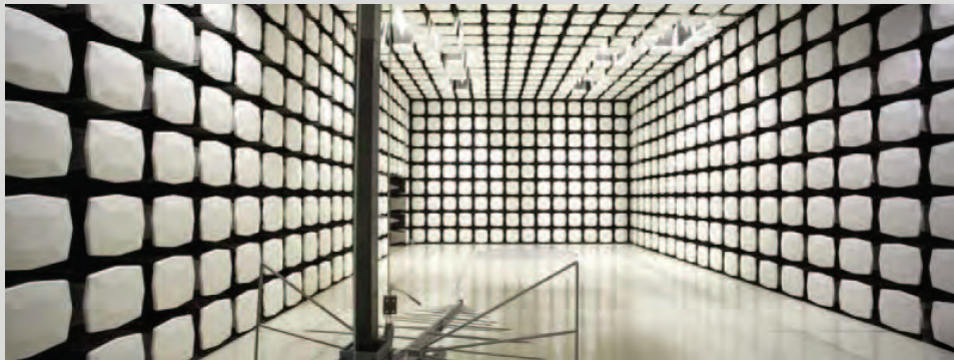




**Medtronic Inc.
Intellis - Models 97745 (PTM), 97755 (RTM)**

Report #: MDTR0182.3 Rev. 1



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: July 31, 2012

Medtronic Inc.

Model: Intellis - Models 97745 (PTM), 97755 (RTM)

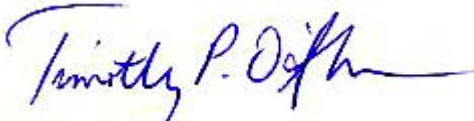
Emissions

Test Description	Specification	Test Method	Pass/Fail
Emissions Bandwidth	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	Pass
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
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 109:2012 Class B	ANSI C63.4:2009	Pass
Spurious Radiated Emissions	FCC 951:2012	ANSI/TIA/EIA-603-C-2004	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 Number	Description	Date	Page Number
01	Added Emissions Bandwidth to this report	10-18-2012	2, 7, 9, 10-14

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.

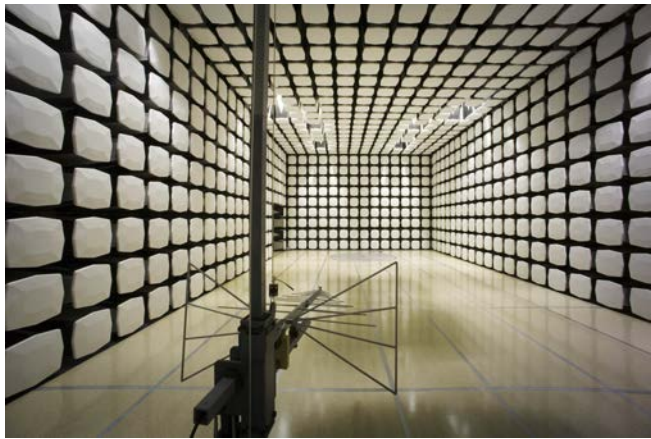
SCOPE

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

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



<p>Oregon Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066</p>	<p>California Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918</p>	<p>New York Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796</p>	<p>Minnesota Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281</p>	<p>Washington Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675</p>
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



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:	Holli Pheil
Model:	Intellis - Models 97745 (PTM), 97755 (RTM)
First Date of Test:	July 16, 2012
Last Date of Test:	July 31, 2012
Receipt Date of Samples:	July 10, 2012
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The Intellis PTM is a handheld, battery operated, microprocessor-based programmer designed for use by clinicians and patients to provide control of medical therapy for pain. Control therapy includes the ability to permit management of stimulation or view and acknowledge medical alarms or alerts.

The RTM is an instrument designed for use by clinicians and patients to charge rechargeable medical devices and stimulators. Operationally, the RTM requires a physical interface with a patient programmer via a cabled system connection. Power is drawn from the patient programmer's battery (PTM) source to drive recharge circuitry. The RTM also assists in the bonding operation of a medical device to a patient programmer and/or places the device in a known state via proximal telemetry, either operation requires patient programmer use and software interaction while the RTM is connected.

Clocks and Oscillators of the EUT:

None Provided

Testing Objective:

To demonstrate compliance to FCC requirements for the MICS transmitter.

Configuration MDTR0182- 8

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
PTM	Medtronic inc.	97745	NLD001856N
PTM	Medtronic inc.	97745	NLD001683N

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
DC adapter	Group West	18UR-05-2000	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.90m	Yes	DC adapter	PTM
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MDTR0182- 9

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
PTM	Medtronic inc.	97745	NLD001683N

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
RTM	Medtronic inc.	97755	NLF001345N

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RTM Cable	Yes	0.90m	Yes	PTM	RTM
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MDTR0182- 11

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
PTM	Medtronic inc.	97745	NLD001683N

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
RTM	Medtronic inc.	97755	NLF001345N

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
RTM Cable	Yes	0.90m	Yes	PTM	RTM
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration MDTR0182- 13

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
PTM	Medtronic inc.	97745	NLD001683N

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
DC adapter	Group West	18UR-05-2000	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.90m	Yes	DC adapter	PTM
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	7/16/2012	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	7/17/2012	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	7/17/2012	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	7/17/2012	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	7/18/2012	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.
6	7/18/2012	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.
7	7/31/2012	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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
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 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: Intellis - Models 97745 (PTM), 97755 (RTM)		Work Order: MDTR0182
Serial Number: NLD001683N		Date: 07/17/12
Customer: Medtronic Inc.		Temperature: 24.32°C
Attendees: Scott Straka		Humidity: 60%
Project: None		Barometric Pres.: 1008.9
Tested by: Trevor Buls	Power: 5 VDC	Job Site: MN08

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

COMMENTS

Per MDTR0043 test plan configuration: 5 and 6

DEVIATIONS FROM TEST STANDARD

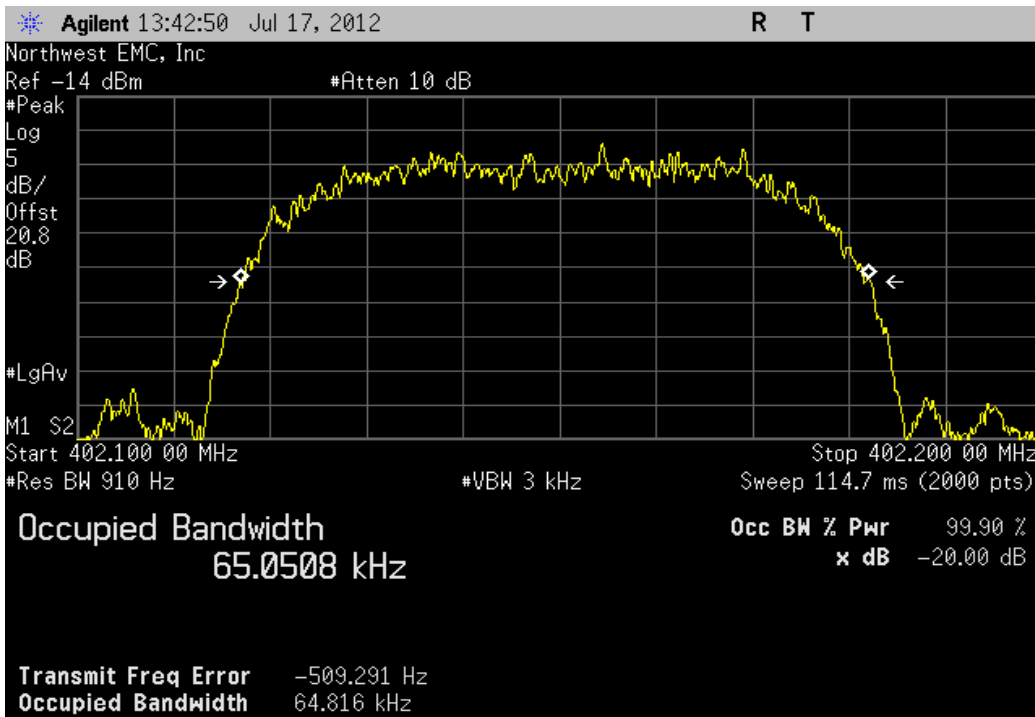
None

Configuration #	8, 9	Signature	<i>Trevor Buls</i>
-----------------	------	-----------	--------------------

	Value	Limit	Result
Per MDTR0043 test plan configuration: 5			
Low Channel, 402.15 MHz	64.816 kHz	≤ 300 kHz	Pass
Mid Channel, 403.35 MHz	63.422 kHz	≤ 300 kHz	Pass
High Channel, 404.85 MHz	63.84 kHz	≤ 300 kHz	Pass
Per MDTR0043 test plan configuration: 6			
Low Channel, 402.15 MHz	64.74 kHz	≤ 300 kHz	Pass
Mid Channel, 403.35 MHz	64.576 kHz	≤ 300 kHz	Pass
High Channel, 404.85 MHz	63.25 kHz	≤ 300 kHz	Pass

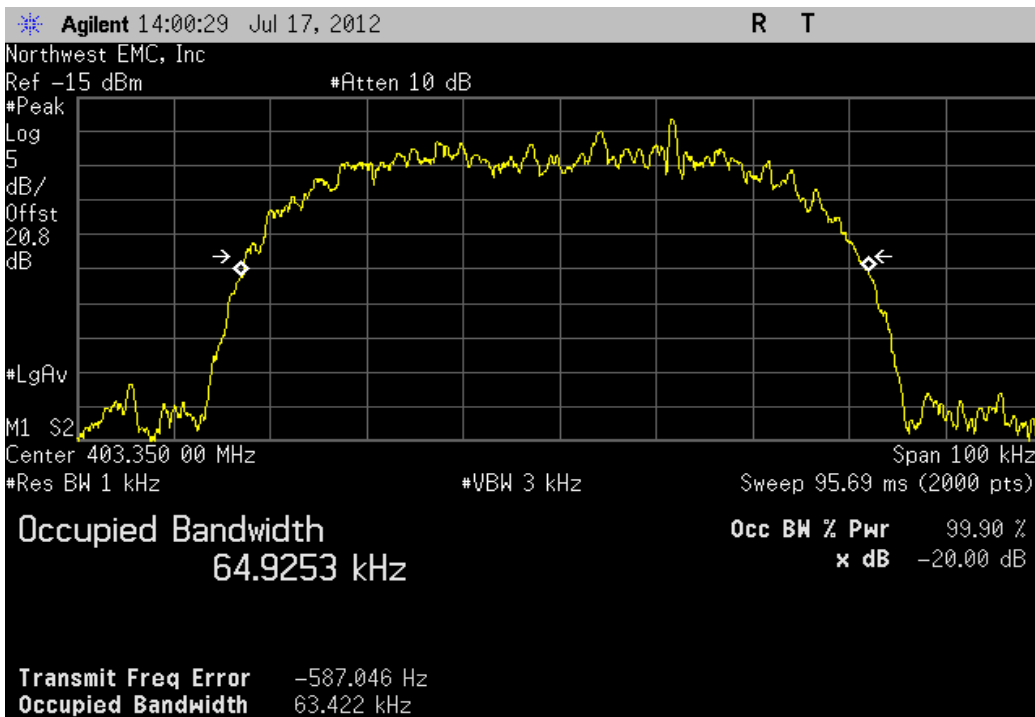
Per MDTR0043 test plan configuration: 5, Low Channel, 402.15 MHz

	Value	Limit	Result
	64.816 kHz	≤ 300 kHz	Pass



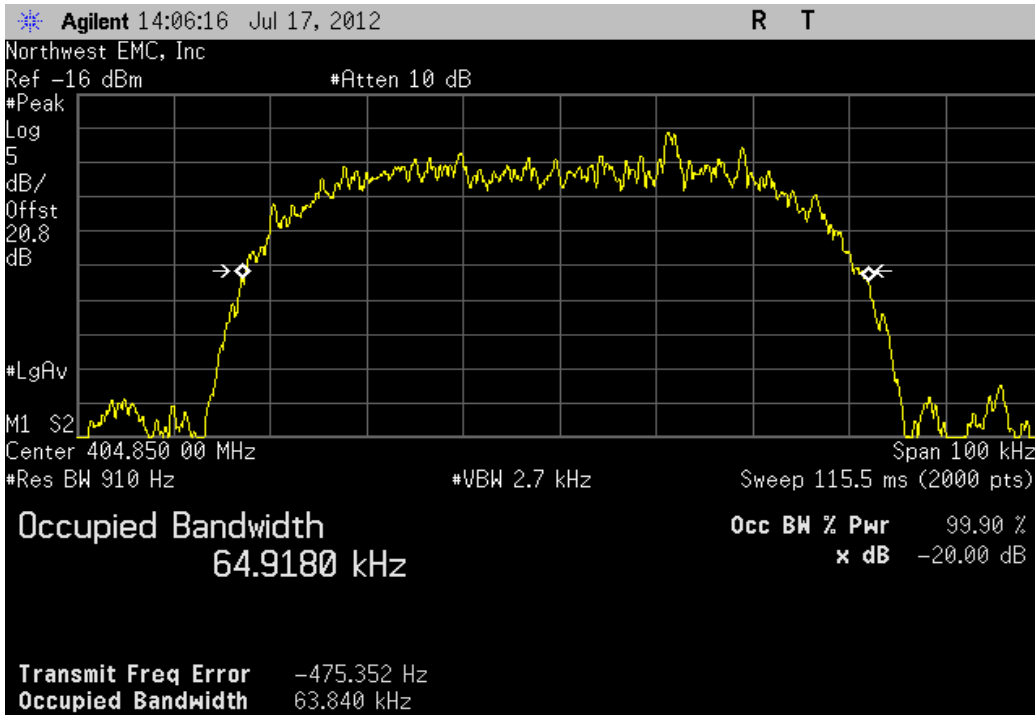
Per MDTR0043 test plan configuration: 5, Mid Channel, 403.35 MHz

	Value	Limit	Result
	63.422 kHz	≤ 300 kHz	Pass



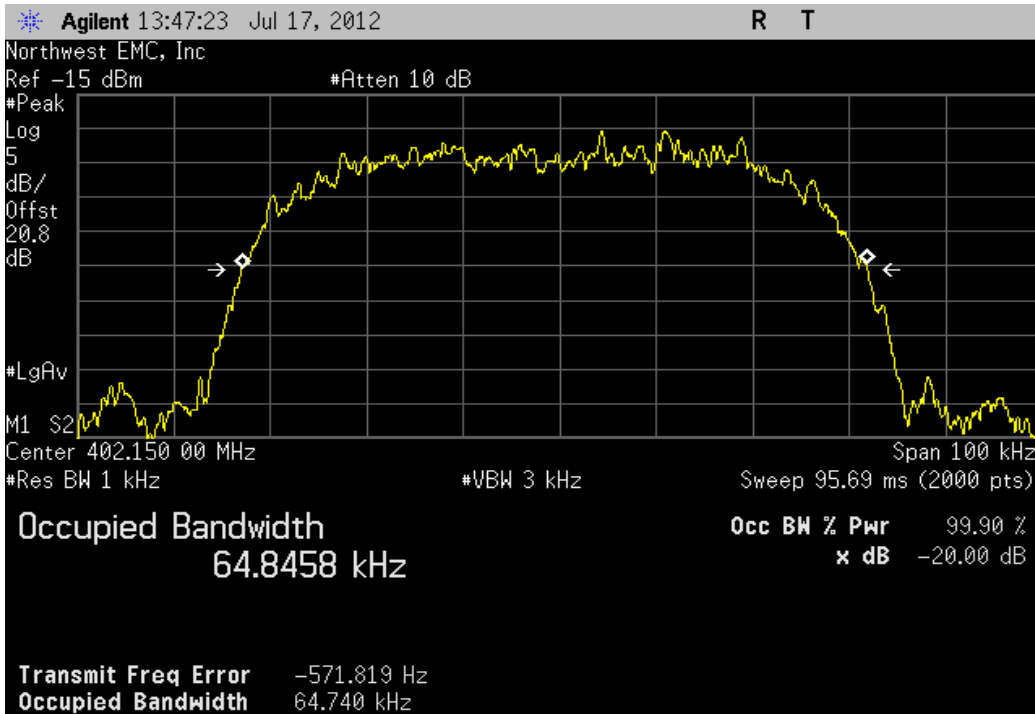
Per MDTR0043 test plan configuration: 5, High Channel, 404.85 MHz

	Value	Limit	Result
	63.84 kHz	≤ 300 kHz	Pass



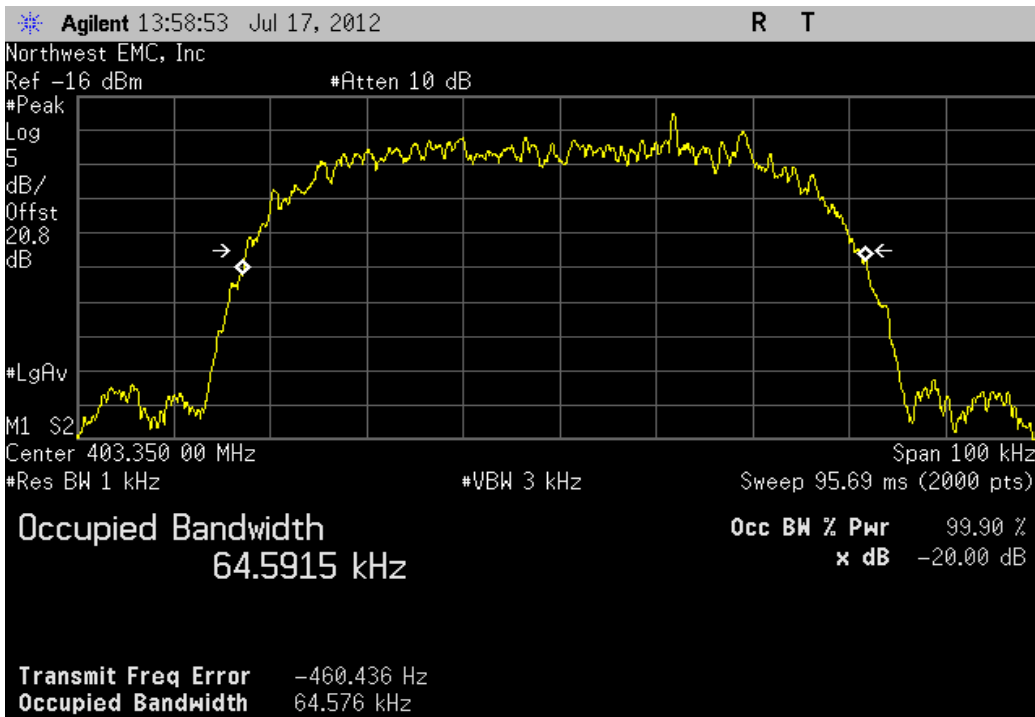
Per MDTR0043 test plan configuration: 6, Low Channel, 402.15 MHz

	Value	Limit	Result
	64.74 kHz	≤ 300 kHz	Pass



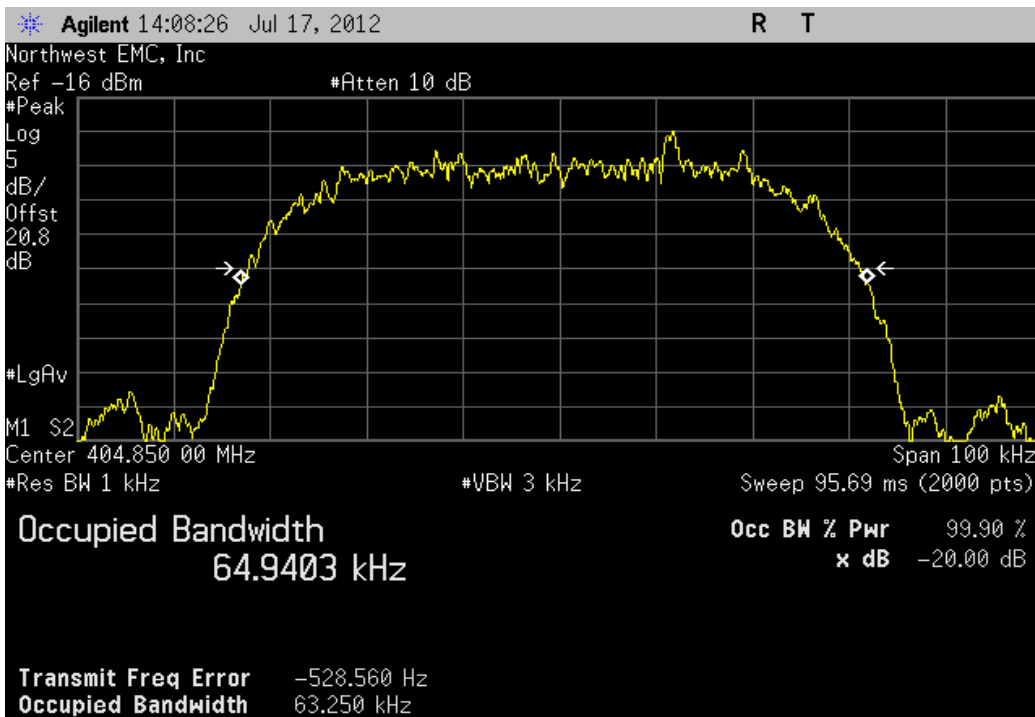
Per MDTR0043 test plan configuration: 6, Mid Channel, 403.35 MHz

	Value	Limit	Result
	64.576 kHz	≤ 300 kHz	Pass



Per MDTR0043 test plan configuration: 6, High Channel, 404.85 MHz

	Value	Limit	Result
	63.25 kHz	≤ 300 kHz	Pass



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

PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz, CW. PTM connected AC Adapter. Li-Ion battery.

PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz, CW. PTM connected to RTM. Li-Ion battery.

POWER SETTINGS INVESTIGATED

5 VDC

Battery

CONFIGURATIONS INVESTIGATED

MDTR0182 - 1

MDTR0182 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency	402 MHz	Stop Frequency	405 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
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 95.628(g)(3), the maximum EIRP for a MICS transmitter is 25uW. This is equivalent to a radiated field strength 85.2 dBuV/m at 3 meters when measured over a reference ground plane.

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 effective radiated power (EIRP) 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.

The EUT was configured to transmit in a fixture that simulates the human torso. The dimensions of the test fixture and the characteristics of the tissue material met the requirements 95.627, 3(i) and FCC KDB 617965. The height of the transmitter was 1.5-meter above the reference ground plane.



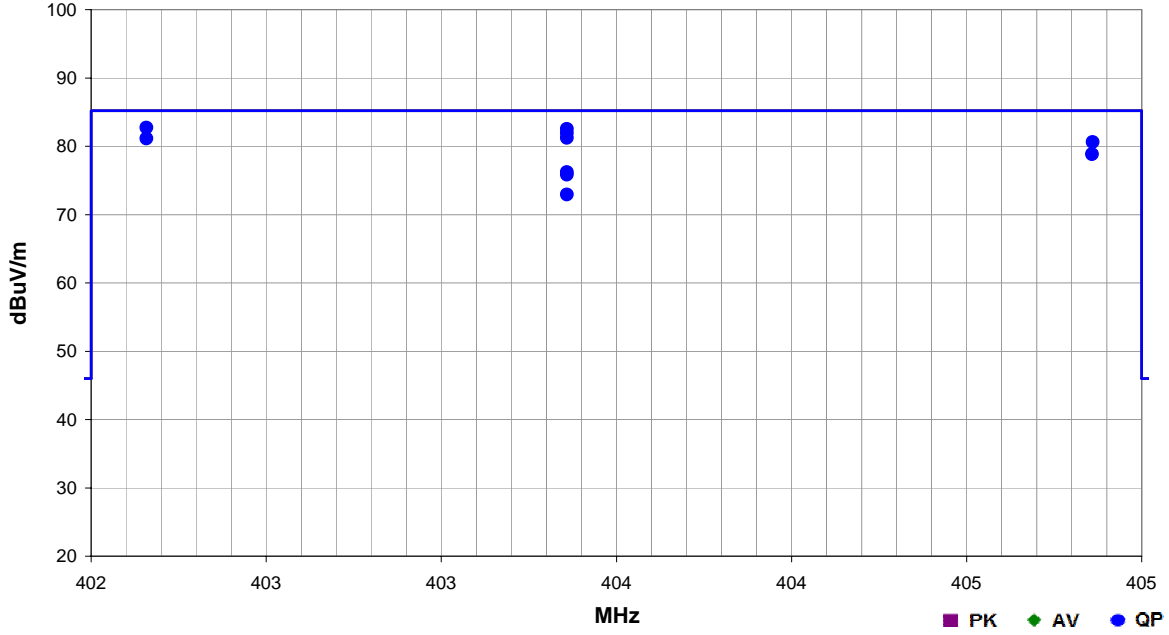
Field Strength of Fundamental

Trevor Buls

Work Order:	MDTR0182	Date:	07/16/12
Project:	None	Temperature:	23.08 °C
Job Site:	MN05	Humidity:	60.14% RH
Serial Number:	NLD001856N	Barometric Pres.:	1010.2 mbar
EUT: Intellis - Models 97745 (PTM), 97755 (RTM)			Tested by: Trevor Buls
Configuration:	4		
Customer:	Medtronic Inc.		
Attendees:	Scott Straka		
EUT Power:	Battery		
Operating Mode:	PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz, CW. PTM connected to RTM. Li-Ion battery.		
Deviations:	None		
Comments:	Per MDTR0043 test plan configuration: 6		

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

Run #	0	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
--------------	---	--------------------------	---	--------------------------	------	----------------	------



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
402.158	60.7	22.0	1.9	281.0	3.0	0.0	Horz	QP	0.0	82.7	85.2	-2.5	EUT Horizontal, Low Ch
403.358	60.4	22.1	1.9	282.0	3.0	0.0	Horz	QP	0.0	82.5	85.2	-2.7	EUT Horizontal, Mid Ch
403.358	59.8	22.1	1.9	283.0	3.0	0.0	Horz	QP	0.0	81.9	85.2	-3.3	EUT on Side, Mid Ch
403.358	59.1	22.1	1.0	246.0	3.0	0.0	Vert	QP	0.0	81.2	85.2	-4.0	EUT Vertical, Mid Ch
402.158	59.1	22.0	1.0	245.0	3.0	0.0	Vert	QP	0.0	81.1	85.2	-4.1	EUT Vertical, Low Ch
404.860	58.4	22.2	1.8	283.0	3.0	0.0	Horz	QP	0.0	80.6	85.2	-4.6	EUT Horizontal, High Ch
404.858	56.6	22.2	1.0	259.0	3.0	0.0	Vert	QP	0.0	78.8	85.2	-6.4	EUT Vertical, High Ch
403.358	54.1	22.1	2.0	348.0	3.0	0.0	Vert	QP	0.0	76.2	85.2	-9.0	EUT Horizontal, Mid Ch
403.358	53.7	22.1	2.2	127.0	3.0	0.0	Horz	QP	0.0	75.8	85.2	-9.4	EUT Vertical, Mid Ch
403.358	50.8	22.1	1.0	142.0	3.0	0.0	Vert	QP	0.0	72.9	85.2	-12.3	EUT on Side, Mid Ch

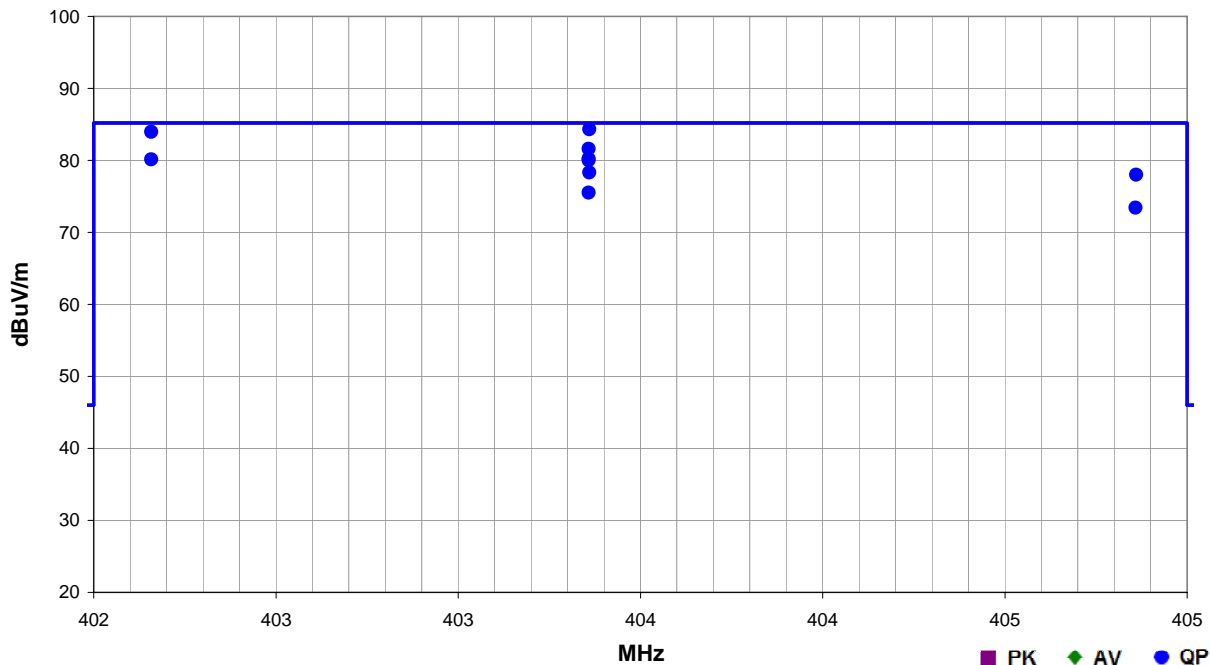


Field Strength of Fundamental

Work Order:	MDTR0182	Date:	07/16/12	<i>Trevor Buls</i>	
Project:	None	Temperature:	23.08 °C		
Job Site:	MN05	Humidity:	60.14% RH		
Serial Number:	NLD001856N	Barometric Pres.:	1010.2 mbar		Tested by: Trevor Buls
EUT:	Intellis - Models 97745 (PTM), 97755 (RTM)				
Configuration:	1				
Customer:	Medtronic Inc.				
Attendees:	Scott Straka				
EUT Power:	5 VDC				
Operating Mode:	PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz, CW. PTM connected AC Adapter. Li-Ion battery.				
Deviations:	None				
Comments:	Per MDTR0043 test plan configuration: 5				

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

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



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
403.360	62.2	22.1	1.1	74.0	3.0	0.0	Vert	QP	0.0	84.3	85.2	-0.9	EUT Vertical, Mid Ch
402.158	61.9	22.0	1.0	245.0	3.0	0.0	Vert	QP	0.0	83.9	85.2	-1.3	EUT Vertical, Low Ch
403.358	59.5	22.1	2.1	153.0	3.0	0.0	Vert	QP	0.0	81.6	85.2	-3.6	EUT on Side, Mid Ch
403.358	58.1	22.1	1.9	196.0	3.0	0.0	Horz	QP	0.0	80.2	85.2	-5.0	EUT on Side, Mid Ch
402.158	58.1	22.0	1.9	185.0	3.0	0.0	Horz	QP	0.0	80.1	85.2	-5.1	EUT on Side, Low Ch
403.358	57.9	22.1	1.0	181.0	3.0	0.0	Vert	QP	0.0	80.0	85.2	-5.2	EUT Horizontal, Mid Ch
403.360	56.2	22.1	1.8	115.0	3.0	0.0	Horz	QP	0.0	78.3	85.2	-6.9	EUT Vertical, Mid Ch
404.860	55.8	22.2	1.0	243.0	3.0	0.0	Vert	QP	0.0	78.0	85.2	-7.2	EUT Vertical, High Ch
403.358	53.4	22.1	1.0	93.0	3.0	0.0	Horz	QP	0.0	75.5	85.2	-9.7	EUT Horizontal, Mid Ch
404.858	51.2	22.2	1.9	187.0	3.0	0.0	Horz	QP	0.0	73.4	85.2	-11.8	EUT on Side, High 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)(4-5) 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.



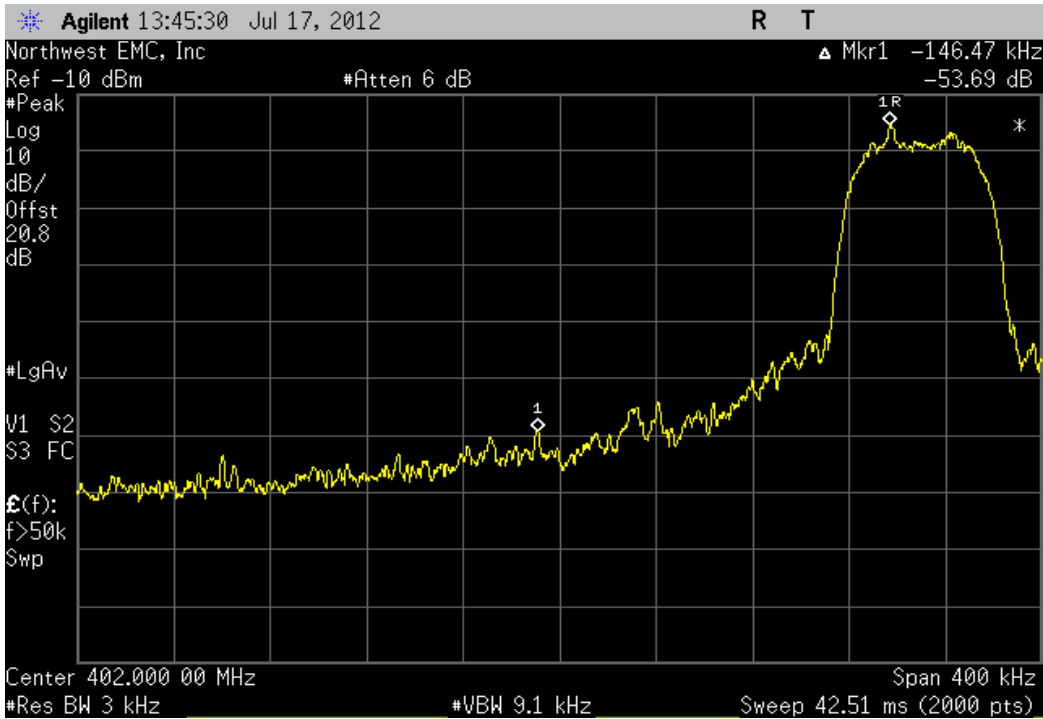
Emissions Mask

XMit 2012.05.09
PsaTx 2012.05.24

EUT: Intellis - Models 97745 (PTM), 97755 (RTM)		Work Order: MDTR0182
Serial Number: NLD001683N		Date: 07/17/12
Customer: Medtronic Inc.		Temperature: 24.32°C
Attendees: Scott Straka		Humidity: 60%
Project: None		Barometric Pres.: 1008.9
Tested by: Trevor Buls	Power: 5 VDC	Job Site: MN08
TEST SPECIFICATIONS		Test Method
FCC 95:2012	ANSI/TIA/EIA-603-C-2004	
COMMENTS		
Per MDTR0043 test plan configuration: 5 and 6		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	8, 9	Signature <i>Trevor Buls</i>
		Value Limit Result
Per MDTR0043 test plan configuration: 5		
Low Channel, 402.15 MHz	-53.69 dBc	≤ -20 dBc Pass
High Channel, 404.85 MHz	-55.48 dBc	≤ -20 dBc Pass
Per MDTR0043 test plan configuration: 6		
Low Channel, 402.15 MHz	-54.39 dBc	≤ -20 dBc Pass
High Channel, 404.85 MHz	-55.24 dBc	≤ -20 dBc Pass

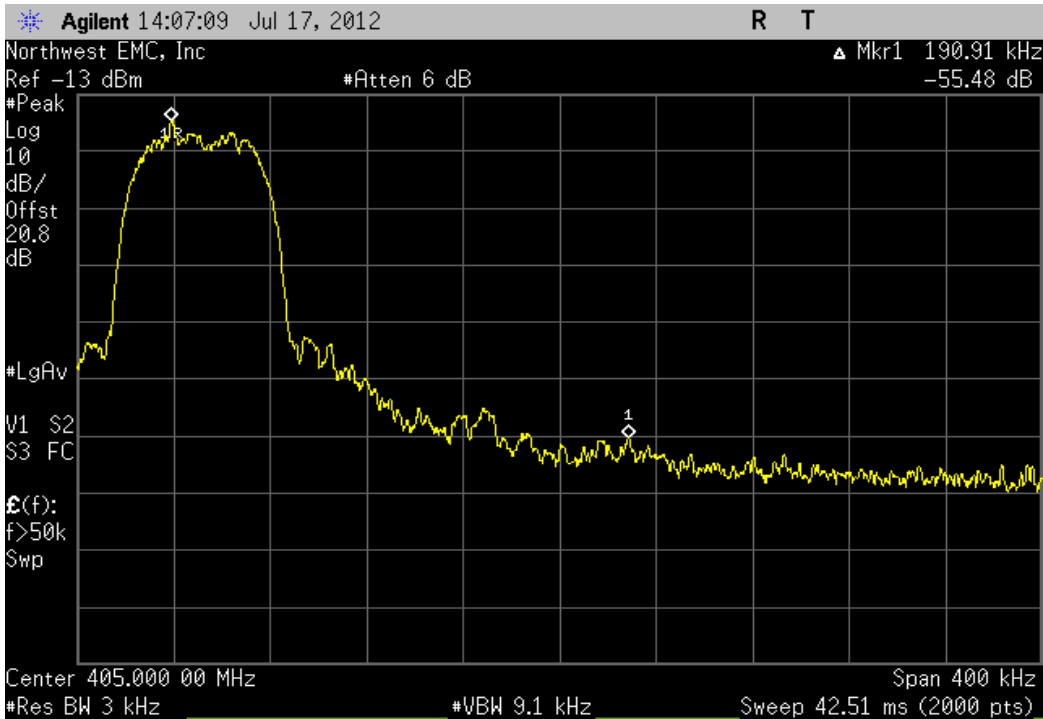
Per MDTR0043 test plan configuration: 5, Low Channel, 402.15 MHz

Value	Limit	Result
-53.69 dBc	≤ -20 dBc	Pass



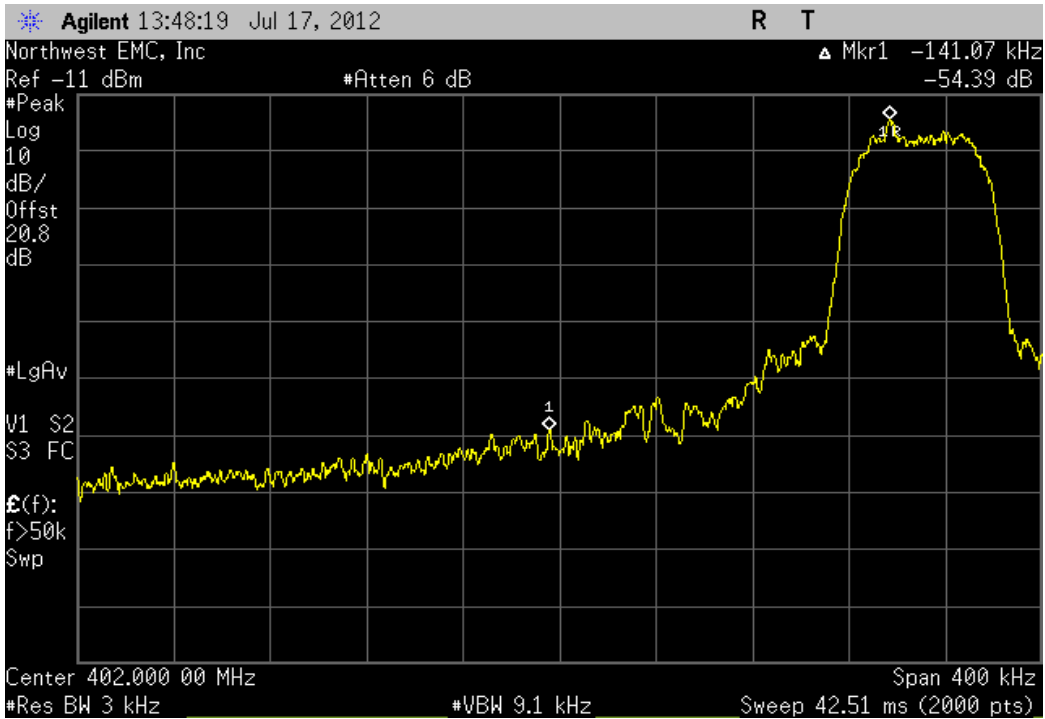
Per MDTR0043 test plan configuration: 5, High Channel, 404.85 MHz

