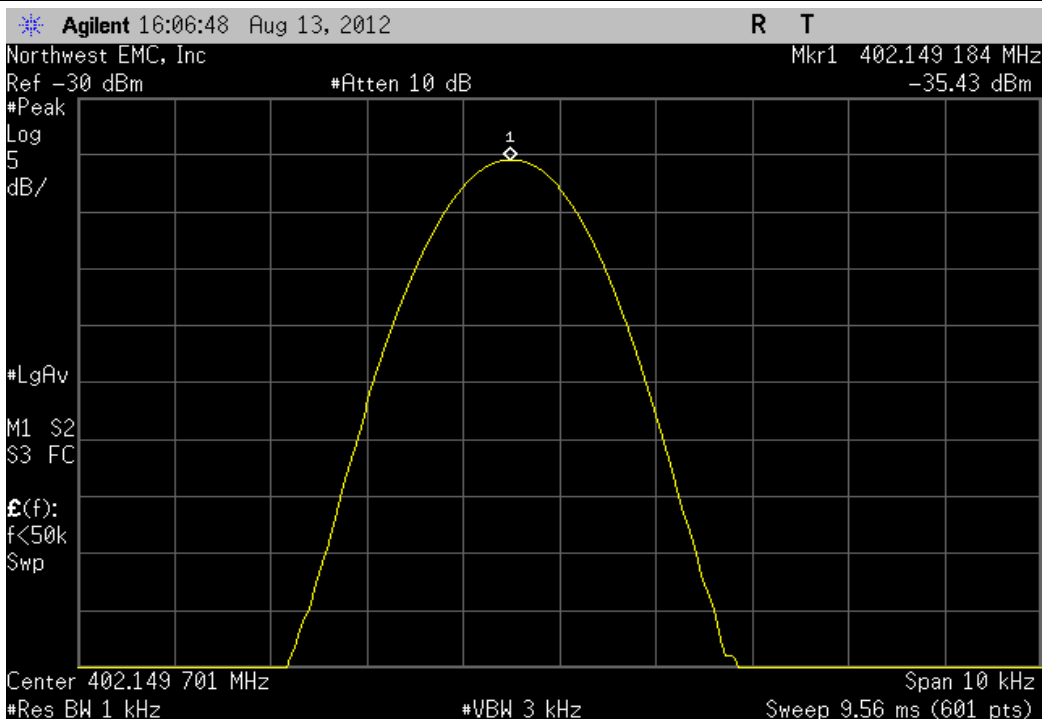
Extreme Temperature +15°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349685	403.35	0.78	100	Pass



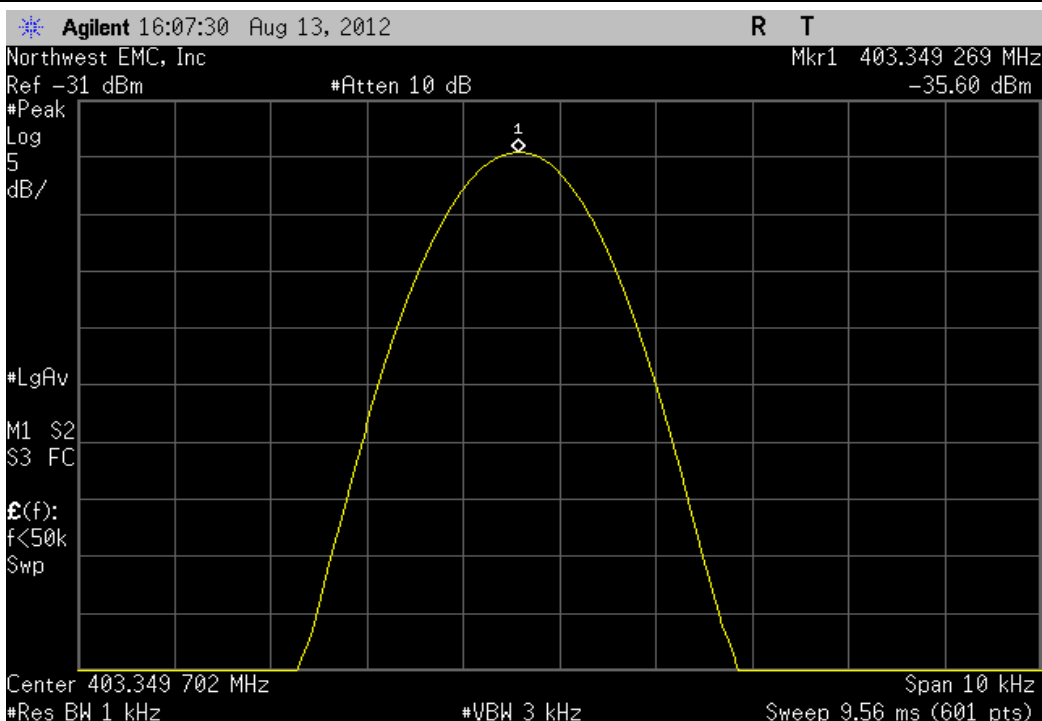
Extreme Temperature +15°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849653	404.85	0.86	100	Pass



Extreme Temperature +5°C, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	402.149184	402.15	2.03	100	Pass	

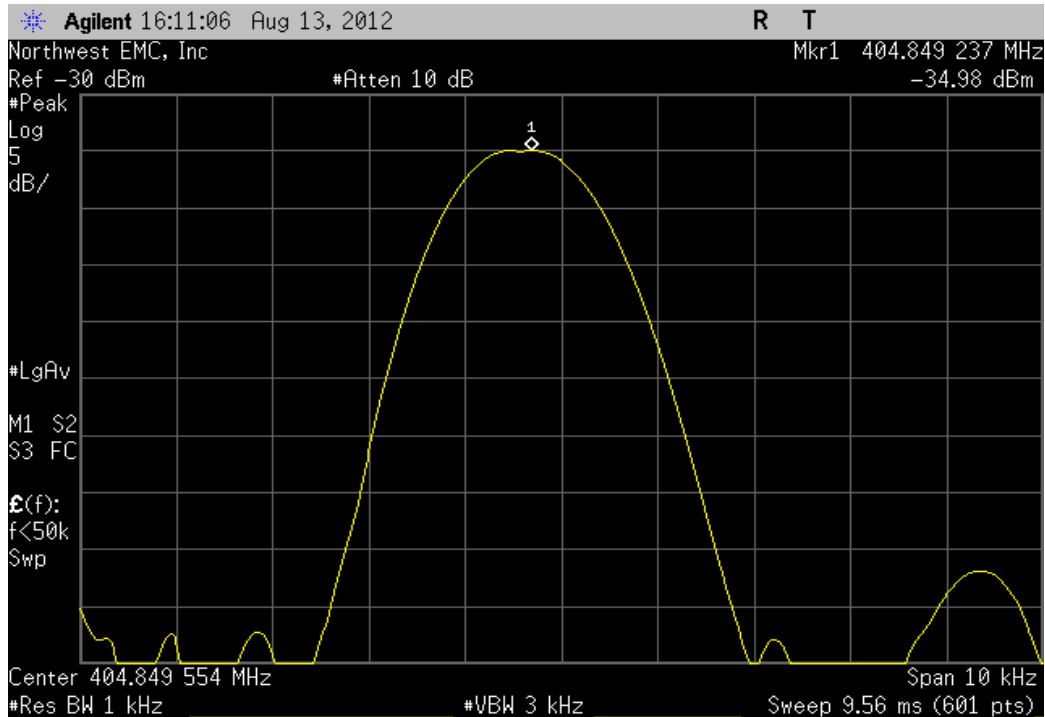


Extreme Temperature +5°C, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	403.349269	403.35	1.81	100	Pass	



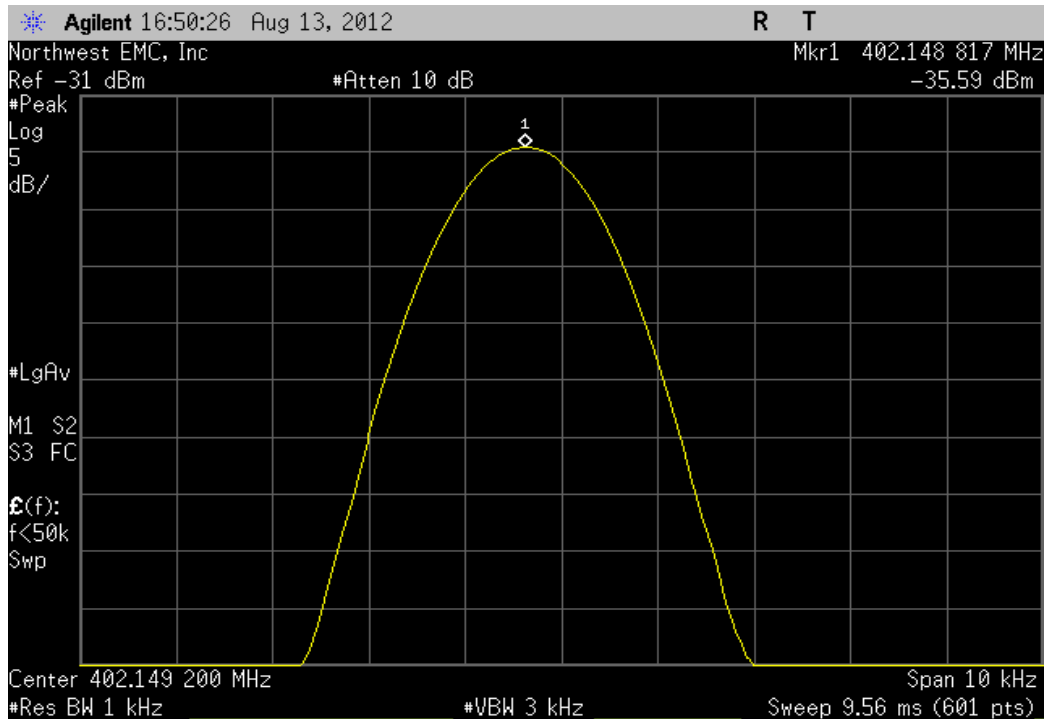
Extreme Temperature +5°C, High Channel, 404.85 MHz

Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
404.849237	404.85	1.88	100	Pass

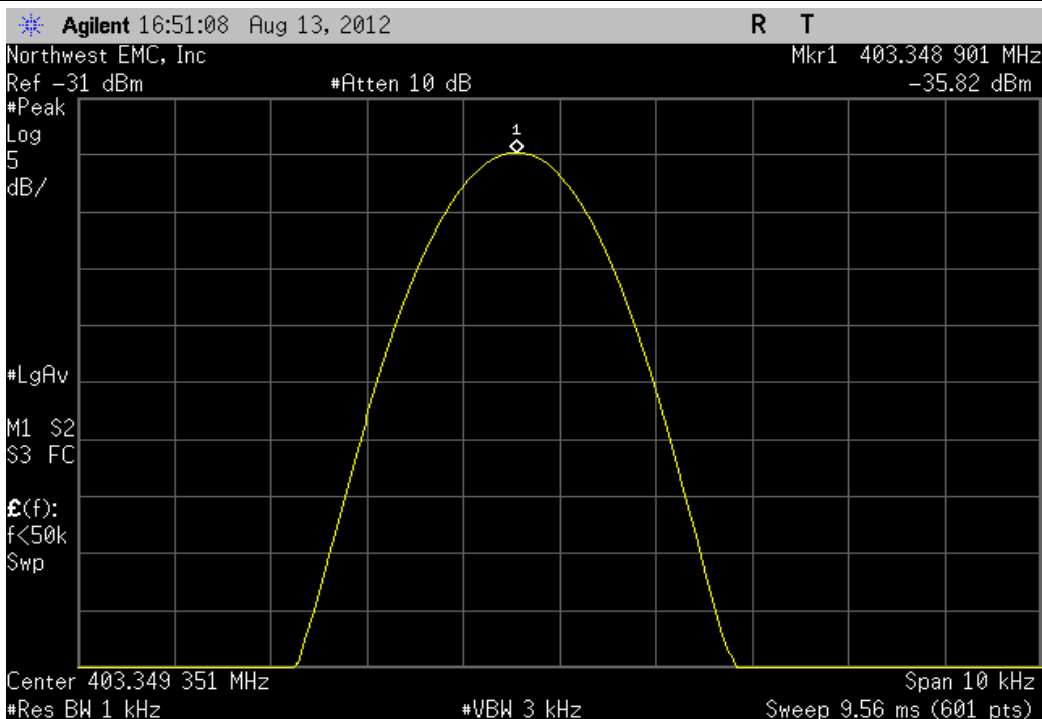


Extreme Temperature 0°C, Low Channel, 402.15 MHz

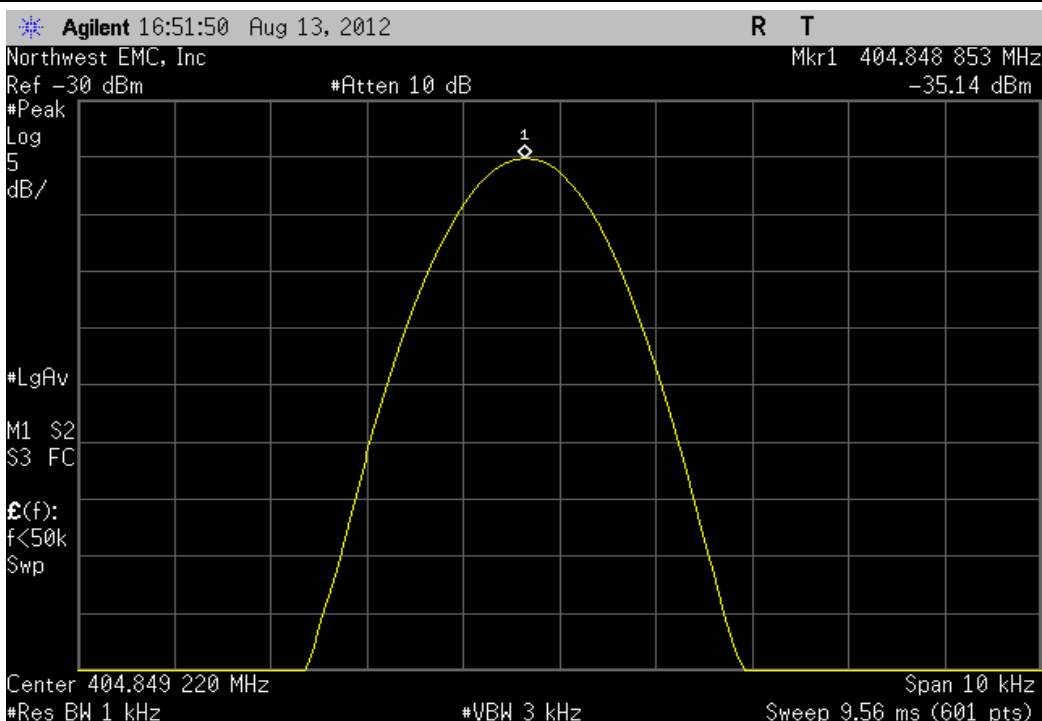
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
402.148817	402.15	2.94	100	Pass



Extreme Temperature 0°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.348901	403.35	2.72	100	Pass



Extreme Temperature 0°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.848853	404.85	2.83	100	Pass



Output Power

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/19/2012	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/12/2011	12
Signal Generator	Agilent	N5183A	TIA	1/27/2012	24
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	12

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

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 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 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.