Value	Limit	Result
-55.48 dBc	≤ -20 dBc	Pass



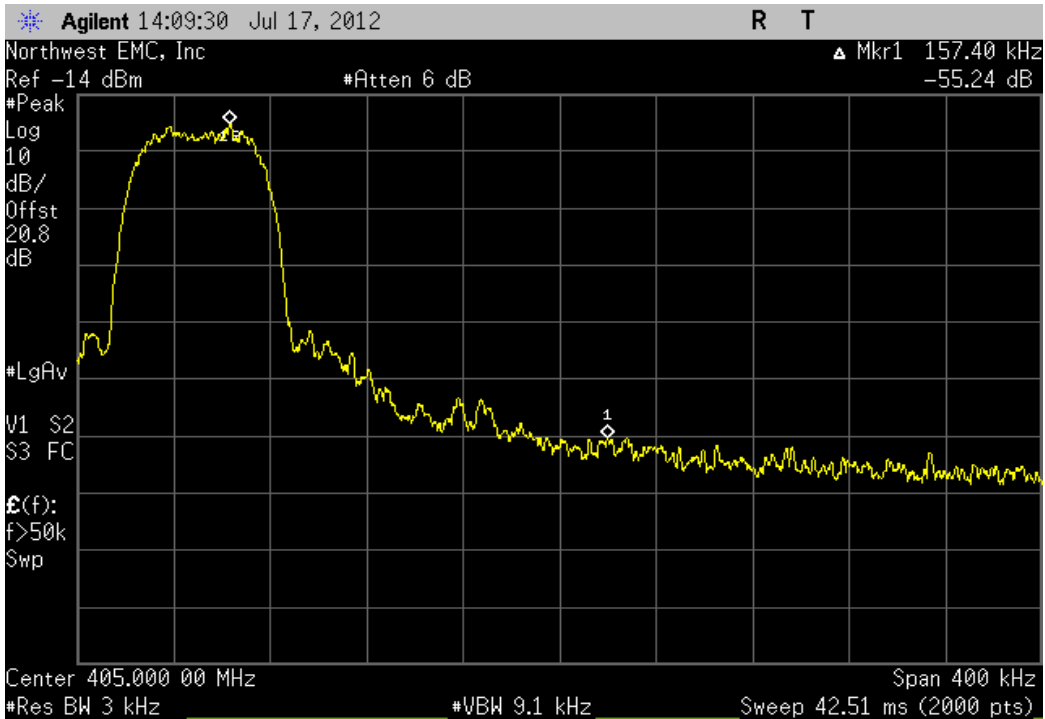
Per MDTR0043 test plan configuration: 6, Low Channel, 402.15 MHz

Value	Limit	Result
-54.39 dBc	≤ -20 dBc	Pass



Per MDTR0043 test plan configuration: 6, High Channel, 404.85 MHz

Value	Limit	Result
-55.24 dBc	≤ -20 dBc	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
Multimeter	Fluke	117	MNN	2/3/2012	24
Variable Transformer	Powerstat	236B	XFF	NCR	0
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	24
Chamber, 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).

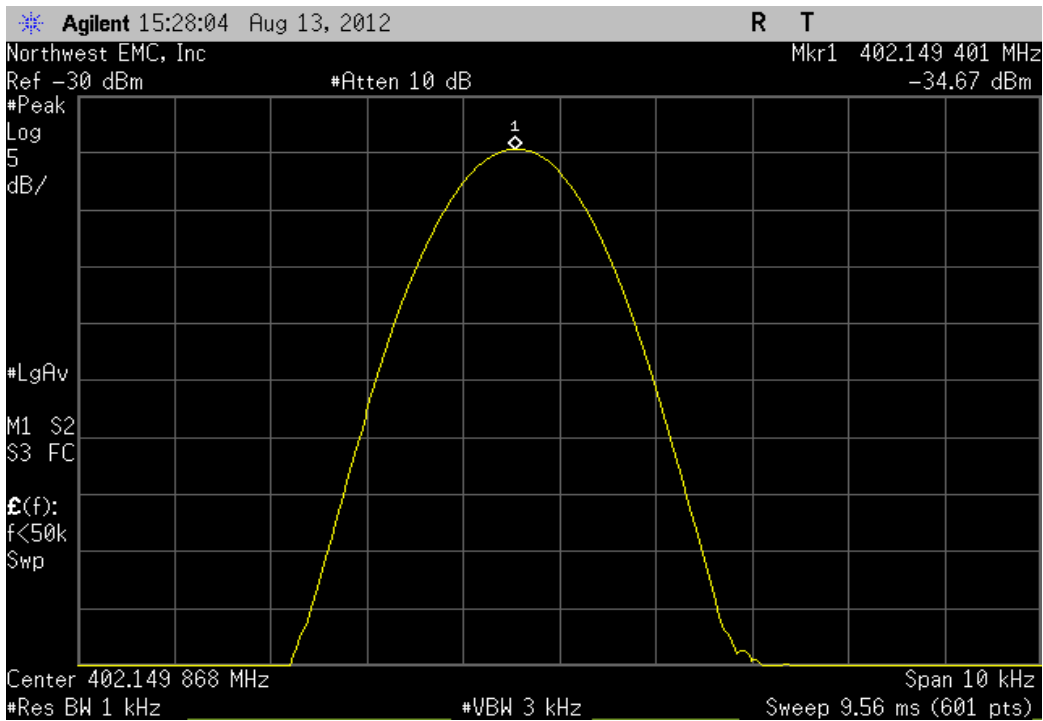
The Frequency Stability was measured using a direct connection to a spectrum analyzer. The spectrum analyzer is configured with a precision frequency reference that exceeds the stability requirement of the transmitter. The EUT was placed inside a temperature / humidity chamber.



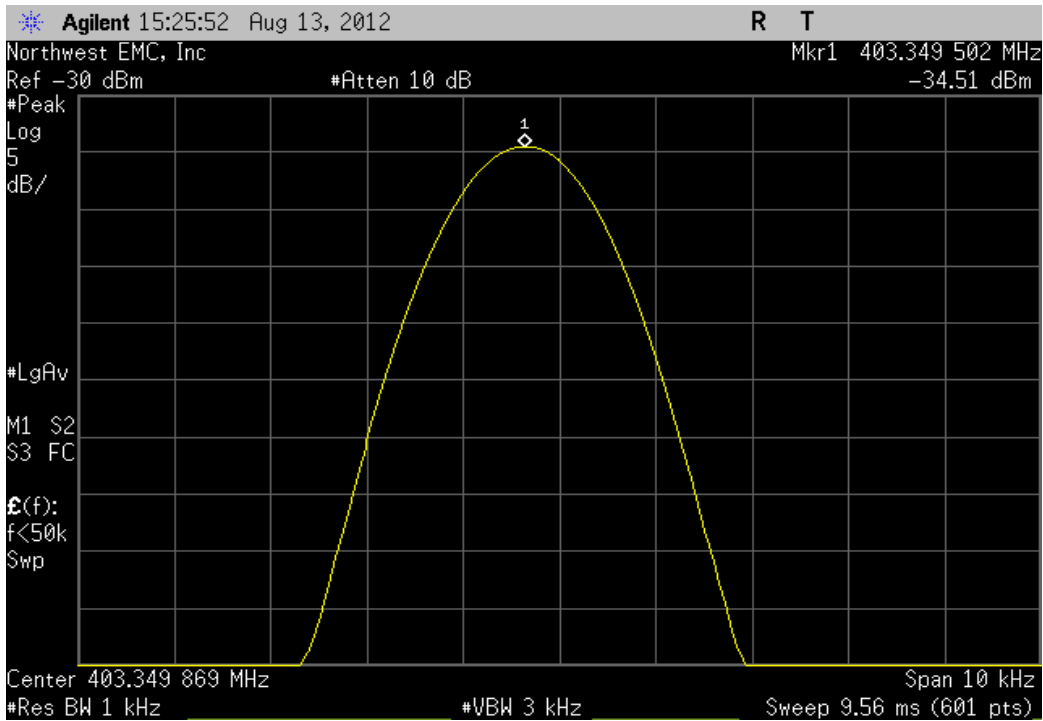
Frequency Stability

EUT: Intellis - Models 97745 (PTM), 97755 (RTM)		Work Order: MDTR0182				
Serial Number: NLD001683N		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						
FCC 95:2012		Test Method				
		ANSI/TIA/EIA-603-C-2004				
		RSS-Gen Issue 3:2010 EN 301 839-1 V1.3.1:2009				
COMMENTS						
Per MDTR0043 test plan configuration: 5.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	13	Signature <i>Trevor Buls</i>				
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
Normal Voltage						
	Low Channel, 402.15 MHz	402.149401	402.15	1.49	100	Pass
	Mid Channel, 403.35 MHz	403.349502	403.35	1.23	100	Pass
	High Channel, 404.85 MHz	404.849486	404.85	1.27	100	Pass
Extreme Voltage +15%						
	Low Channel, 402.15 MHz	402.149452	402.15	1.36	100	Pass
	Mid Channel, 403.35 MHz	403.349519	403.35	1.19	100	Pass
	High Channel, 404.85 MHz	404.849436	404.85	1.39	100	Pass
Extreme Voltage -15%						
	Low Channel, 402.15 MHz	402.149584	402.15	1.03	100	Pass
	Mid Channel, 403.35 MHz	403.349635	403.35	0.9	100	Pass
	High Channel, 404.85 MHz	404.849703	404.85	0.73	100	Pass
Extreme Temperature +55°C						
	Low Channel, 402.15 MHz	402.151154	402.15	2.87	100	Pass
	Mid Channel, 403.35 MHz	403.351021	403.35	2.53	100	Pass
	High Channel, 404.85 MHz	404.851123	404.85	2.77	100	Pass
Extreme Temperature +45°C						
	Low Channel, 402.15 MHz	402.150386	402.15	0.96	100	Pass
	Mid Channel, 403.35 MHz	403.350487	403.35	1.21	100	Pass
	High Channel, 404.85 MHz	404.850556	404.85	1.37	100	Pass
Extreme Temperature +35°C						
	Low Channel, 402.15 MHz	402.150018	402.15	0.04	100	Pass
	Mid Channel, 403.35 MHz	403.349952	403.35	0.12	100	Pass
	High Channel, 404.85 MHz	404.84992	404.85	0.2	100	Pass
Extreme Temperature +25°C						
	Low Channel, 402.15 MHz	402.149485	402.15	1.28	100	Pass
	Mid Channel, 403.35 MHz	403.349618	403.35	0.95	100	Pass
	High Channel, 404.85 MHz	404.849519	404.85	1.19	100	Pass
Extreme Temperature +15°C						
	Low Channel, 402.15 MHz	402.149334	402.15	1.66	100	Pass
	Mid Channel, 403.35 MHz	403.349368	403.35	1.57	100	Pass
	High Channel, 404.85 MHz	404.849336	404.85	1.64	100	Pass
Extreme Temperature +5°C						
	Low Channel, 402.15 MHz	402.14875	402.15	3.11	100	Pass
	Mid Channel, 403.35 MHz	403.348768	403.35	3.05	100	Pass
	High Channel, 404.85 MHz	404.848685	404.85	3.25	100	Pass
Extreme Temperature 0°C						
	Low Channel, 402.15 MHz	402.148349	402.15	4.11	100	Pass
	Mid Channel, 403.35 MHz	403.348417	403.35	3.92	100	Pass
	High Channel, 404.85 MHz	404.848435	404.85	3.87	100	Pass

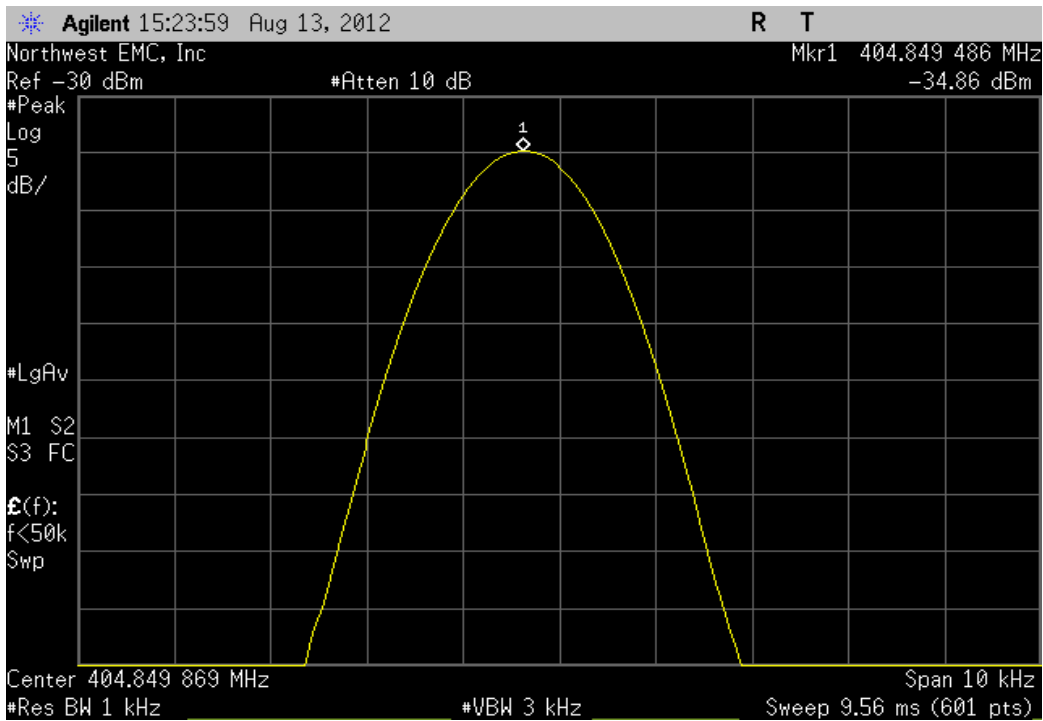
Normal Voltage, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.149401	402.15	1.49	100	Pass	



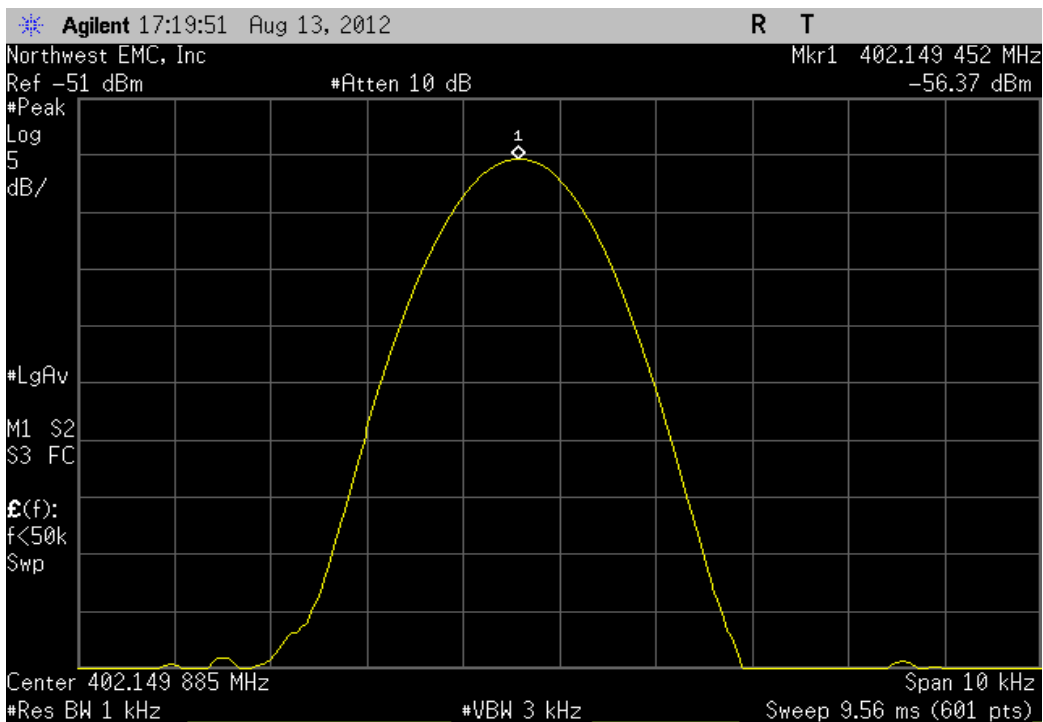
Normal Voltage, Mid Channel, 403.35 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
403.349502	403.35	1.23	100	Pass	



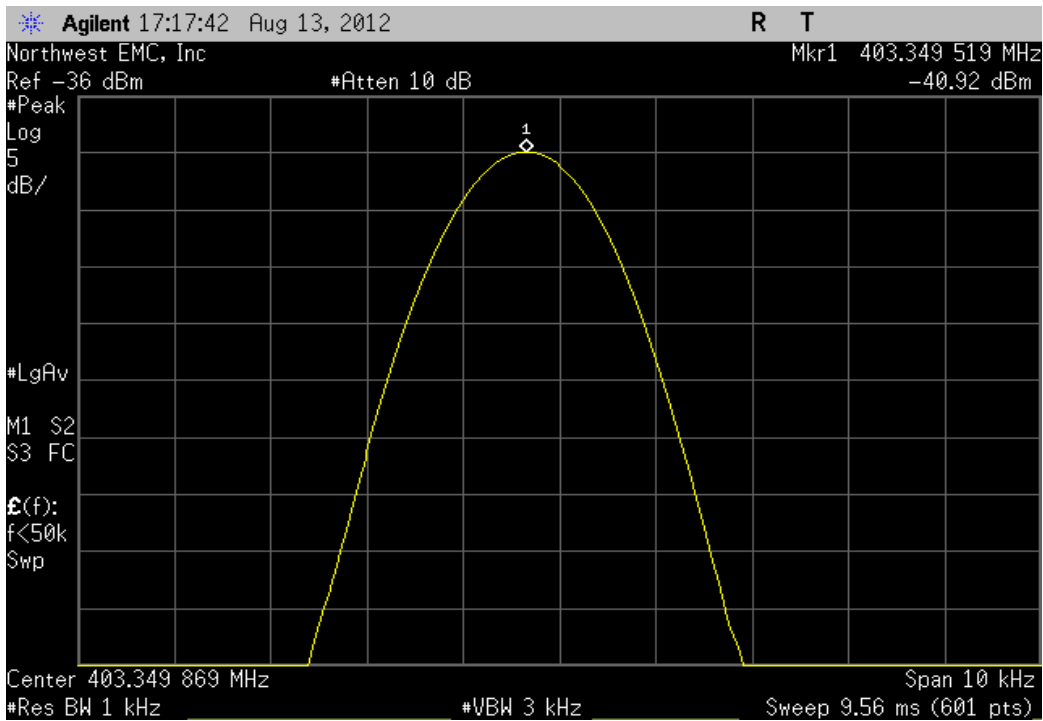
Normal Voltage, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849486	404.85	1.27	100	Pass