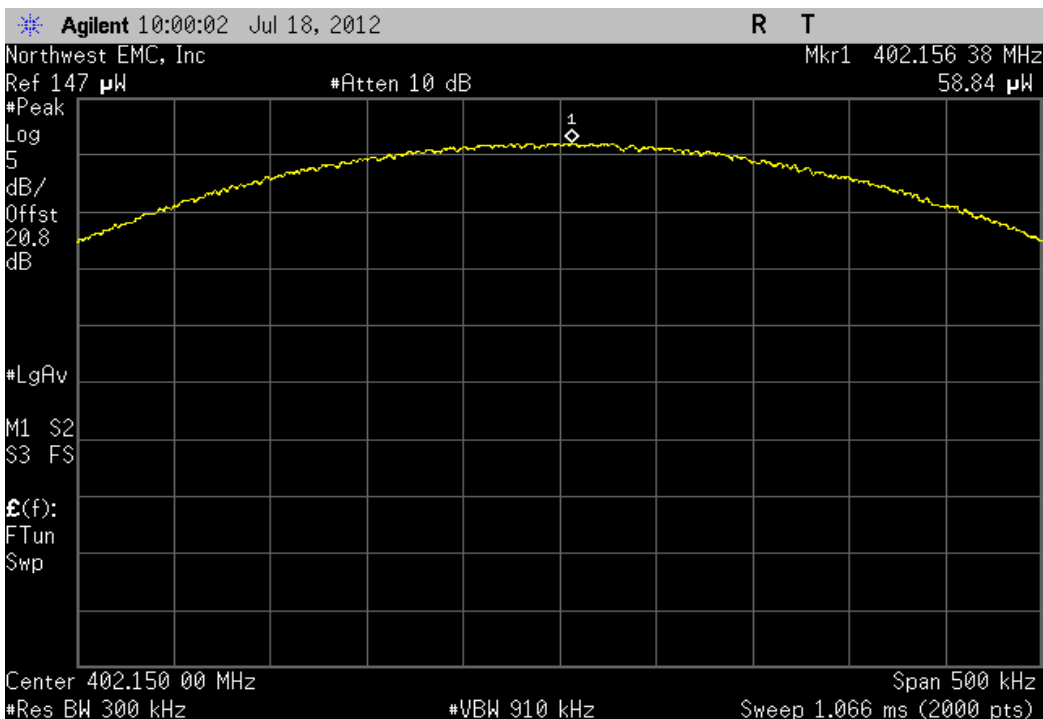
Output Power

XMit 2012.05.09
PsaTx 2012.05.24

EUT: Base		Work Order: MDTR0183	
Serial Number: YDM000107A		Date: 07/18/12	
Customer: Medtronic Inc.		Temperature: 23.63°C	
Attendees: None		Humidity: 57%	
Project: None		Barometric Pres.: 1011.0	
Tested by: Trevor Buls		Power: 5VDC	
		Job Site: MN08	
TEST SPECIFICATIONS			
		Test Method	
FCC 95:2012		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Per Medtronic Test Plan config 5			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
Low Channel, 402.15 MHz		58.844 uW	N/A
Mid Channel, 403.35 MHz		59.896 uW	N/A
High Channel, 404.85 MHz		61.165 uW	N/A

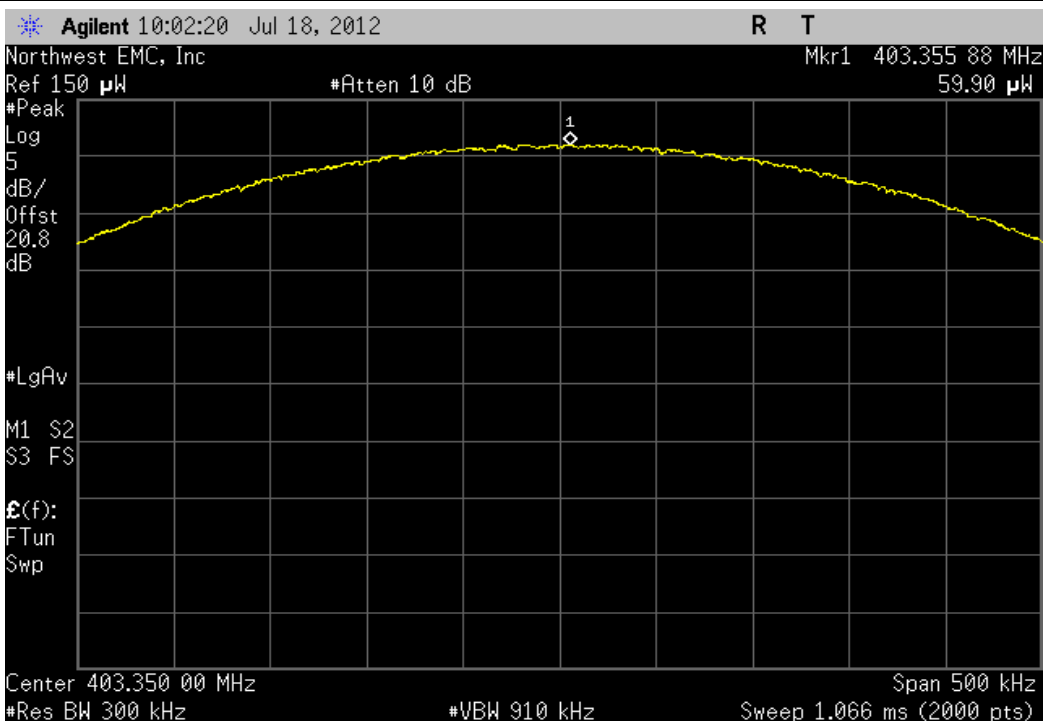
Low Channel, 402.15 MHz

Value	Limit	Result
58.844 uW	N/A	N/A



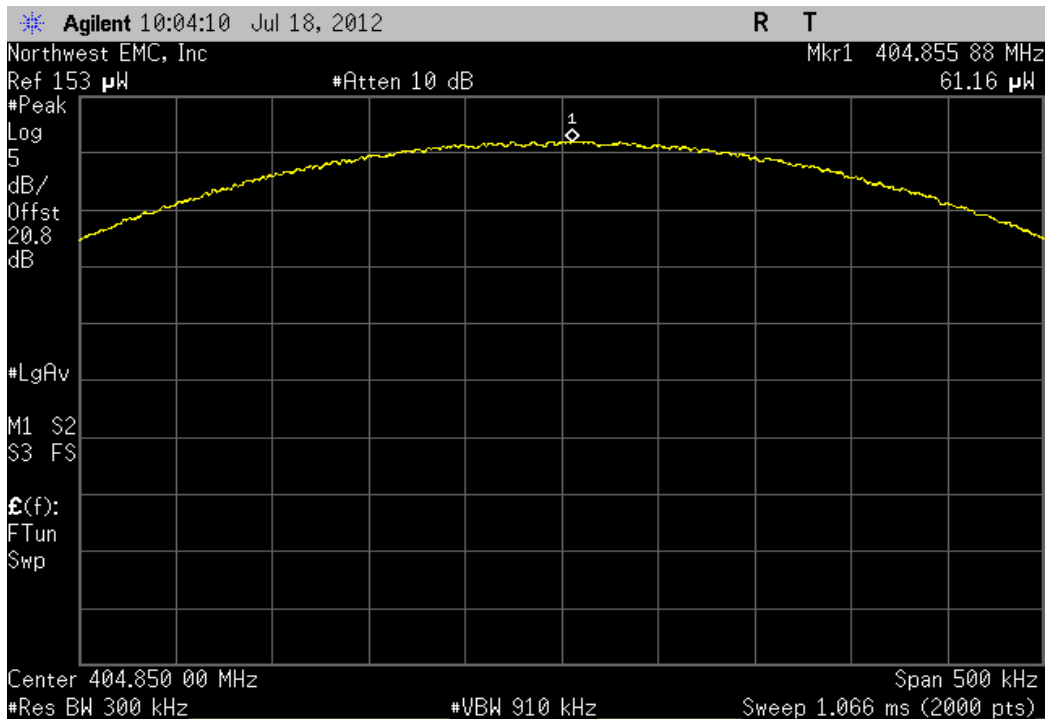
Mid Channel, 403.35 MHz

Value	Limit	Result
59.896 uW	N/A	N/A



High Channel, 404.85 MHz

Value	Limit	Result
61.165 uW	N/A	N/A



Receiver Spurious 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

MICS receiving channel 1, 5, 10, 15 Antenna 0, 1.

POWER SETTINGS INVESTIGATED

5VDC

CONFIGURATIONS INVESTIGATED

MDTR0183 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	5000 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
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/30/2012	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	5/30/2012	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	5/31/2012	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	5/31/2012	12 mo
Antenna, Bilog	Teseq	CBL 6141B	AYD	12/19/2011	12 mo
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	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

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

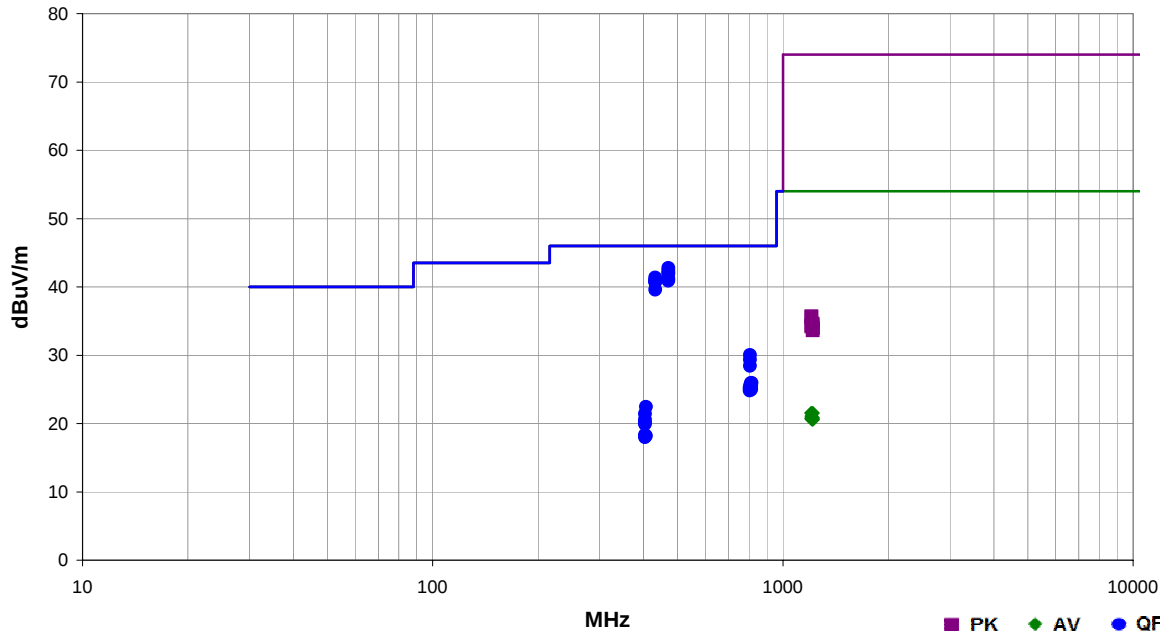
TEST DESCRIPTION

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 receive 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, 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:	MDTR0183	Date:	07/31/12	<i>Trevor Buls</i>
Project:	None	Temperature:	23.73 °C	
Job Site:	MN05	Humidity:	53.76% RH	
Serial Number:	YDM000106A	Barometric Pres.:	1015.6 mbar	
EUT:	Base			
Configuration:	2			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5VDC			
Operating Mode:	MICS receiving channel 1, 5, 10, 15 Antenna 0, 1.			
Deviations:	None			
Comments:	Per MDTR0129 test plan configuration: 5			

Test Specifications	Class B	Test Method
FCC 15.109:2012		ANSI C63.4:2009

Run #	45	Test Distance (m)	3	Antenna Height(s)	1-4m	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
471.294	41.1	1.7	1.5	22.0	3.0	0.0	Horz	QP	0.0	42.8	46.0	-3.2	EUT Vertical, Low Ch, Ant 1
471.292	40.7	1.7	1.5	21.0	3.0	0.0	Horz	QP	0.0	42.4	46.0	-3.6	EUT Vertical, Ch 15, Ant 0
471.292	40.4	1.7	1.5	9.0	3.0	0.0	Horz	QP	0.0	42.1	46.0	-3.9	EUT Vertical, Low Ch, Ant0
471.292	40.2	1.7	1.5	24.0	3.0	0.0	Horz	QP	0.0	41.9	46.0	-4.1	EUT Vertical, Ch 15, Ant 1
432.018	40.4	1.0	1.0	26.0	3.0	0.0	Vert	QP	0.0	41.4	46.0	-4.6	EUT Vertical, Mid Ch, Ant 0
471.292	39.5	1.7	1.5	12.0	3.0	0.0	Horz	QP	0.0	41.2	46.0	-4.8	EUT Vertical, Mid Ch, Ant 0
432.018	40.0	1.0	1.0	21.0	3.0	0.0	Vert	QP	0.0	41.0	46.0	-5.0	EUT Vertical, High Ch, Ant 0
432.018	40.0	1.0	1.0	27.0	3.0	0.0	Vert	QP	0.0	41.0	46.0	-5.0	EUT Vertical, Low Ch, Ant 1
471.292	39.2	1.7	1.5	12.0	3.0	0.0	Horz	QP	0.0	40.9	46.0	-5.1	EUT Vertical, High Ch, Ant 0
432.018	39.8	1.0	1.1	24.0	3.0	0.0	Vert	QP	0.0	40.8	46.0	-5.2	EUT Vertical, Ch 15, Ant 0
432.018	39.7	1.0	1.0	19.0	3.0	0.0	Vert	QP	0.0	40.7	46.0	-5.3	EUT Vertical, Low Ch, Ant0
432.018	38.6	1.0	1.0	20.0	3.0	0.0	Vert	QP	0.0	39.6	46.0	-6.4	EUT Vertical, Ch 15, Ant 1
1207.625	43.1	-7.4	1.0	51.0	3.0	0.0	Horz	PK	0.0	35.7	50.4	-14.7	EUT Vertical, Mid Ch, Ant 0
1205.675	43.0	-7.4	1.3	27.0	3.0	0.0	Horz	PK	0.0	35.6	50.4	-14.8	EUT Vertical, Low Ch, Ant 0
1216.000	42.0	-7.4	2.1	170.0	3.0	0.0	Horz	PK	0.0	34.6	50.4	-15.8	EUT Vertical, High Ch, Ant 0
805.120	22.3	7.7	1.0	338.0	3.0	0.0	Vert	QP	0.0	30.0	46.0	-16.0	EUT Vertical, Low Ch, Ant0
1208.025	41.8	-7.4	1.0	308.0	3.0	0.0	Vert	PK	0.0	34.4	50.4	-16.0	EUT Vertical, Mid Ch, Ant 0
1217.508	41.7	-7.4	1.0	273.0	3.0	0.0	Horz	PK	0.0	34.3	50.4	-16.1	EUT Vertical, Ch 15, Ant 0
1207.592	41.6	-7.4	1.0	58.0	3.0	0.0	Vert	PK	0.0	34.2	50.4	-16.2	EUT Vertical, Low Ch, Ant 0
1218.717	41.3	-7.3	1.0	170.0	3.0	0.0	Vert	PK	0.0	34.0	50.4	-16.4	EUT Vertical, Ch 15, Ant 0

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 MICS channel 1, 5 10. Antenna 0, 1

POWER SETTINGS INVESTIGATED

5VDC

CONFIGURATIONS INVESTIGATED

MDTR0183 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 MHz	Stop Frequency	10000 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
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	5/30/2012	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/30/2012	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	5/31/2012	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	5/31/2012	12 mo
Antenna, Bilog	Teseq	CBL 6141B	AYD	12/19/2011	12 mo
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	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

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

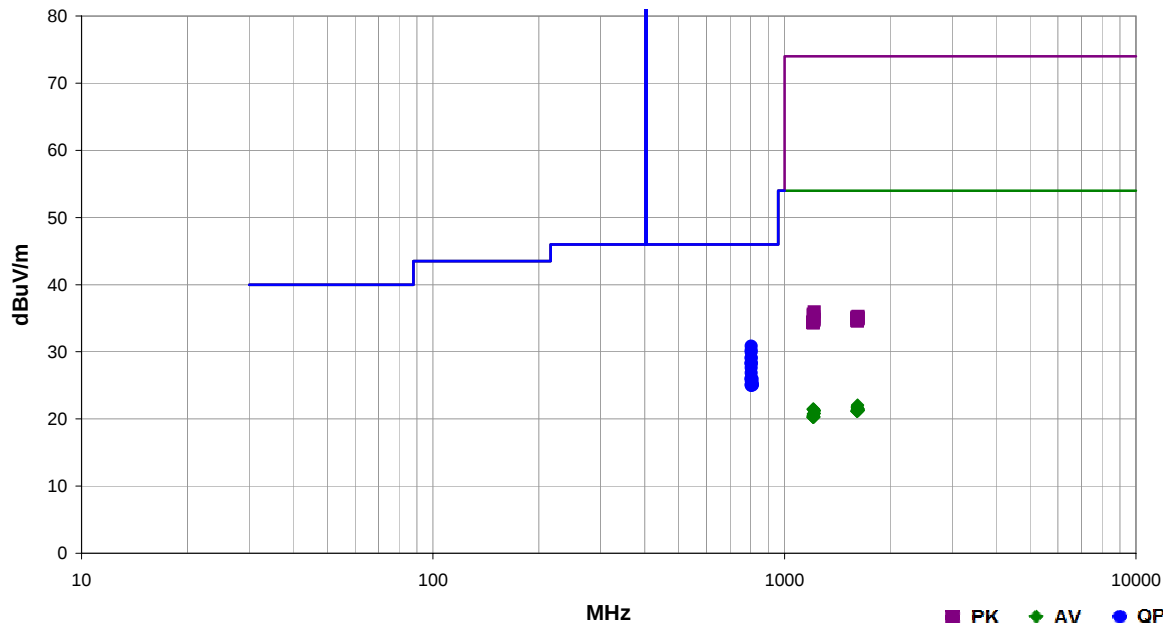
TEST DESCRIPTION

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. 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 C63.10:2009). A preamp was used for this test in order to provide sufficient measurement sensitivity.