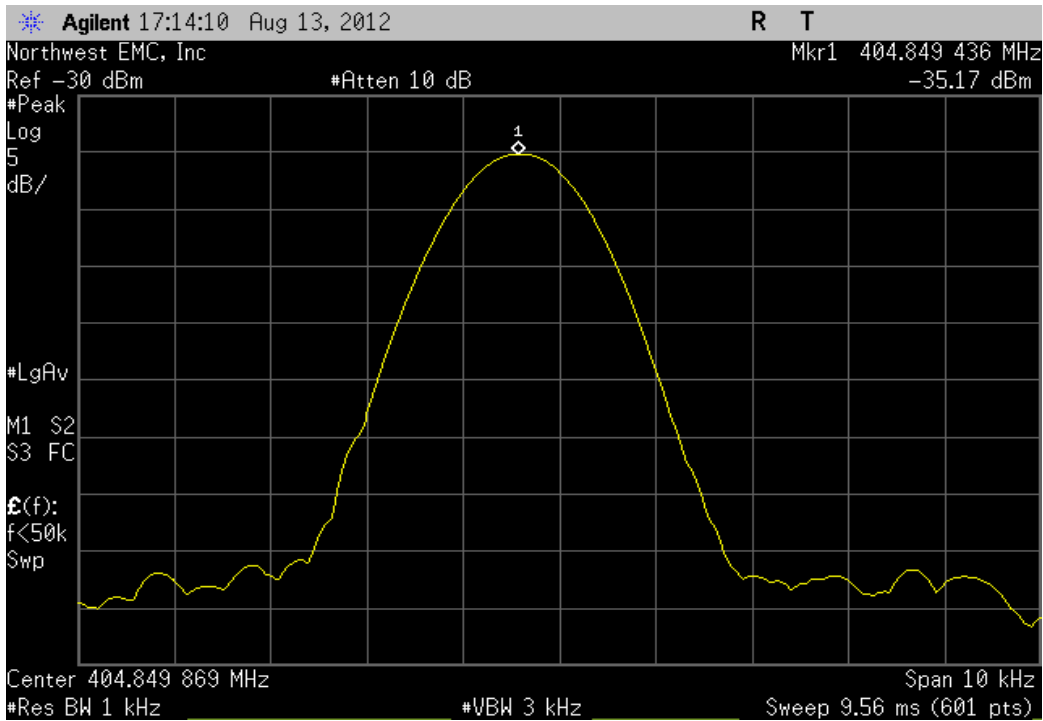
Extreme Voltage +15%, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149452	402.15	1.36	100	Pass



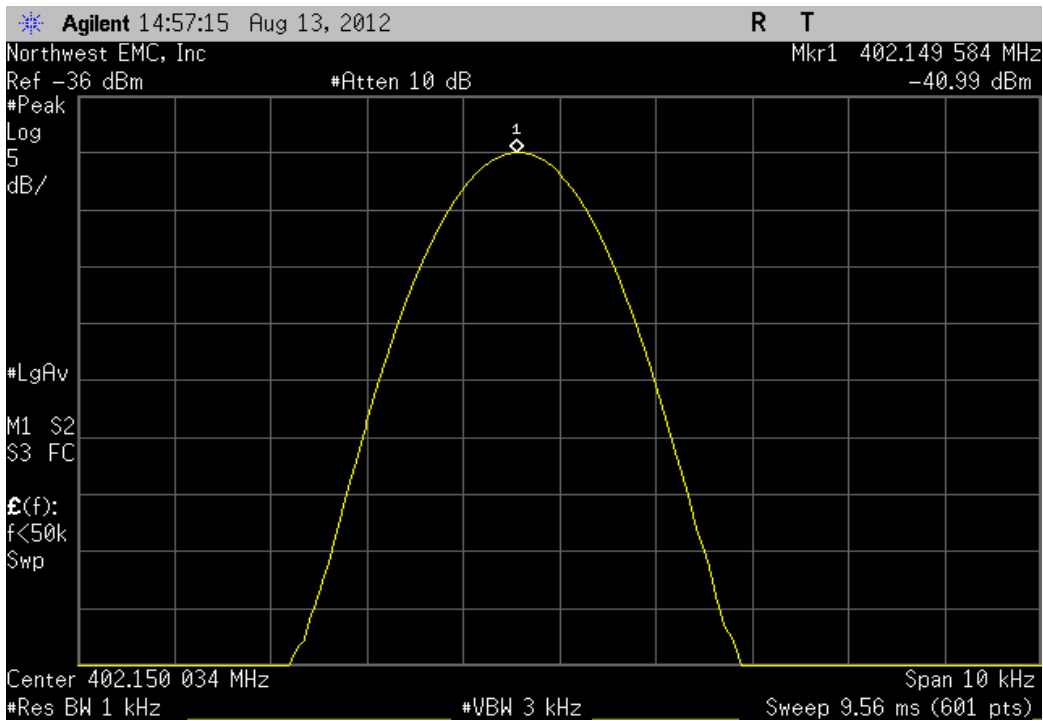
Extreme Voltage +15%, Mid Channel, 403.35 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
403.349519	403.35	1.19	100	Pass	



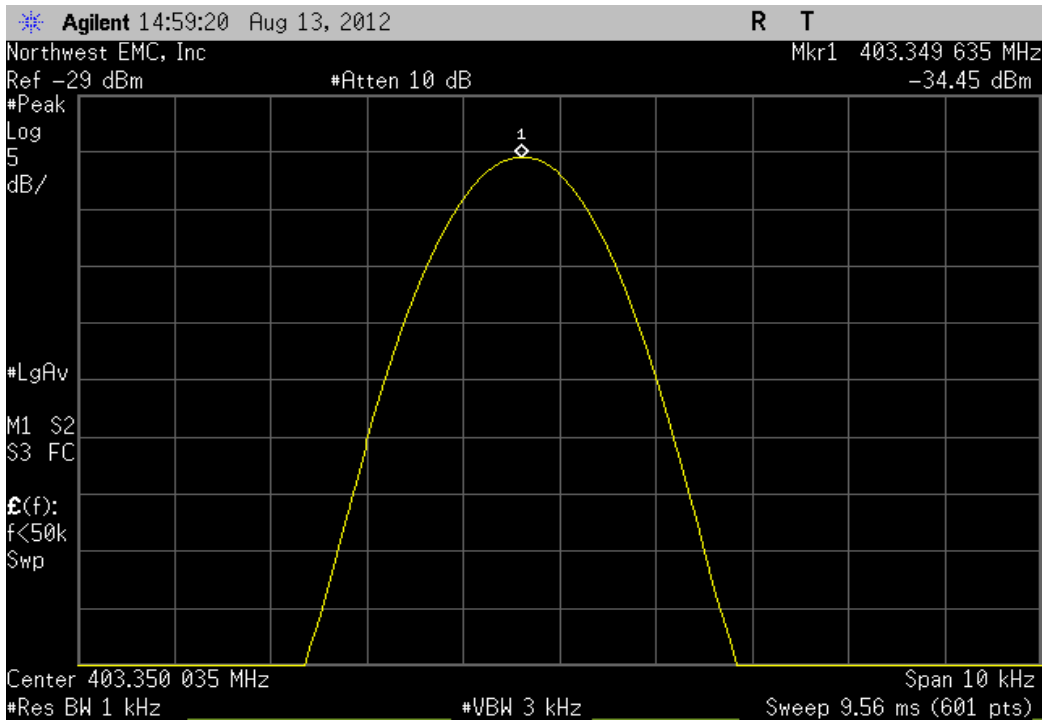
Extreme Voltage +15%, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.849436	404.85	1.39	100	Pass	



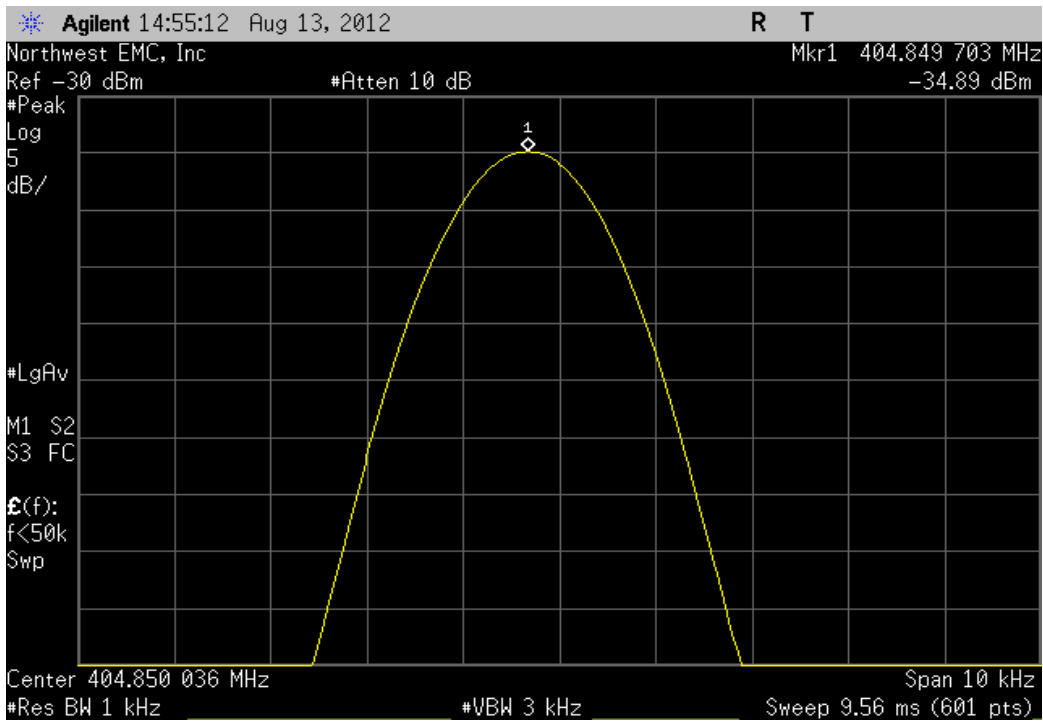
Extreme Voltage -15%, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.149584	402.15	1.03	100	Pass	



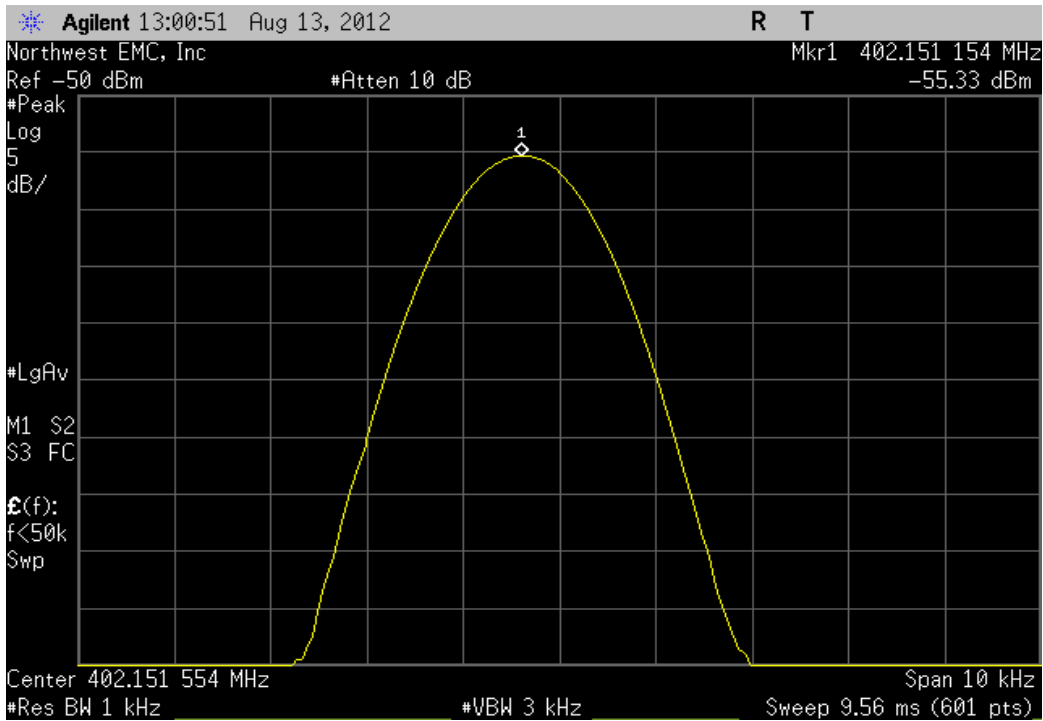
Extreme Voltage -15%, Mid Channel, 403.35 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
403.349635	403.35	0.9	100	Pass	



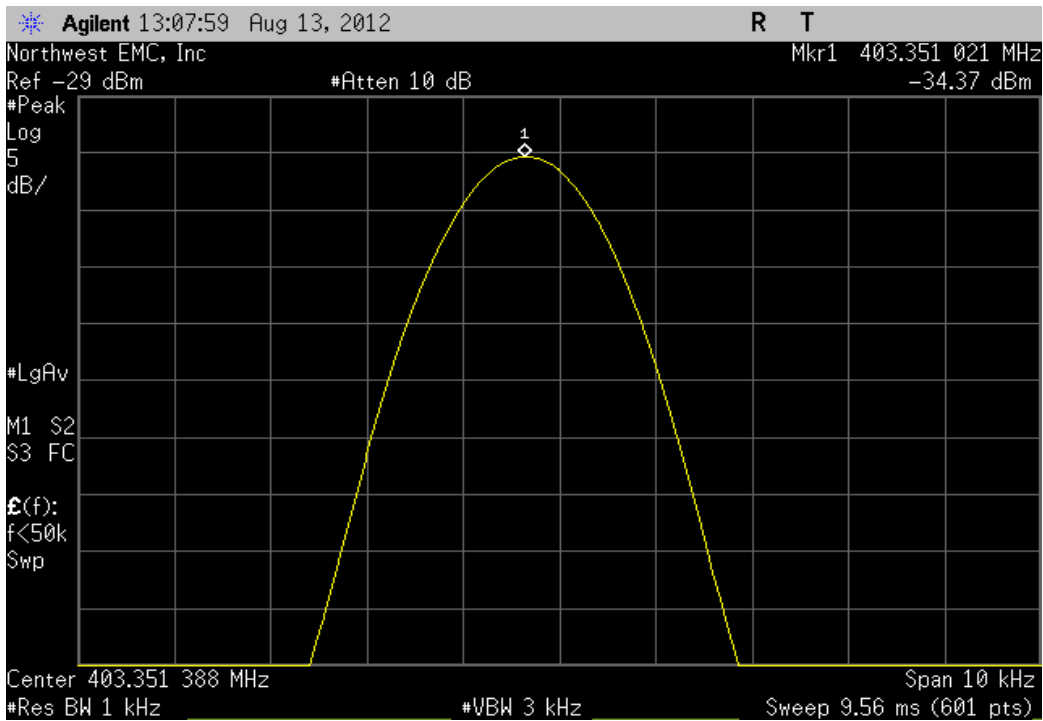
Extreme Voltage -15%, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.849703	404.85	0.73	100	Pass	



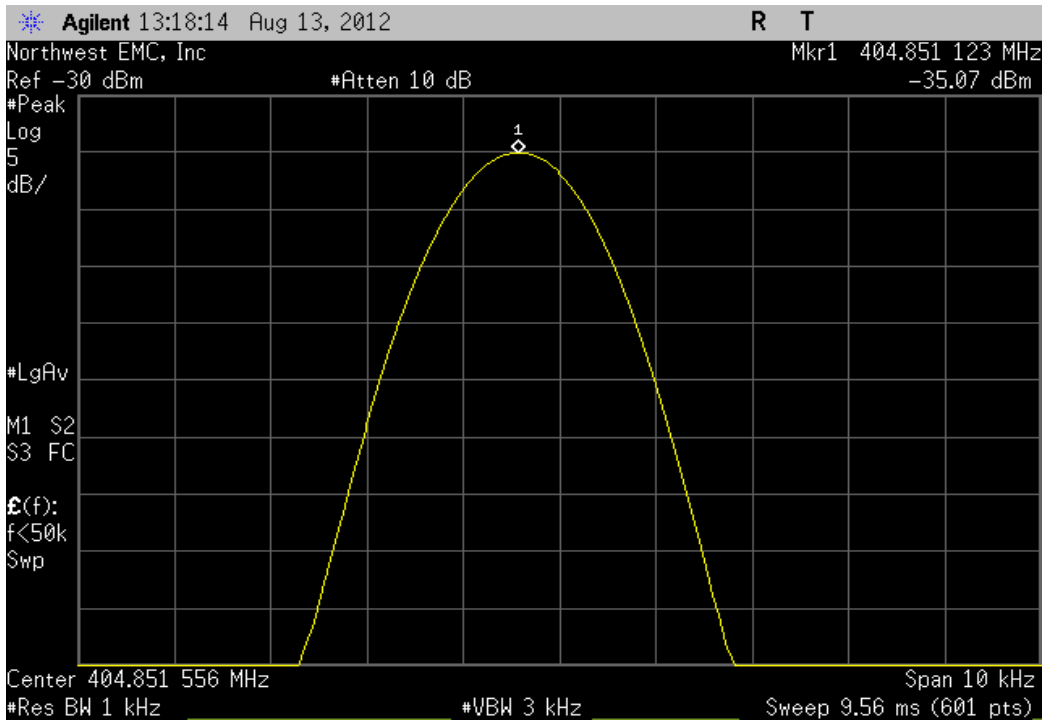
Extreme Temperature +55°C, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.151154	402.15	2.87	100	Pass	



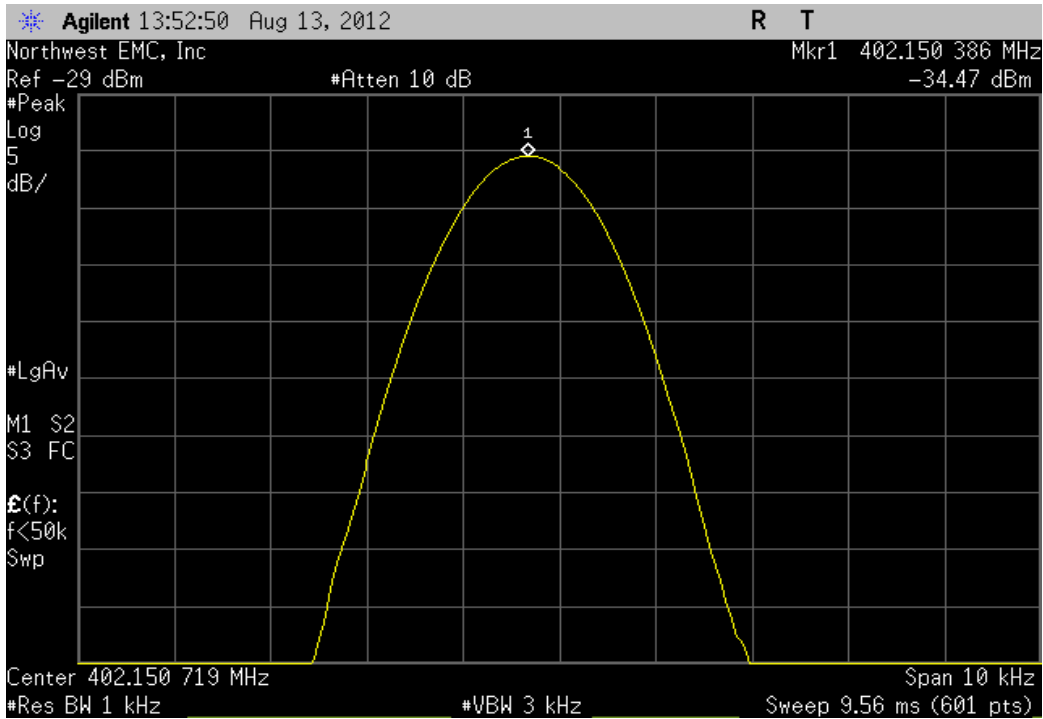
Extreme Temperature +55°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.351021	403.35	2.53	100	Pass



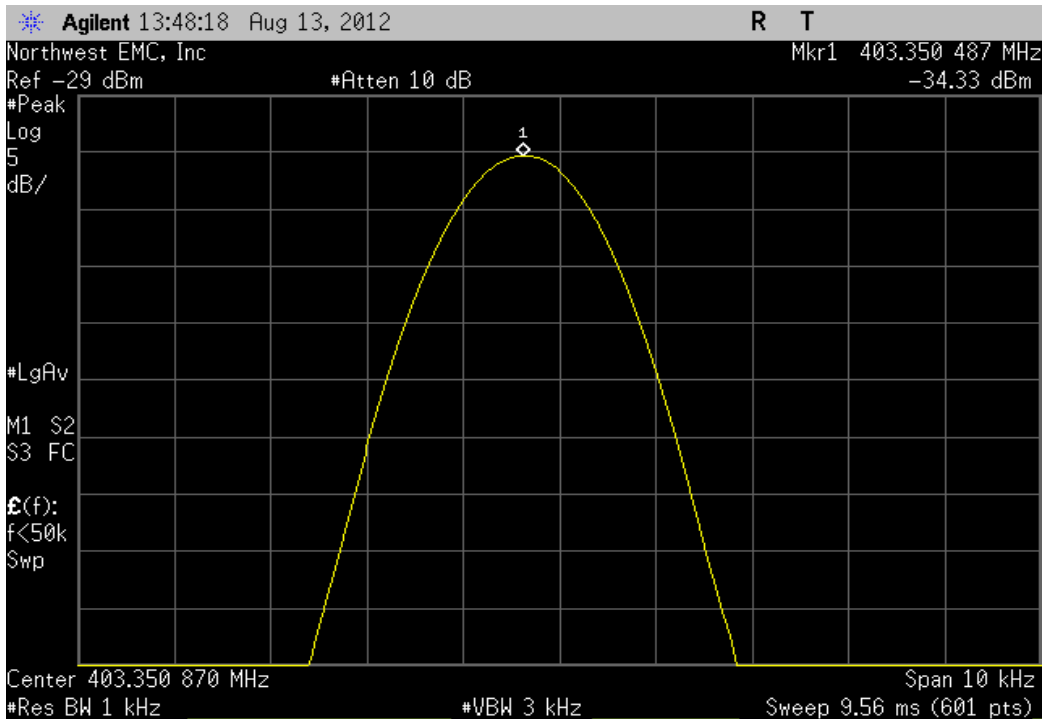
Extreme Temperature +55°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.851123	404.85	2.77	100	Pass



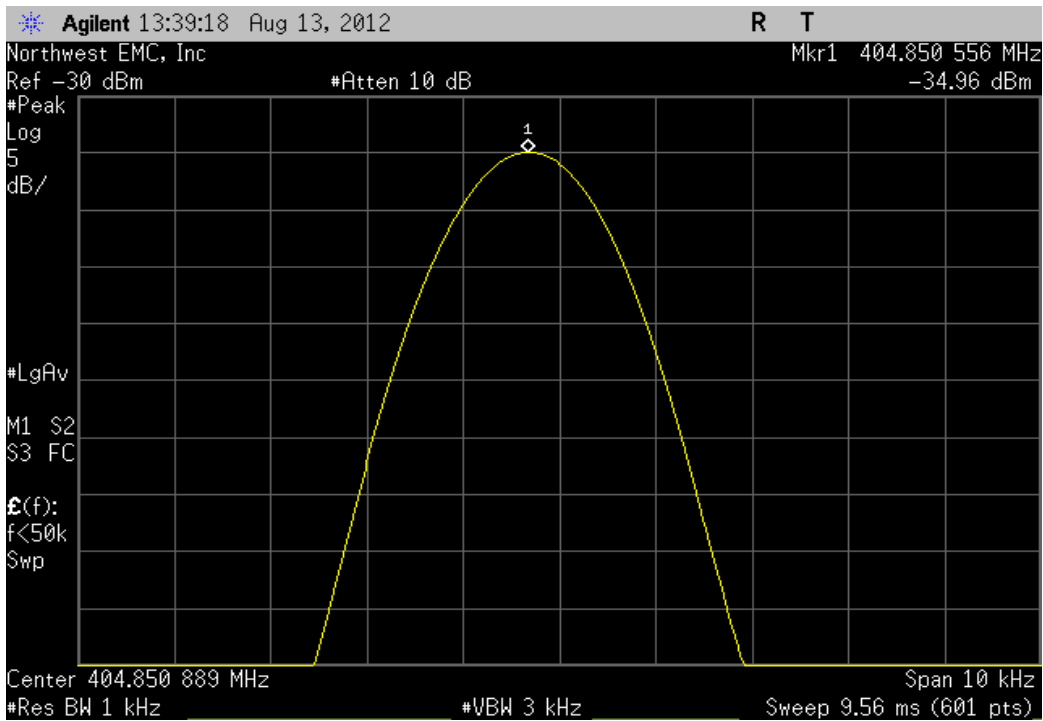
Extreme Temperature +45°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.150386	402.15	0.96	100	Pass



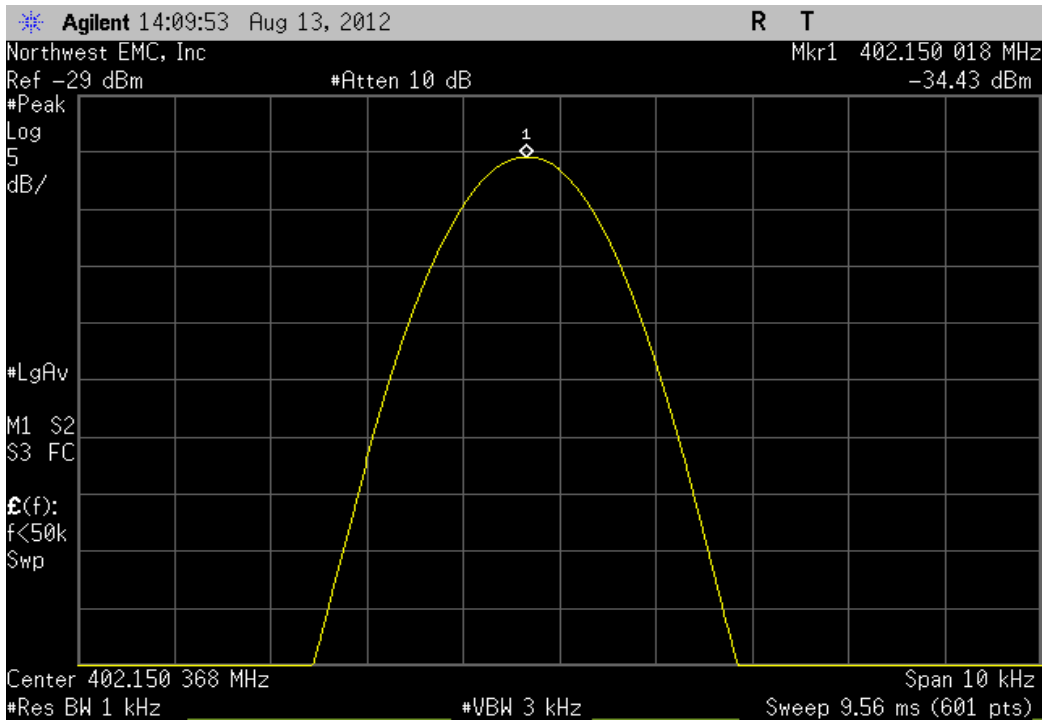
Extreme Temperature +45°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.350487	403.35	1.21	100	Pass



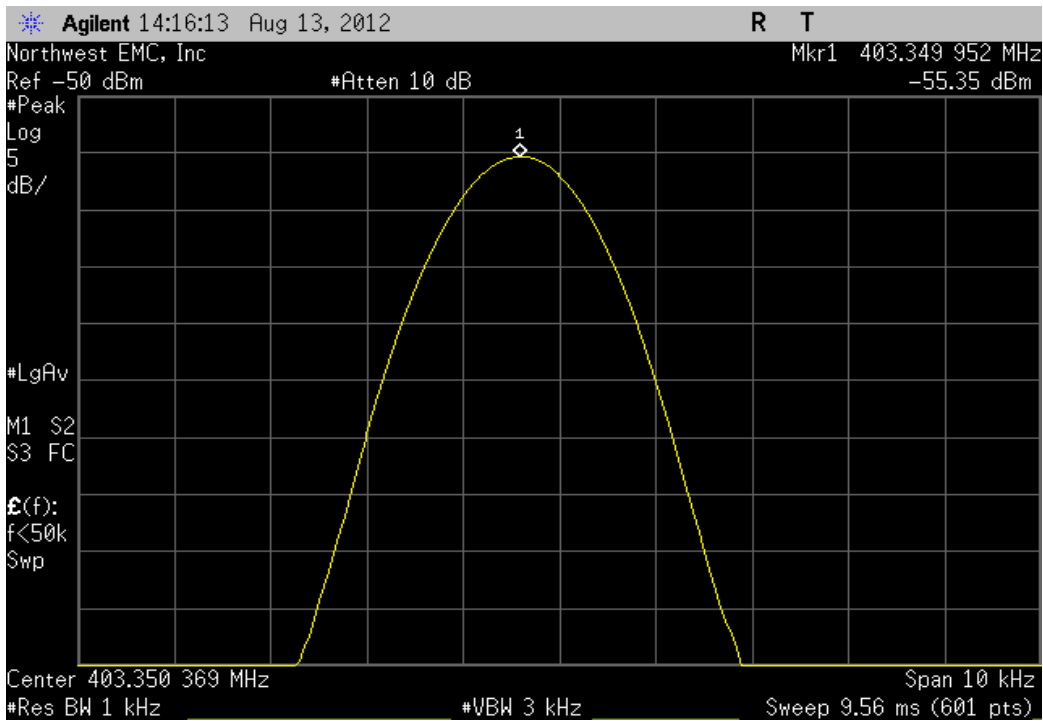
Extreme Temperature +45°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.850556	404.85	1.37	100	Pass



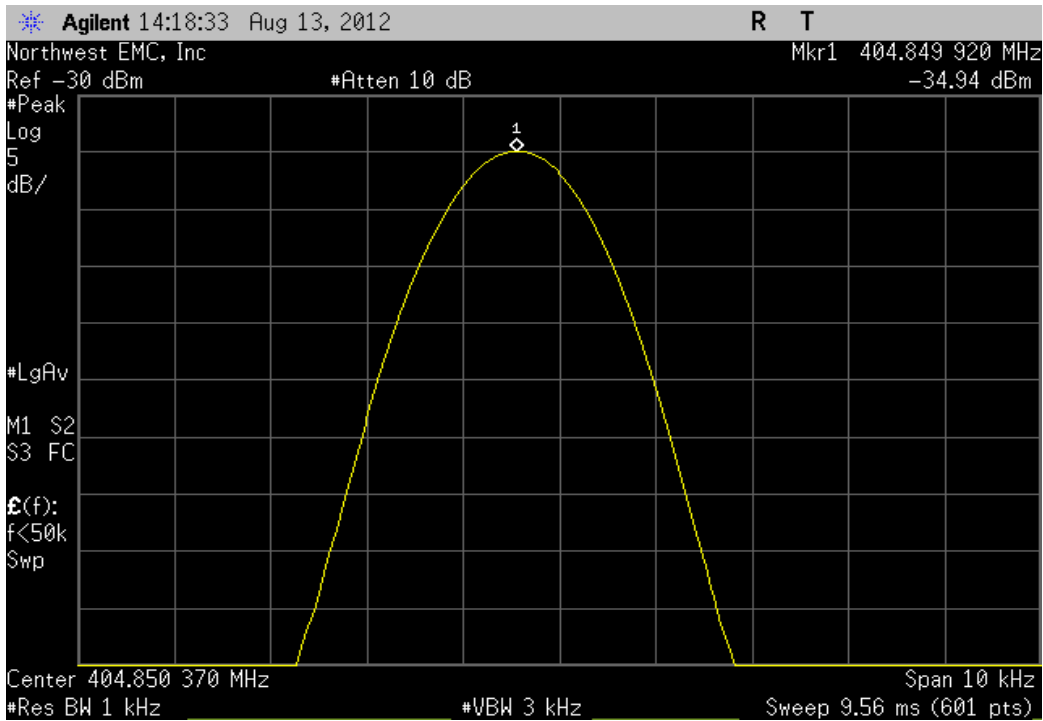
Extreme Temperature +35°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.150018	402.15	0.04	100	Pass



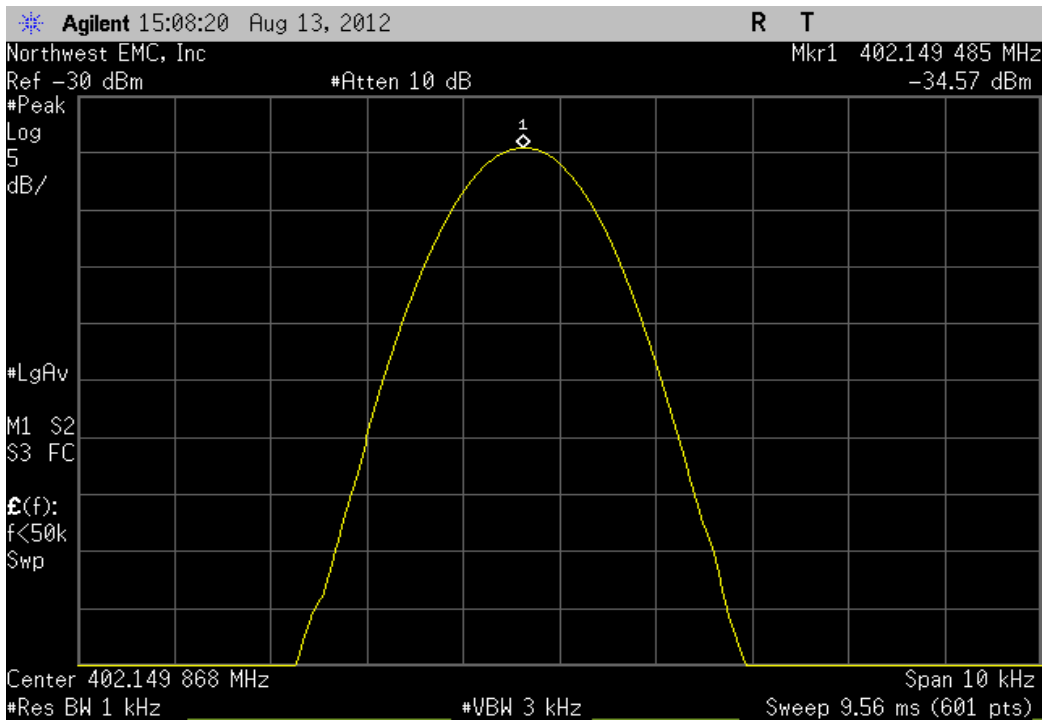
Extreme Temperature +35°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349952	403.35	0.12	100	Pass



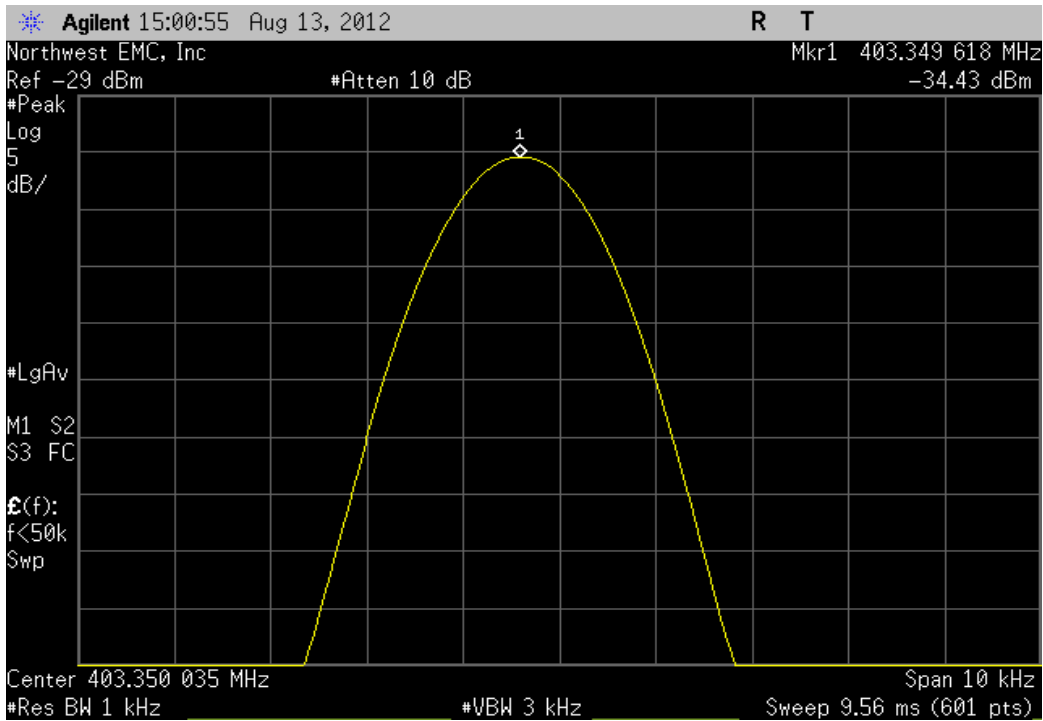
Extreme Temperature +35°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.84992	404.85	0.2	100	Pass



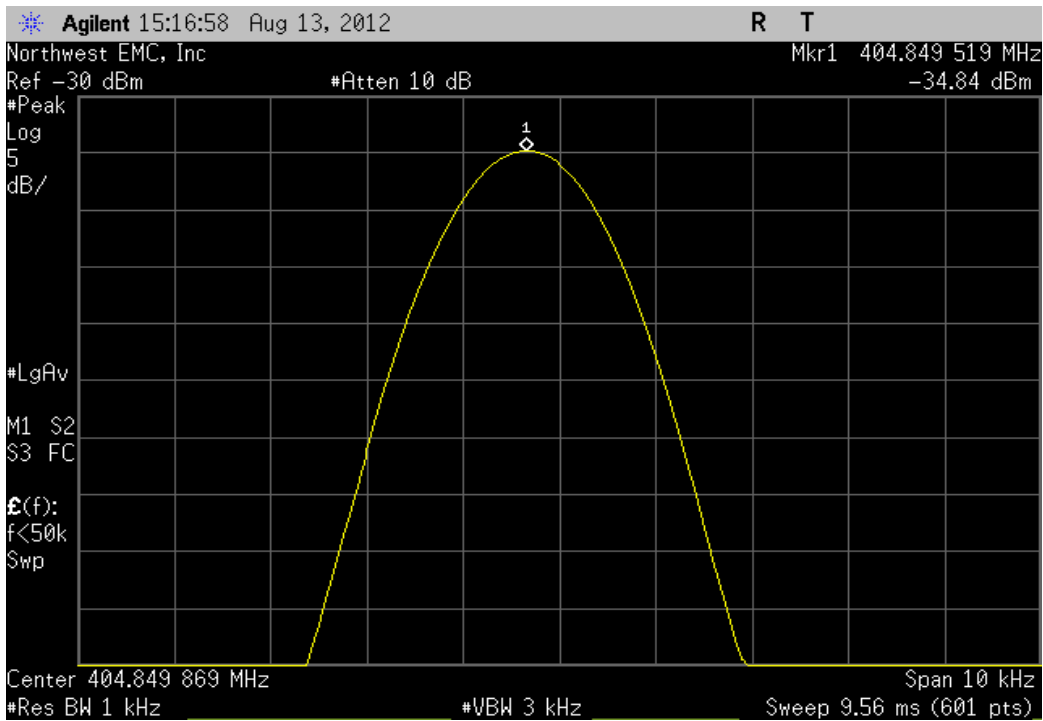
Extreme Temperature +25°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149485	402.15	1.28	100	Pass