Work Order:	MDTR0183	Date:	08/08/12	<i>Trevor Buls</i>
Project:	None	Temperature:	23.54 °C	
Job Site:	MN05	Humidity:	50.57% RH	
Serial Number:	YDM000106A	Barometric Pres.:	1014.9 mbar	
EUT:	Base			
Configuration:	2			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5VDC			
Operating Mode:	Transmitting MICS channel 1, 5 10. Antenna 0, 1			
Deviations:	None			
Comments:	Per MDTR0129 test plan configuration: 5. 3 wires taped to SD card at edge.			

Test Specifications	Test Method
FCC 95:2012	ANSI/TIA/EIA-603-C:2004

Run #	55	Test Distance (m)	3	Antenna Height(s)	1-4m	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
805.124	23.1	7.7	1.0	216.0	3.0	0.0	Horz	QP	0.0	30.8	46.0	-15.2	EUT Vertical, Mid Ch, Ant 1
805.124	22.5	7.7	1.1	124.0	3.0	0.0	Vert	QP	0.0	30.2	46.0	-15.8	EUT Horizontal Mid Ch, Ant 1
805.127	22.2	7.7	1.0	182.0	3.0	0.0	Vert	QP	0.0	29.9	46.0	-16.1	EUT on Side, Mid Ch, Ant 1
805.121	21.4	7.7	1.0	219.0	3.0	0.0	Horz	QP	0.0	29.1	46.0	-16.9	EUT Vertical, Low Ch, Ant 0
805.125	21.3	7.7	1.1	123.0	3.0	0.0	Vert	QP	0.0	29.0	46.0	-17.0	EUT Vertical, Low Ch, Ant 0
805.127	20.7	7.7	1.0	241.0	3.0	0.0	Horz	QP	0.0	28.4	46.0	-17.6	EUT Vertical, Mid Ch, Ant 0
805.136	20.5	7.7	1.0	260.0	3.0	0.0	Vert	QP	0.0	28.2	46.0	-17.8	EUT Vertical, Mid Ch, Ant 0
805.129	20.5	7.7	2.0	59.0	3.0	0.0	Horz	QP	0.0	28.2	46.0	-17.8	EUT on Side, Mid Ch, Ant 1
805.125	19.9	7.7	1.2	186.0	3.0	0.0	Vert	QP	0.0	27.6	46.0	-18.4	EUT Vertical, Mid Ch, Ant 1
805.138	19.1	7.7	1.0	231.0	3.0	0.0	Horz	QP	0.0	26.8	46.0	-19.2	EUT Horizontal, Mid Ch, Ant 0
805.125	18.3	7.7	1.0	14.0	3.0	0.0	Vert	QP	0.0	26.0	46.0	-20.0	EUT Horizontal, Mid Ch, Ant 0
805.136	18.3	7.7	1.0	109.0	3.0	0.0	Vert	QP	0.0	26.0	46.0	-20.0	EUT on Side, Mid Ch, Ant 0
809.714	18.2	7.7	2.1	141.0	3.0	0.0	Horz	QP	0.0	25.9	46.0	-20.1	EUT Vertical, High Ch, Ant 1
806.412	18.2	7.7	2.1	178.0	3.0	0.0	Horz	QP	0.0	25.9	46.0	-20.1	EUT on Side, Mid Ch, Ant 0
805.131	18.0	7.7	3.8	318.0	3.0	0.0	Horz	QP	0.0	25.7	46.0	-20.3	EUT Horizontal Mid Ch, Ant 1
809.746	17.7	7.7	1.0	346.0	3.0	0.0	Vert	QP	0.0	25.4	46.0	-20.6	EUT Vertical, High Ch, Ant 1
804.535	17.4	7.7	1.0	198.0	3.0	0.0	Vert	QP	0.0	25.1	46.0	-20.9	EUT Vertical, Low Ch, Ant 1
810.031	17.4	7.7	1.0	165.0	3.0	0.0	Vert	QP	0.0	25.1	46.0	-20.9	EUT Vertical, High Ch, Ant 0
810.600	17.3	7.7	2.4	191.0	3.0	0.0	Horz	QP	0.0	25.0	46.0	-21.0	EUT Vertical, High Ch, Ant 0
804.027	17.2	7.7	3.9	360.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1	EUT Vertical, Low Ch, Ant 1
1612.775	28.1	-6.0	1.0	358.0	3.0	0.0	Vert	AV	0.0	22.1	54.0	-31.9	EUT Vertical, Mid Ch, Ant 1
1610.192	27.8	-6.0	1.2	173.0	3.0	0.0	Horz	AV	0.0	21.8	54.0	-32.2	EUT Vertical, Low Ch, Ant 1
1612.700	27.6	-6.0	1.0	349.0	3.0	0.0	Horz	AV	0.0	21.6	54.0	-32.4	EUT Vertical, Mid Ch, Ant 1
1209.658	28.9	-7.4	1.0	314.0	3.0	0.0	Vert	AV	0.0	21.5	54.0	-32.5	EUT Vertical, Mid Ch, Ant 0