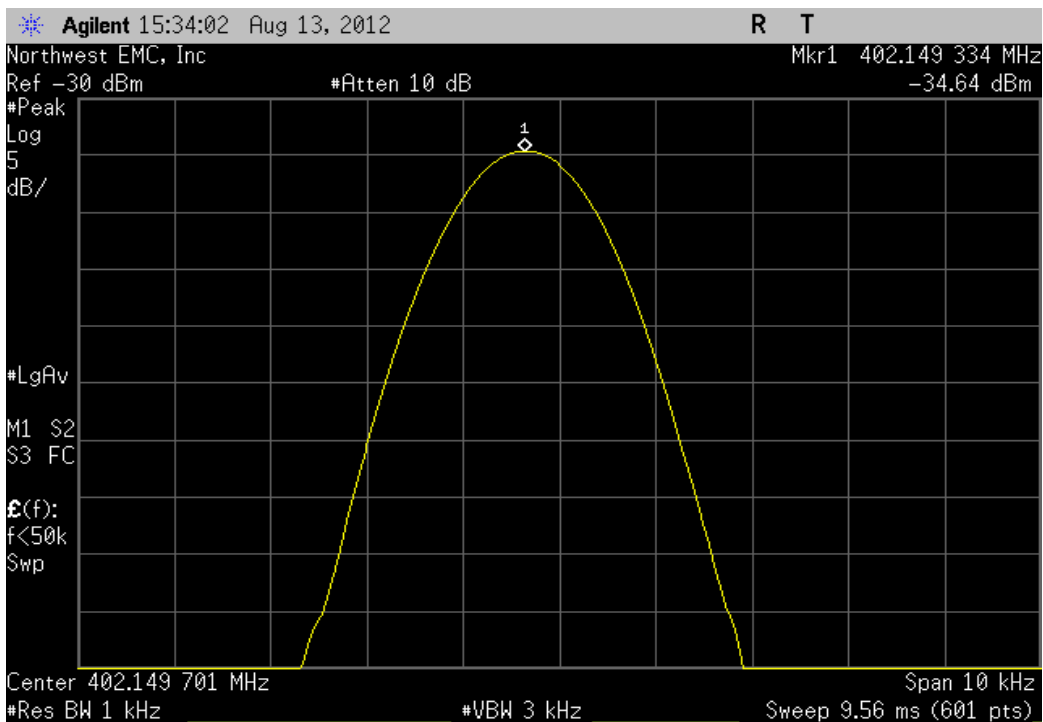
Extreme Temperature +25°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349618	403.35	0.95	100	Pass



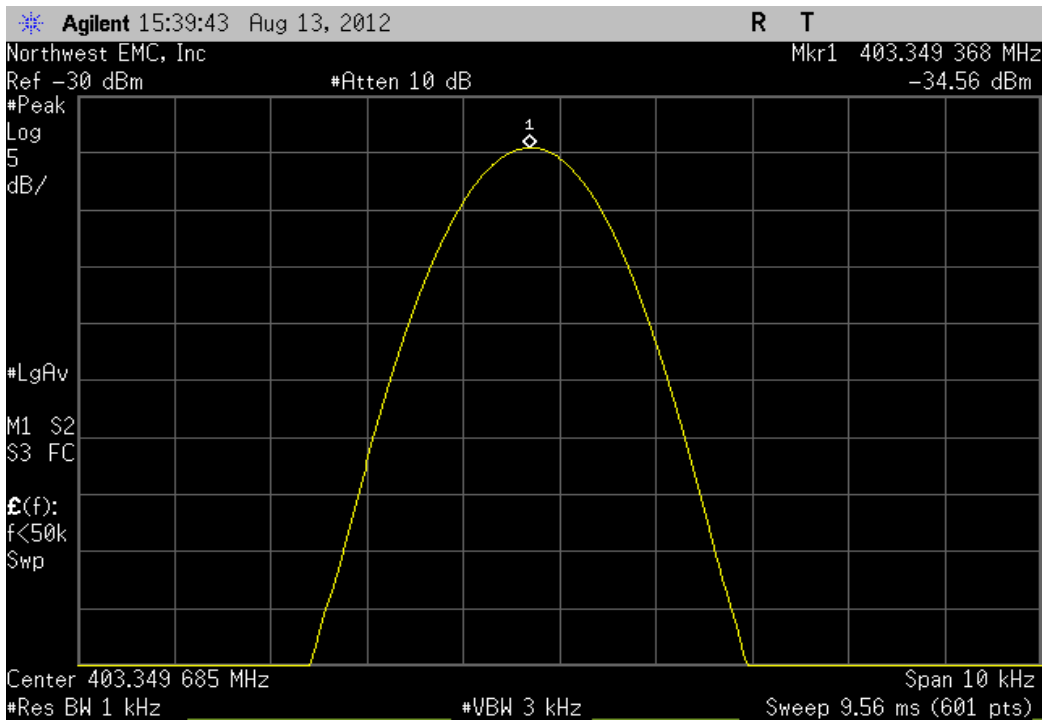
Extreme Temperature +25°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849519	404.85	1.19	100	Pass



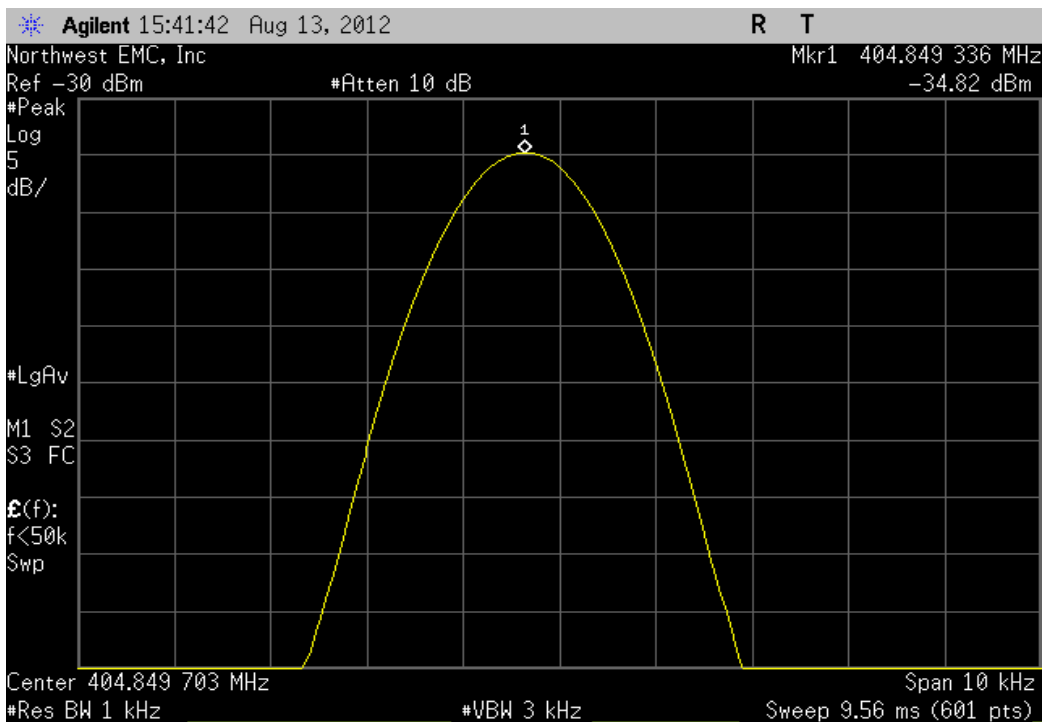
Extreme Temperature +15°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149334	402.15	1.66	100	Pass



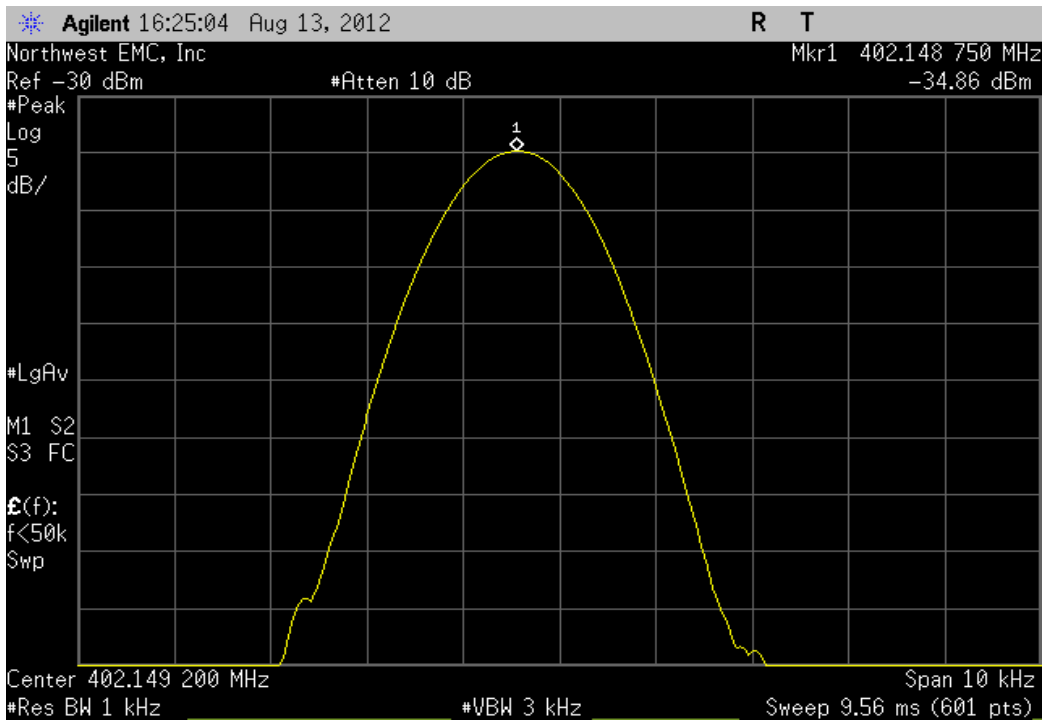
Extreme Temperature +15°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349368	403.35	1.57	100	Pass



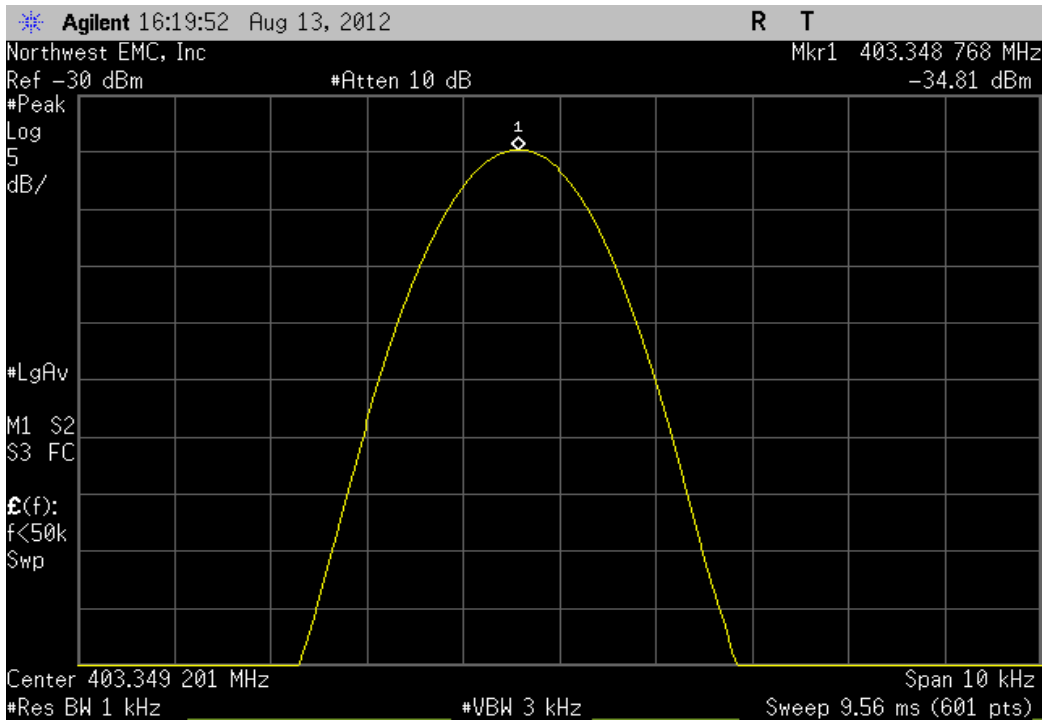
Extreme Temperature +15°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849336	404.85	1.64	100	Pass



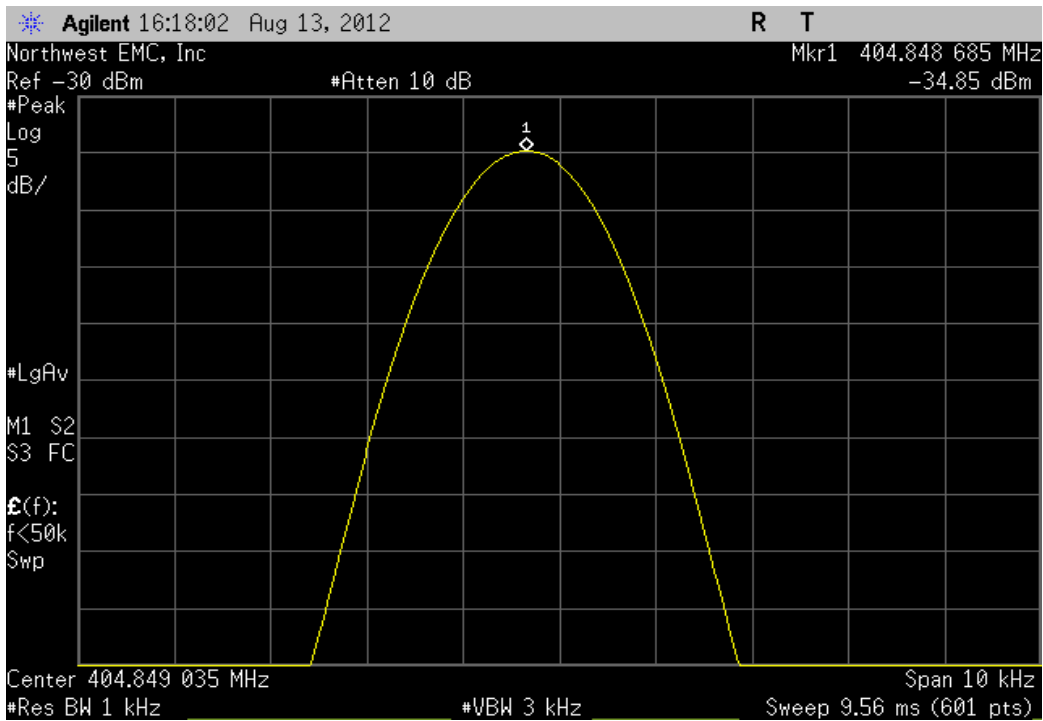
Extreme Temperature +5°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.14875	402.15	3.11	100	Pass



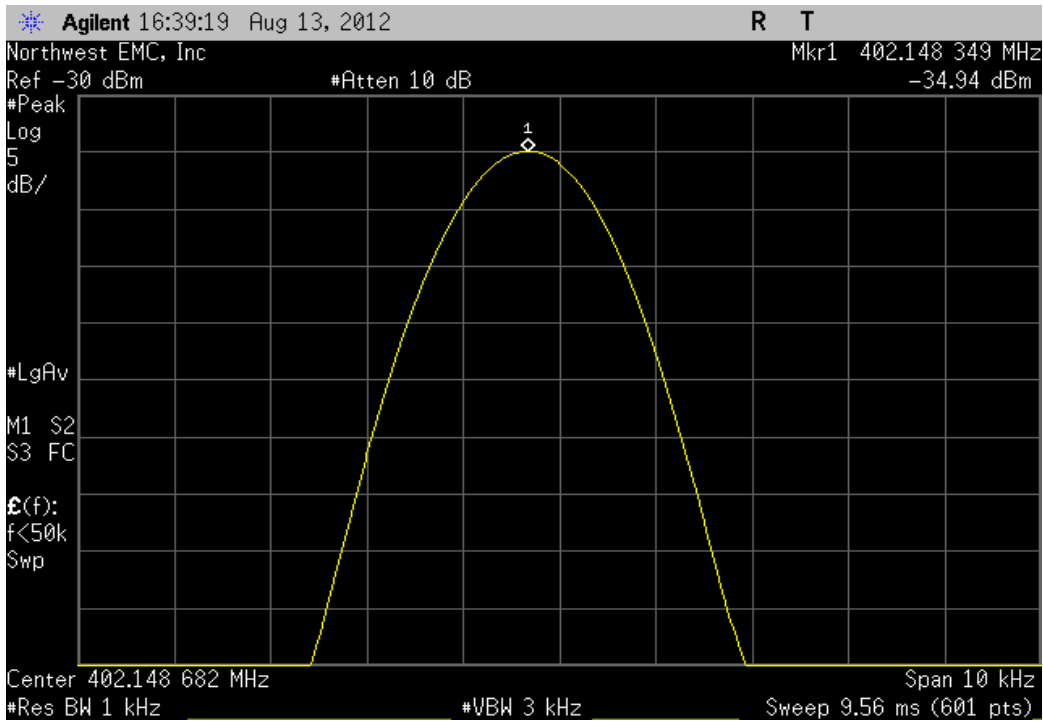
Extreme Temperature +5°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.348768	403.35	3.05	100	Pass



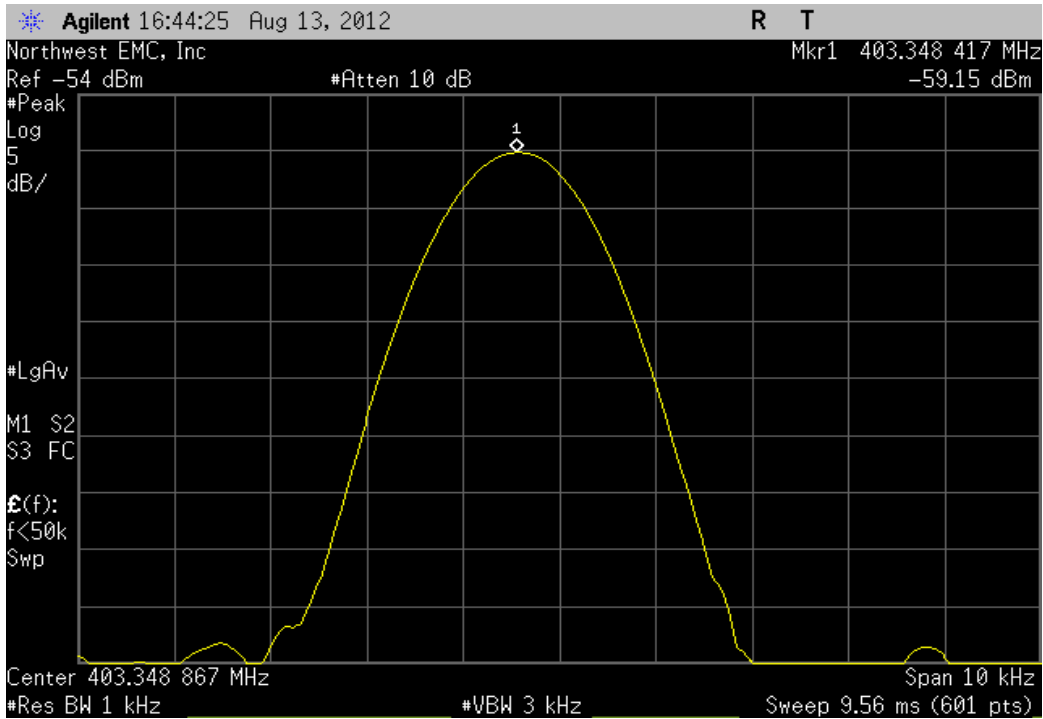
Extreme Temperature +5°C, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.848685	404.85	3.25	100	Pass	



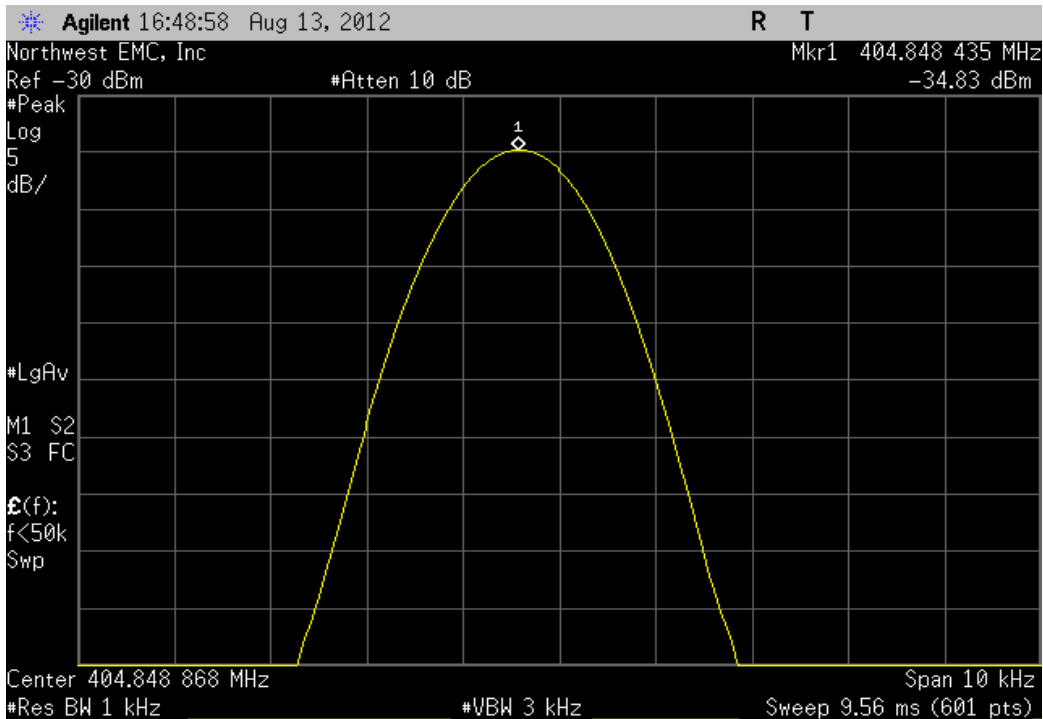
Extreme Temperature 0°C, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.148349	402.15	4.11	100	Pass	



Extreme Temperature 0°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.348417	403.35	3.92	100	Pass



Extreme Temperature 0°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.848435	404.85	3.87	100	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
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	24
Chamber, Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
DC Power Supply	EZ Digital Co	GP-4303D	TPY	NCR	0
Multimeter	Fluke	117	MNN	2/3/2012	24
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	12
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	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 2.2VDC to 3.2VDC of the nominal voltage. A DC lab supply was used to vary the supply voltage, per the manufacturer rated operating voltage.