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
1620.017	27.5	-6.0	1.0	172.0	3.0	0.0	Horz	AV	0.0	21.5	54.0	-32.5	EUT Vertical, High Ch, Ant 0
1205.475	28.9	-7.4	1.0	145.0	3.0	0.0	Horz	AV	0.0	21.5	54.0	-32.5	EUT Vertical, Low Ch, Ant 0
1610.433	27.4	-6.0	1.2	222.0	3.0	0.0	Vert	AV	0.0	21.4	54.0	-32.6	EUT Vertical, Low Ch, Ant 1
1620.167	27.3	-6.0	3.5	171.0	3.0	0.0	Vert	AV	0.0	21.3	54.0	-32.7	EUT Vertical, High Ch, Ant 0
1619.967	27.3	-6.0	1.0	154.0	3.0	0.0	Horz	AV	0.0	21.3	54.0	-32.7	EUT Vertical, High Ch, Ant 1
1618.108	27.3	-6.0	1.0	50.0	3.0	0.0	Vert	AV	0.0	21.3	54.0	-32.7	EUT Vertical, High Ch, Ant 1
1612.683	27.3	-6.0	1.2	178.0	3.0	0.0	Vert	AV	0.0	21.3	54.0	-32.7	EUT Vertical, Mid Ch, Ant 0
1216.017	28.6	-7.4	1.0	211.0	3.0	0.0	Vert	AV	0.0	21.2	54.0	-32.8	EUT Vertical, High Ch, Ant 1
1215.900	28.6	-7.4	1.0	19.0	3.0	0.0	Horz	AV	0.0	21.2	54.0	-32.8	EUT Vertical, High Ch, Ant 1
1612.583	27.2	-6.0	1.0	91.0	3.0	0.0	Horz	AV	0.0	21.2	54.0	-32.8	EUT Vertical, Mid Ch, Ant 0
1608.092	27.2	-6.0	3.5	274.0	3.0	0.0	Horz	AV	0.0	21.2	54.0	-32.8	EUT Vertical, Low Ch, Ant 0
1607.675	27.2	-6.0	2.1	33.0	3.0	0.0	Vert	AV	0.0	21.2	54.0	-32.8	EUT Vertical, Low Ch, Ant 0
1215.842	28.2	-7.4	1.0	12.0	3.0	0.0	Horz	AV	0.0	20.8	54.0	-33.2	EUT Vertical, High Ch, Ant 0
1207.992	28.2	-7.4	1.0	150.0	3.0	0.0	Horz	AV	0.0	20.8	54.0	-33.2	EUT Vertical, Mid Ch, Ant 1
1207.933	28.0	-7.4	2.4	237.0	3.0	0.0	Vert	AV	0.0	20.6	54.0	-33.4	EUT Vertical, Mid Ch, Ant 1
1205.650	27.9	-7.4	2.5	195.0	3.0	0.0	Vert	AV	0.0	20.5	54.0	-33.5	EUT Vertical, Low Ch, Ant 0
1213.392	27.7	-7.4	3.5	11.0	3.0	0.0	Vert	AV	0.0	20.3	54.0	-33.7	EUT Vertical, High Ch, Ant 0
1209.667	27.7	-7.4	1.0	358.0	3.0	0.0	Horz	AV	0.0	20.3	54.0	-33.7	EUT Vertical, Mid Ch, Ant 0
1205.567	27.7	-7.4	1.0	275.0	3.0	0.0	Vert	AV	0.0	20.3	54.0	-33.7	EUT Vertical, Low Ch, Ant 1
1205.575	27.7	-7.4	2.6	322.0	3.0	0.0	Horz	AV	0.0	20.3	54.0	-33.7	EUT Vertical, Low Ch, Ant 1
1214.925	43.3	-7.4	1.0	19.0	3.0	0.0	Horz	PK	0.0	35.9	74.0	-38.1	EUT Vertical, High Ch, Ant 1
1207.617	43.0	-7.4	1.0	145.0	3.0	0.0	Horz	PK	0.0	35.6	74.0	-38.4	EUT Vertical, Low Ch, Ant 0
1208.417	42.8	-7.4	2.5	195.0	3.0	0.0	Vert	PK	0.0	35.4	74.0	-38.6	EUT Vertical, Low Ch, Ant 0
1619.617	41.3	-6.0	3.5	171.0	3.0	0.0	Vert	PK	0.0	35.3	74.0	-38.7	EUT Vertical, High Ch, Ant 0
1214.025	42.6	-7.4	3.5	11.0	3.0	0.0	Vert	PK	0.0	35.2	74.0	-38.8	EUT Vertical, High Ch, Ant 0
1611.642	41.2	-6.0	1.2	178.0	3.0	0.0	Vert	PK	0.0	35.2	74.0	-38.8	EUT Vertical, Mid Ch, Ant 0
1210.008	42.5	-7.4	1.0	150.0	3.0	0.0	Horz	PK	0.0	35.1	74.0	-38.9	EUT Vertical, Mid Ch, Ant 1
1621.517	41.1	-6.0	1.0	154.0	3.0	0.0	Horz	PK	0.0	35.1	74.0	-38.9	EUT Vertical, High Ch, Ant 1
1619.342	41.0	-6.0	1.0	50.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Vertical, High Ch, Ant 1
1615.783	41.0	-6.0	1.0	358.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Vertical, Mid Ch, Ant 1
1609.300	41.0	-6.0	3.5	274.0	3.0	0.0	Horz	PK	0.0	35.0	74.0	-39.0	EUT Vertical, Low Ch, Ant 0
1608.142	41.0	-6.0	1.2	173.0	3.0	0.0	Horz	PK	0.0	35.0	74.0	-39.0	EUT Vertical, Low Ch, Ant 1
1607.383	41.0	-6.0	2.1	33.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Vertical, Low Ch, Ant 0
1621.058	40.9	-6.0	1.0	172.0	3.0	0.0	Horz	PK	0.0	34.9	74.0	-39.1	EUT Vertical, High Ch, Ant 0
1216.925	42.2	-7.4	1.0	12.0	3.0	0.0	Horz	PK	0.0	34.8	74.0	-39.2	EUT Vertical, High Ch, Ant 0
1613.033	40.8	-6.0	1.0	91.0	3.0	0.0	Horz	PK	0.0	34.8	74.0	-39.2	EUT Vertical, Mid Ch, Ant 0
1606.167	40.7	-6.0	1.2	222.0	3.0	0.0	Vert	PK	0.0	34.7	74.0	-39.3	EUT Vertical, Low Ch, Ant 1
1214.217	42.0	-7.4	1.0	211.0	3.0	0.0	Vert	PK	0.0	34.6	74.0	-39.4	EUT Vertical, High Ch, Ant 1
1612.883	40.6	-6.0	1.0	349.0	3.0	0.0	Horz	PK	0.0	34.6	74.0	-39.4	EUT Vertical, Mid Ch, Ant 1
1208.583	41.9	-7.4	2.4	237.0	3.0	0.0	Vert	PK	0.0	34.5	74.0	-39.5	EUT Vertical, Mid Ch, Ant 1
1209.558	41.8	-7.4	1.0	314.0	3.0	0.0	Vert	PK	0.0	34.4	74.0	-39.6	EUT Vertical, Mid Ch, Ant 0
1204.917	41.8	-7.4	2.6	322.0	3.0	0.0	Horz	PK	0.0	34.4	74.0	-39.6	EUT Vertical, Low Ch, Ant 1
1204.600	41.8	-7.4	1.0	275.0	3.0	0.0	Vert	PK	0.0	34.4	74.0	-39.6	EUT Vertical, Low Ch, Ant 1
1208.450	41.7	-7.4	1.0	358.0	3.0	0.0	Horz	PK	0.0	34.3	74.0	-39.7	EUT Vertical, Mid Ch, Ant 0

AC POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10-2009.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARG	03/22/2012	12 mo
Attenuator, 20 dB	SM Electronics	SA01B-20	REF	12/21/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	05/31/2012	24 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	05/30/2012	12 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	04/16/2012	12 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.94 dB	-2.94 dB

CONFIGURATIONS INVESTIGATED

MDTR0183-2

MODES INVESTIGATED

MICS Transmitting channel 1
MICS Transmitting channel 5
MICS Transmitting channel 10

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/01/2012
Customer:	Medtronic Inc.	Temperature:	24.07°C
Attendees:	None	Relative Humidity:	57.93%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Elaine Reeves	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification: Equipment Class B FCC 15.207:2012	Method: ANSI C63.10:2009
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TEST PARAMETERS

Run #:	9	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

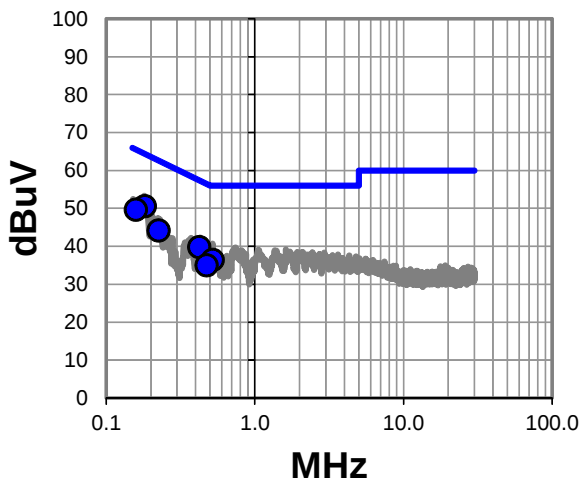
EUT OPERATING MODES

MICS Transmitting channel 1

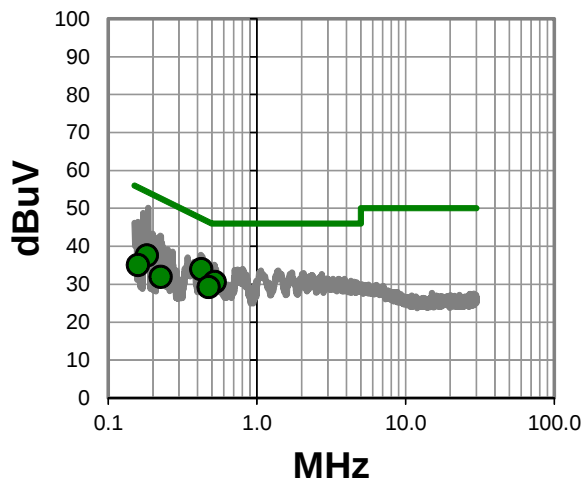
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #9