Variation of Ambient Temperature

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

The Frequency Stability was measured using 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: Intellis - Models 97745 (PTM), 97755 (RTM)		Work Order: MDTR0182
Serial Number: NLD001683N		Date: 07/31/12
Customer: Medtronic Inc.		Temperature: 23.24°C
Attendees: None		Humidity: 54%
Project: None		Barometric Pres.: 1014.7
Tested by: Bryan Weller	Power: AC	Job Site: MN08

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

COMMENTS

Per MDTR0043 test plan configuration: 5.

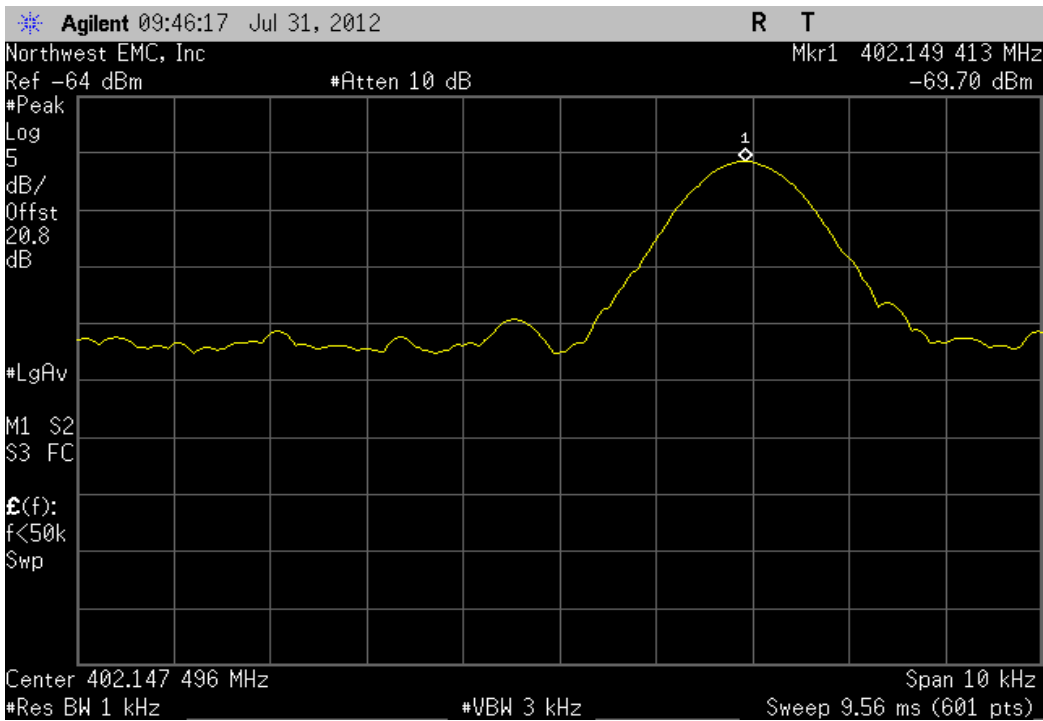
DEVIATIONS FROM TEST STANDARD

None

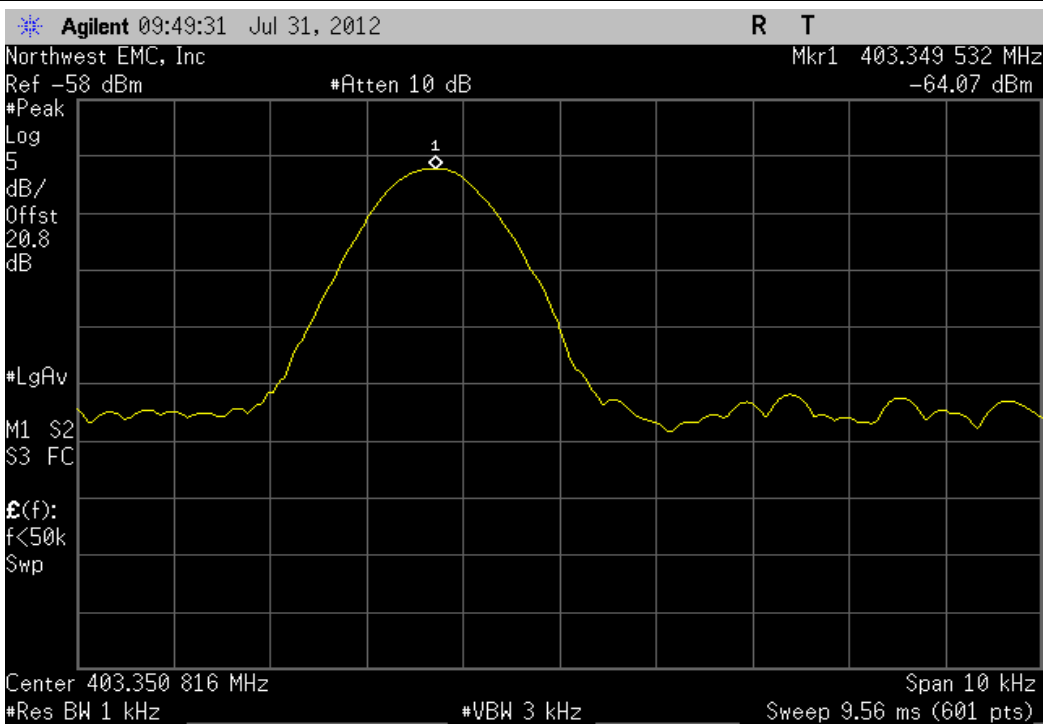
Configuration #	13	Signature <i>Bryan Weller</i>
-----------------	----	-------------------------------

	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
Normal Voltage +3.0 VDC					
Low Channel, 402.15 MHz	402.149413	402.15	1.46	100	Pass
Mid Channel, 403.35 MHz	403.349532	403.35	1.16	100	Pass
High Channel, 404.85 MHz	404.849496	404.85	1.24	100	Pass
Extreme Voltage +3.2 VDC					
Low Channel, 402.15 MHz	402.149465	402.15	1.33	100	Pass
Mid Channel, 403.35 MHz	403.349507	403.35	8.66	100	Pass
High Channel, 404.85 MHz	404.849481	404.85	1.28	100	Pass
Extreme Voltage +2.2 VDC					
Low Channel, 402.15 MHz	402.149511	402.15	1.22	100	Pass
Mid Channel, 403.35 MHz	403.349496	403.35	1.25	100	Pass
High Channel, 404.85 MHz	404.849534	404.85	1.15	100	Pass
Extreme Temperature +55°C					
Low Channel, 402.15 MHz	402.151154	402.15	2.87	100	Pass
Mid Channel, 403.35 MHz	403.351038	403.35	2.57	100	Pass
High Channel, 404.85 MHz	404.85109	404.85	2.69	100	Pass
Extreme Temperature +45°C					
Low Channel, 402.15 MHz	402.150386	402.15	0.96	100	Pass
Mid Channel, 403.35 MHz	403.350504	403.35	1.25	100	Pass
High Channel, 404.85 MHz	404.850539	404.85	1.33	100	Pass
Extreme Temperature +35°C					
Low Channel, 402.15 MHz	402.149968	402.15	0.08	100	Pass
Mid Channel, 403.35 MHz	403.349969	403.35	0.08	100	Pass
High Channel, 404.85 MHz	404.849903	404.85	0.24	100	Pass
Extreme Temperature +25°C					
Low Channel, 402.15 MHz	402.149501	402.15	1.24	100	Pass
Mid Channel, 403.35 MHz	403.349602	403.35	0.99	100	Pass
High Channel, 404.85 MHz	404.849519	404.85	1.19	100	Pass
Extreme Temperature +15°C					
Low Channel, 402.15 MHz	402.149301	402.15	1.74	100	Pass
Mid Channel, 403.35 MHz	403.349386	403.35	1.52	100	Pass
High Channel, 404.85 MHz	404.849337	404.85	1.64	100	Pass
Extreme Temperature +5°C					
Low Channel, 402.15 MHz	402.14875	402.15	3.11	100	Pass
Mid Channel, 403.35 MHz	403.348767	403.35	3.06	100	Pass
High Channel, 404.85 MHz	404.84865	404.85	3.33	100	Pass
Extreme Temperature 0°C					
Low Channel, 402.15 MHz	402.148315	402.15	4.19	100	Pass
Mid Channel, 403.35 MHz	403.348417	403.35	3.92	100	Pass
High Channel, 404.85 MHz	404.84845	404.85	3.83	100	Pass

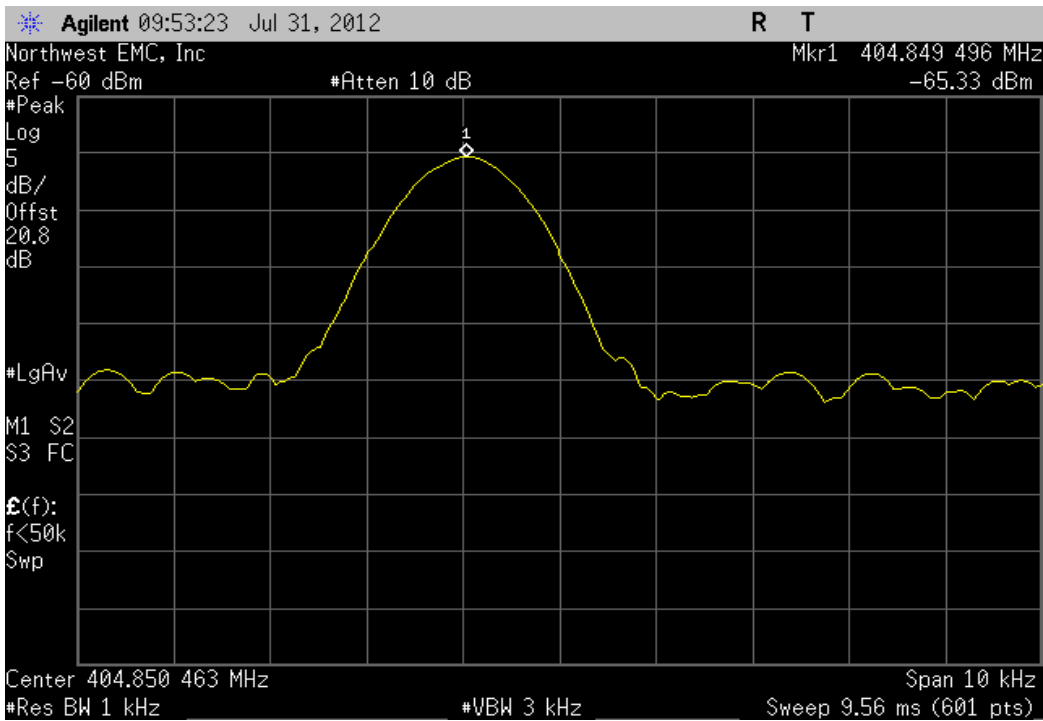
Normal Voltage, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	402.149413	402.15	1.46	100	Pass	



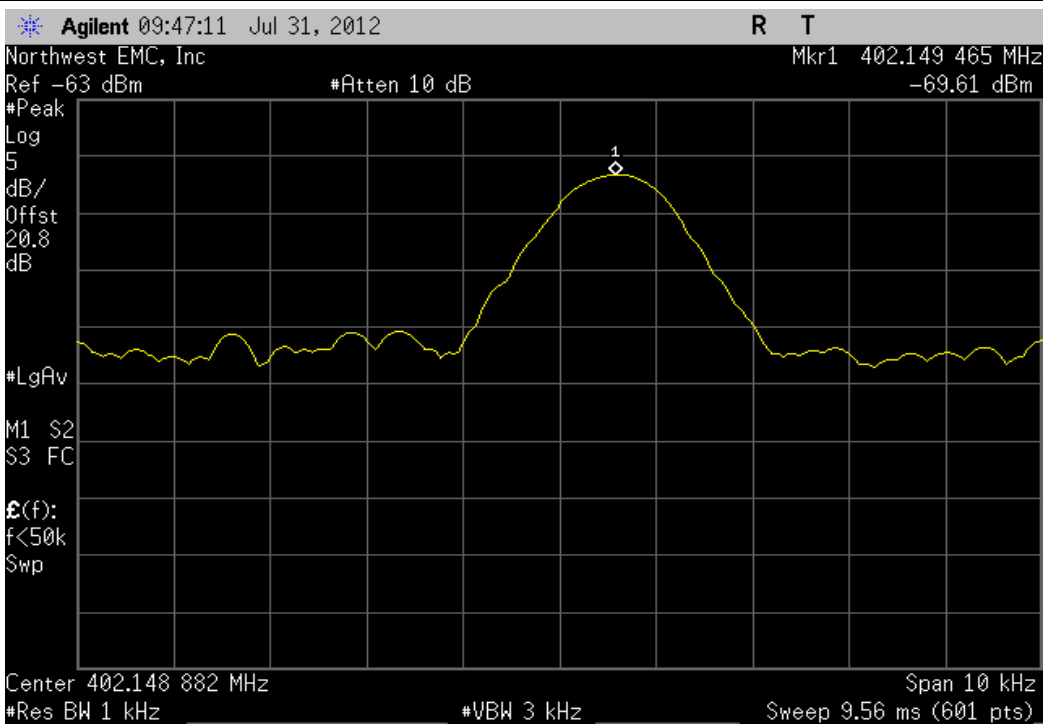
Normal Voltage, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	403.349532	403.35	1.16	100	Pass	



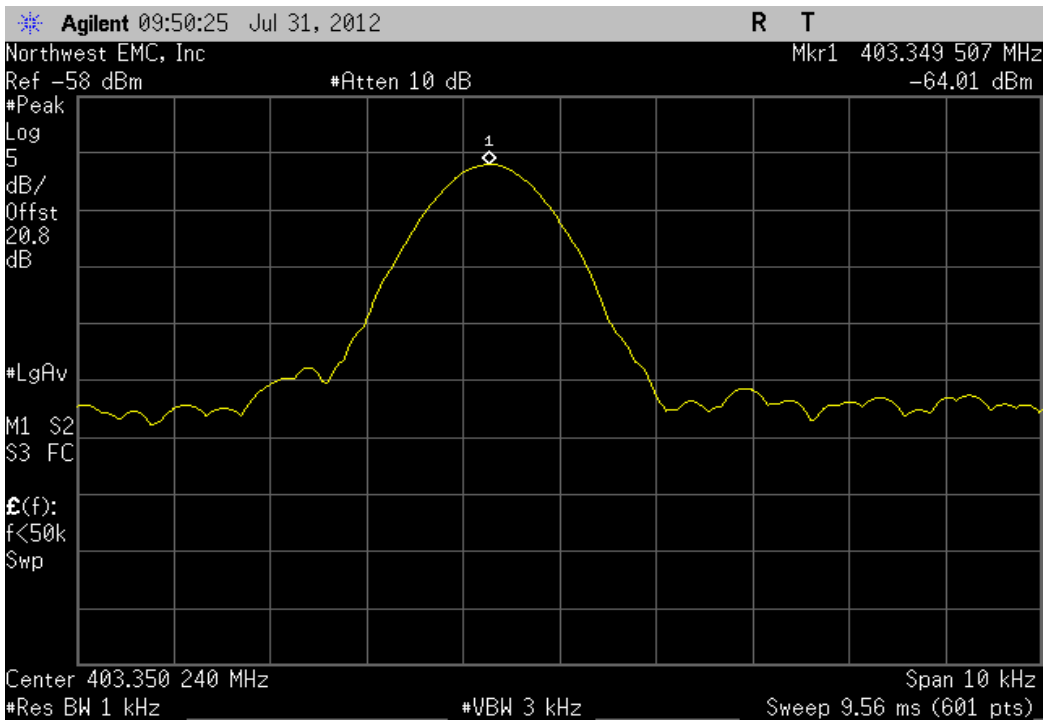
Normal Voltage, High Channel, 404.85 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	404.849496	404.85	1.24	100	Pass	



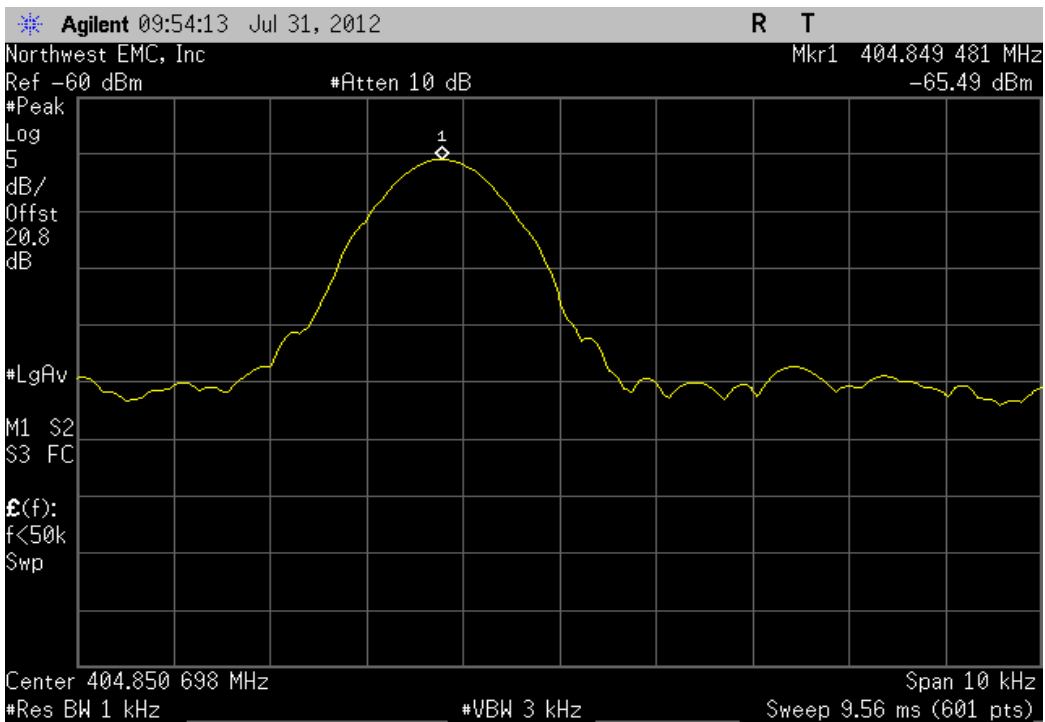
Extreme Voltage +15%, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	402.149465	402.15	1.33	100	Pass	