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.182	30.4	20.2	50.6	64.4	-13.8
0.158	29.5	20.2	49.7	65.6	-15.9
0.423	19.6	20.2	39.8	57.4	-17.6
0.225	24.0	20.2	44.2	62.6	-18.4
0.520	16.2	20.2	36.4	56.0	-19.6
0.473	14.8	20.2	35.0	56.5	-21.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.423	13.8	20.2	34.0	47.4	-13.4
0.520	10.4	20.2	30.6	46.0	-15.4
0.182	17.4	20.2	37.6	54.4	-16.8
0.473	9.1	20.2	29.3	46.5	-17.2
0.158	14.9	20.2	35.1	55.6	-20.5
0.225	11.8	20.2	32.0	52.6	-20.6

CONCLUSION

Pass

Elaine L. Reeves

Tested By

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/01/2012
Customer:	Medtronic Inc.	Temperature:	24.07°C
Attendees:	None	Relative Humidity:	57.93%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Elaine Reeves	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification: Equipment Class B FCC 15.207:2012	Method: ANSI C63.10:2009
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TEST PARAMETERS

Run #:	10	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

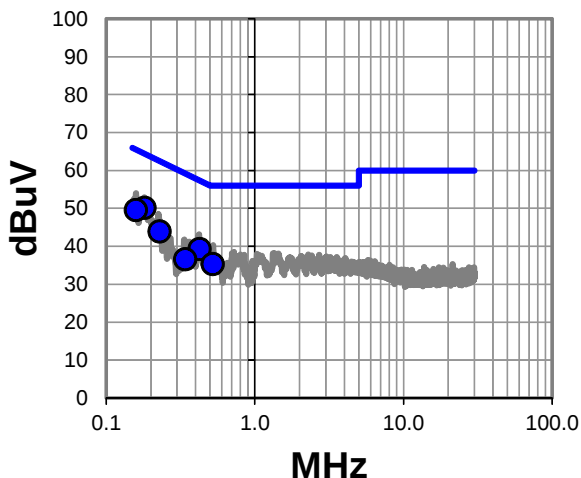
EUT OPERATING MODES

MICS Transmitting channel 1

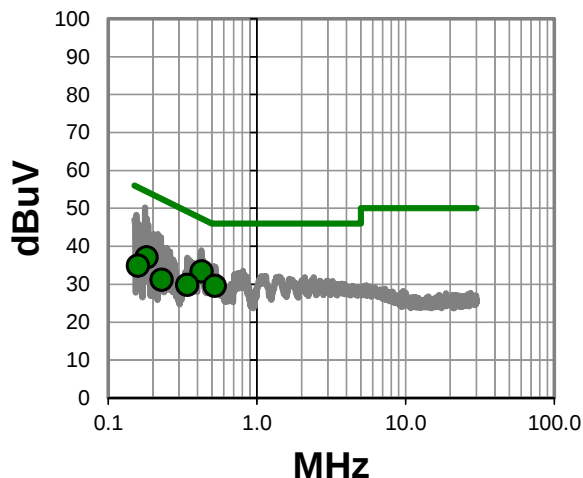
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #10

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.181	30.0	20.2	50.2	64.4	-14.2
0.158	29.4	20.2	49.6	65.6	-16.0
0.424	19.1	20.2	39.3	57.4	-18.1
0.228	23.7	20.2	43.9	62.5	-18.6
0.520	15.1	20.2	35.3	56.0	-20.7
0.340	16.4	20.2	36.6	59.2	-22.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.424	13.2	20.2	33.4	47.4	-14.0
0.520	9.4	20.2	29.6	46.0	-16.4
0.181	16.9	20.2	37.1	54.4	-17.3
0.340	9.7	20.2	29.9	49.2	-19.3
0.158	14.7	20.2	34.9	55.6	-20.7
0.228	11.0	20.2	31.2	52.5	-21.3

CONCLUSION

Pass

Elaine L. Reeves

Tested By

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/01/2012
Customer:	Medtronic Inc.	Temperature:	24.07°C
Attendees:	None	Relative Humidity:	57.93%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Elaine Reeves	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification: Equipment Class B FCC 15.207:2012	Method: ANSI C63.10:2009
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TEST PARAMETERS

Run #:	11	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

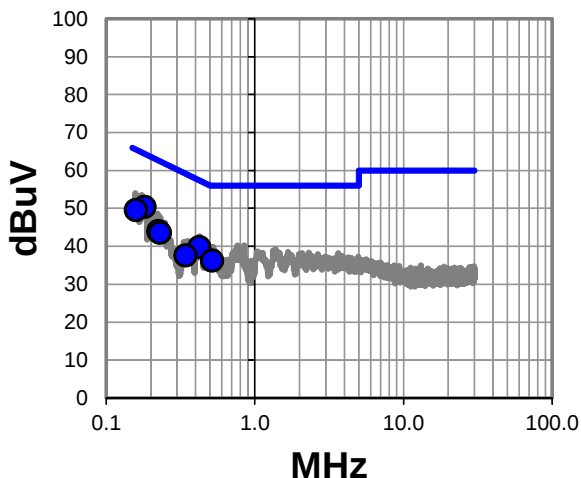
EUT OPERATING MODES

MICS Transmitting channel 5

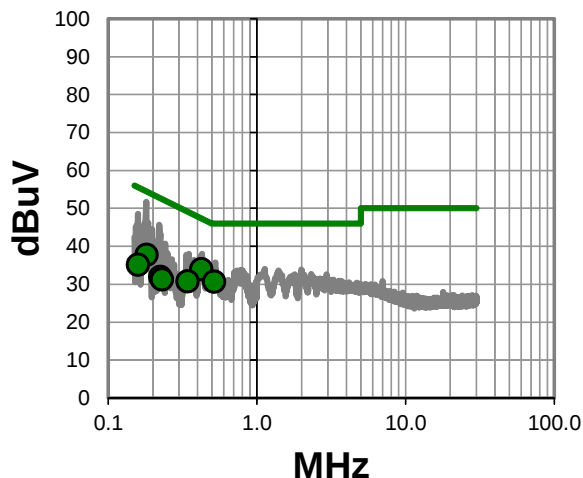
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #11

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.181	30.2	20.2	50.4	64.4	-14.0
0.158	29.4	20.2	49.6	65.6	-16.0
0.423	19.6	20.2	39.8	57.4	-17.6
0.224	23.8	20.2	44.0	62.7	-18.7
0.230	23.4	20.2	43.6	62.4	-18.8
0.516	16.1	20.2	36.3	56.0	-19.7
0.341	17.4	20.2	37.6	59.2	-21.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.423	13.8	20.2	34.0	47.4	-13.4
0.516	10.5	20.2	30.7	46.0	-15.3
0.181	17.6	20.2	37.8	54.4	-16.6
0.341	10.6	20.2	30.8	49.2	-18.4
0.158	15.0	20.2	35.2	55.6	-20.4
0.224	11.8	20.2	32.0	52.7	-20.7
0.230	11.1	20.2	31.3	52.4	-21.1

CONCLUSION

Pass

Elaine L. Reeves

Tested By

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/01/2012
Customer:	Medtronic Inc.	Temperature:	24.07°C
Attendees:	None	Relative Humidity:	57.93%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Elaine Reeves	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification: Equipment Class B FCC 15.207:2012	Method: ANSI C63.10:2009
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TEST PARAMETERS

Run #:	12	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

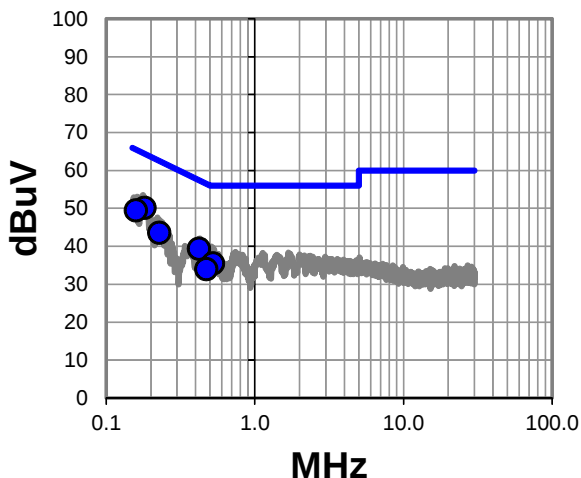
EUT OPERATING MODES

MICS Transmitting channel 5

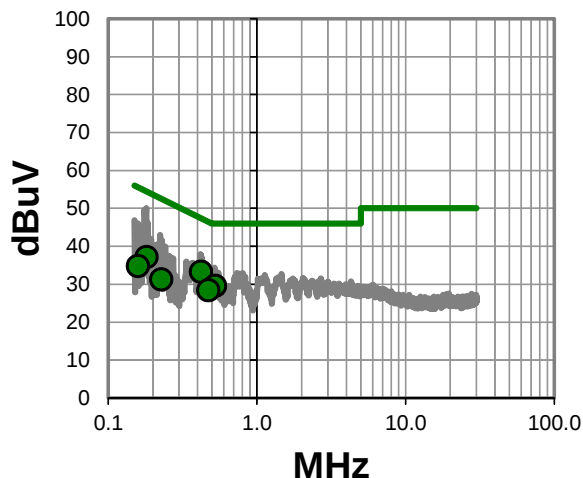
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #12

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.181	30.0	20.2	50.2	64.4	-14.2
0.158	29.3	20.2	49.5	65.6	-16.1
0.421	19.2	20.2	39.4	57.4	-18.0
0.227	23.4	20.2	43.6	62.6	-19.0
0.523	15.3	20.2	35.5	56.0	-20.5
0.471	13.8	20.2	34.0	56.5	-22.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.421	13.1	20.2	33.3	47.4	-14.1
0.523	9.4	20.2	29.6	46.0	-16.4
0.181	17.0	20.2	37.2	54.4	-17.2
0.471	8.2	20.2	28.4	46.5	-18.1
0.158	14.6	20.2	34.8	55.6	-20.8
0.227	11.1	20.2	31.3	52.6	-21.3

CONCLUSION

Pass

Elaine L. Reeves

Tested By

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/02/2012
Customer:	Medtronic Inc.	Temperature:	23.48°C
Attendees:	None	Relative Humidity:	56.44%
Customer Project:	None	Bar. Pressure:	1010.4 mb
Tested By:	Johnathan Lee	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	13	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

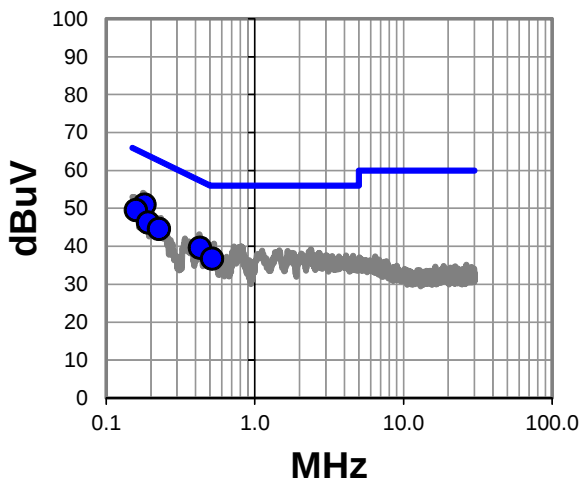
EUT OPERATING MODES

MICS Transmitting channel 10

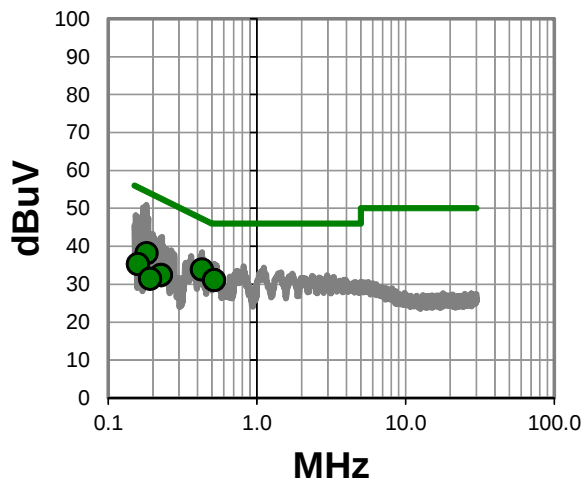
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #13

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.181	30.8	20.2	51.0	64.4	-13.4
0.158	29.4	20.2	49.6	65.6	-16.0
0.191	26.1	20.2	46.3	64.0	-17.7
0.427	19.4	20.2	39.6	57.3	-17.7
0.226	24.4	20.2	44.6	62.6	-18.0
0.516	16.6	20.2	36.8	56.0	-19.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.427	13.7	20.2	33.9	47.3	-13.4
0.516	10.9	20.2	31.1	46.0	-14.9
0.181	18.0	20.2	38.2	54.4	-16.2
0.226	12.3	20.2	32.5	52.6	-20.1
0.158	15.1	20.2	35.3	55.6	-20.3
0.191	11.3	20.2	31.5	54.0	-22.5

CONCLUSION

Pass



Tested By

EUT:	Base	Work Order:	MDTR0183
Serial Number:	YDM000106A	Date:	08/02/2012
Customer:	Medtronic Inc.	Temperature:	23.48°C
Attendees:	None	Relative Humidity:	56.44%
Customer Project:	None	Bar. Pressure:	1010.4 mb
Tested By:	Johnathan Lee	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	MDTR0183-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2012	ANSI C63.10:2009

TEST PARAMETERS

Run #:	14	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

Per MDTR0129 test plan configuration: 5

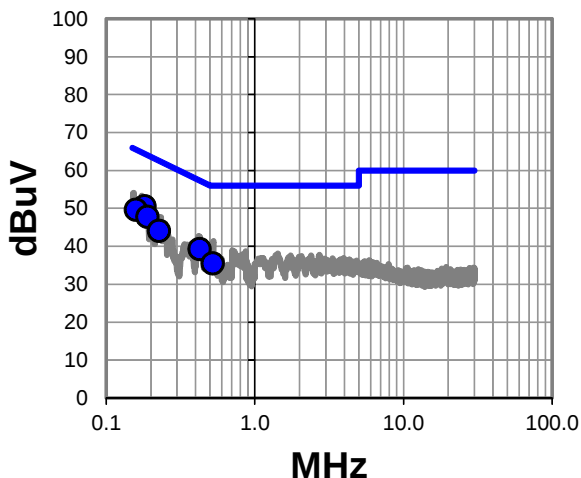
EUT OPERATING MODES

MICS Transmitting channel 10

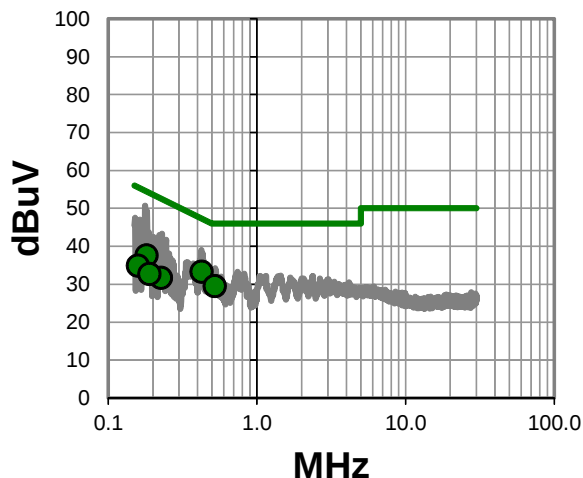
DEVIATIONS FROM TEST STANDARD

None

**Quasi Peak Data - vs -
Quasi Peak Limit**



**Average Data - vs - Average
Limit**



AC POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #14

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.181	30.4	20.2	50.6	64.4	-13.8
0.158	29.5	20.2	49.7	65.6	-15.9
0.189	27.6	20.2	47.8	64.1	-16.3
0.424	19.1	20.2	39.3	57.4	-18.1
0.226	23.9	20.2	44.1	62.6	-18.5
0.520	15.3	20.2	35.5	56.0	-20.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.424	13.1	20.2	33.3	47.4	-14.1
0.520	9.3	20.2	29.5	46.0	-16.5
0.181	17.4	20.2	37.6	54.4	-16.8
0.158	14.7	20.2	34.9	55.6	-20.7
0.226	11.5	20.2	31.7	52.6	-20.9
0.189	12.5	20.2	32.7	54.1	-21.4

CONCLUSION

Pass



Tested By