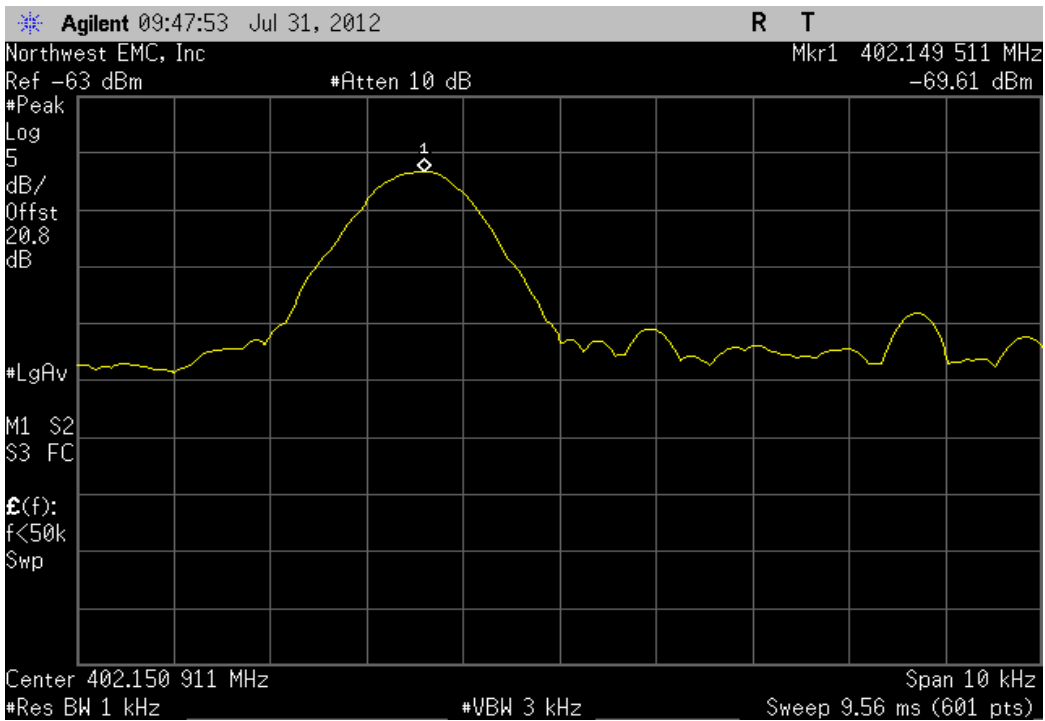
Extreme Voltage +15%, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	403.349507	403.353	8.66	100	Pass	



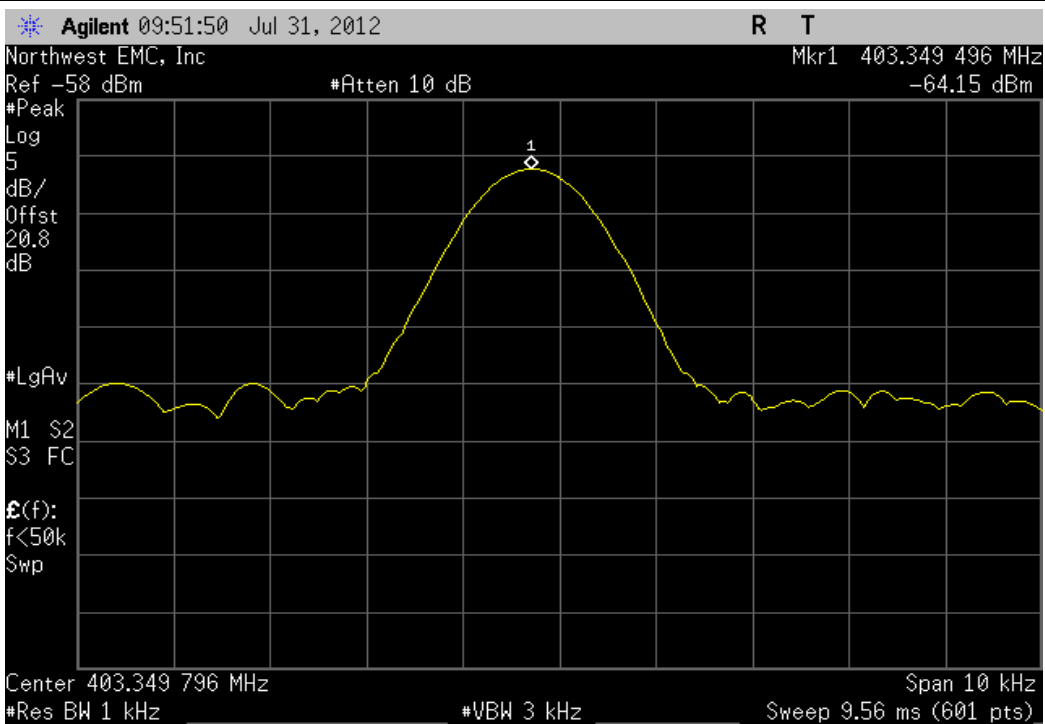
Extreme Voltage +15%, High Channel, 404.85 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	404.849481	404.85	1.28	100	Pass	



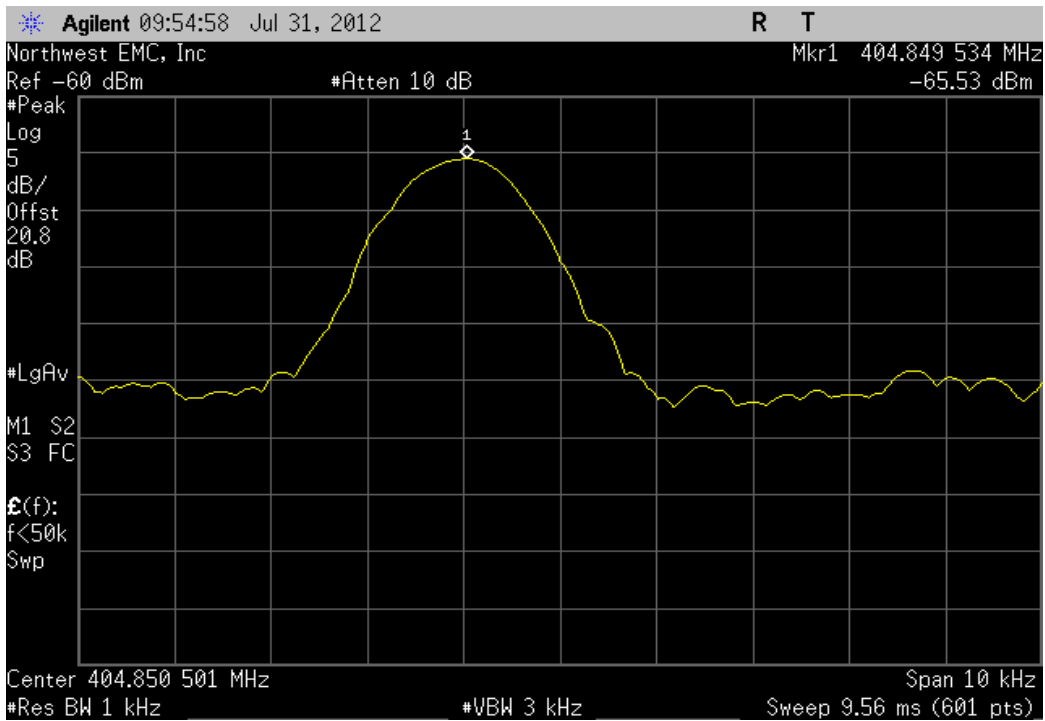
Extreme Voltage -15%, Low Channel, 402.15 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	402.149511	402.15	1.22	100	Pass	



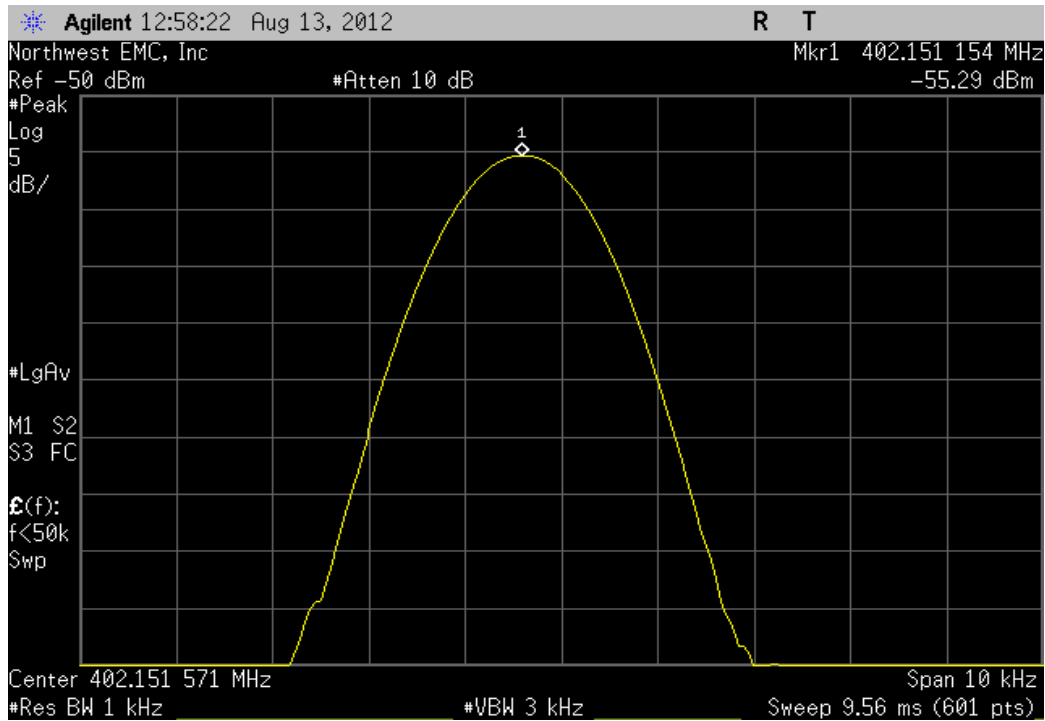
Extreme Voltage -15%, Mid Channel, 403.35 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit	Result	
	403.349496	403.35	1.25	100	Pass	



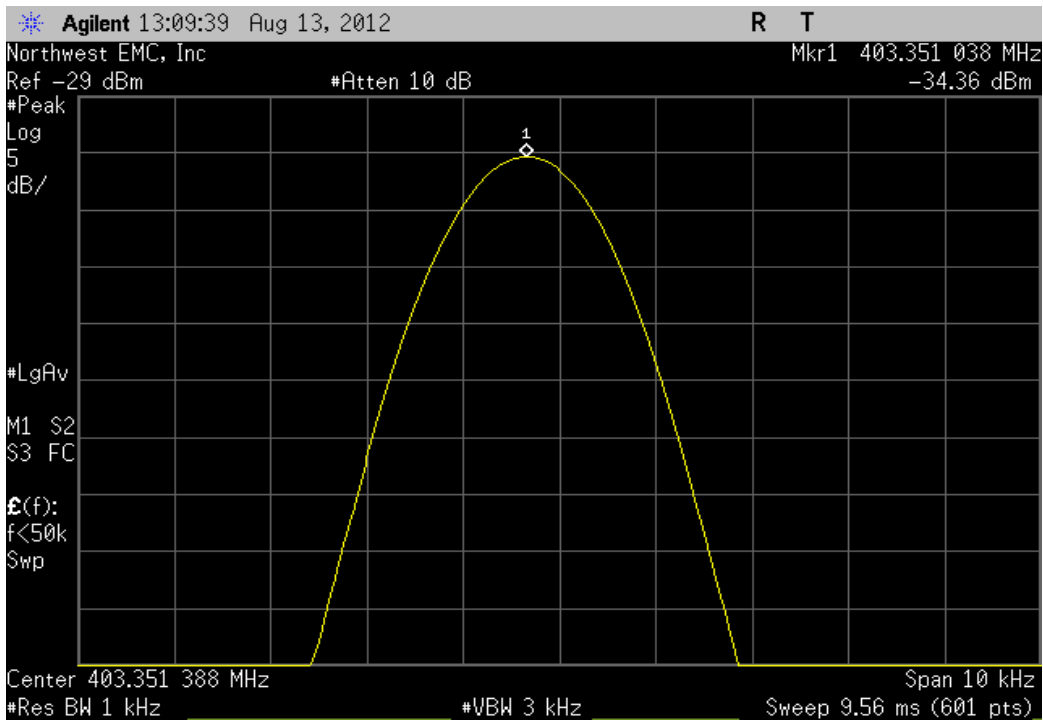
Extreme Voltage -15%, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.849534	404.85	1.15	100	Pass	



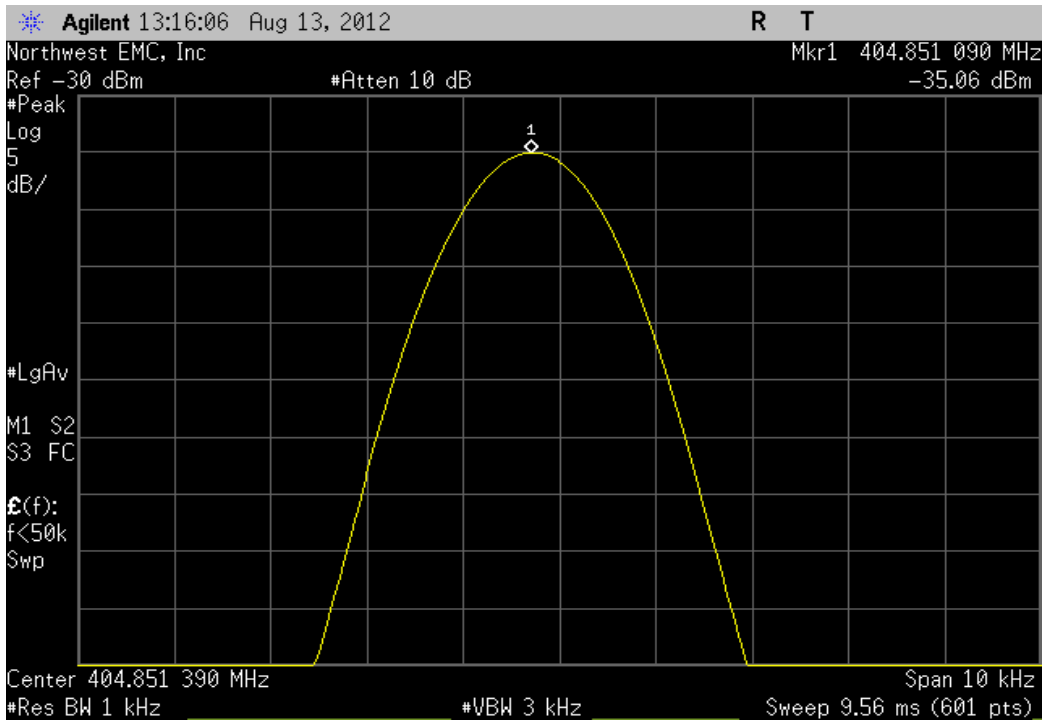
Extreme Temperature +55°C, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.151154	402.15	2.87	100	Pass	



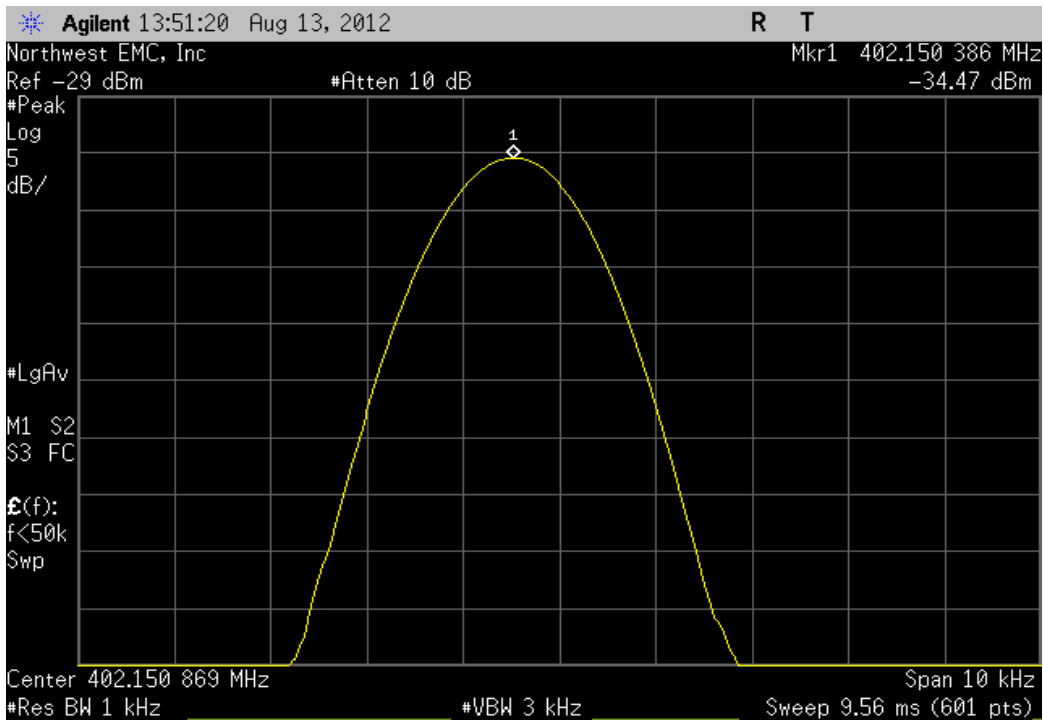
Extreme Temperature +55°C, Mid Channel, 403.35 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
403.351038	403.35	2.57	100	Pass	



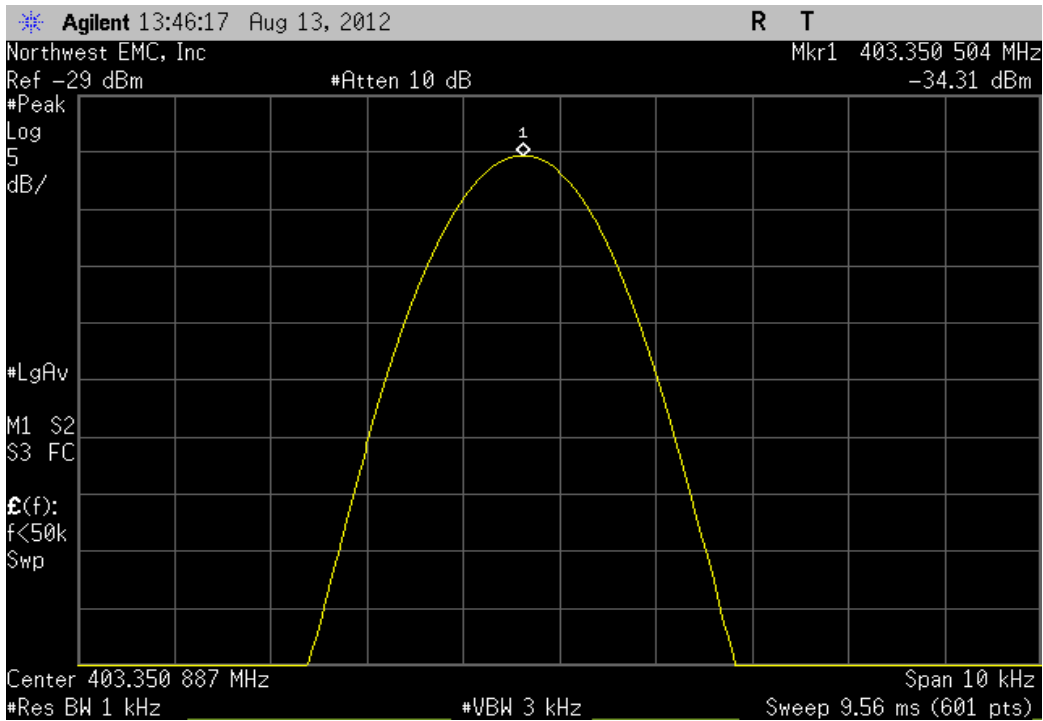
Extreme Temperature +55°C, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.85109	404.85	2.69	100	Pass	



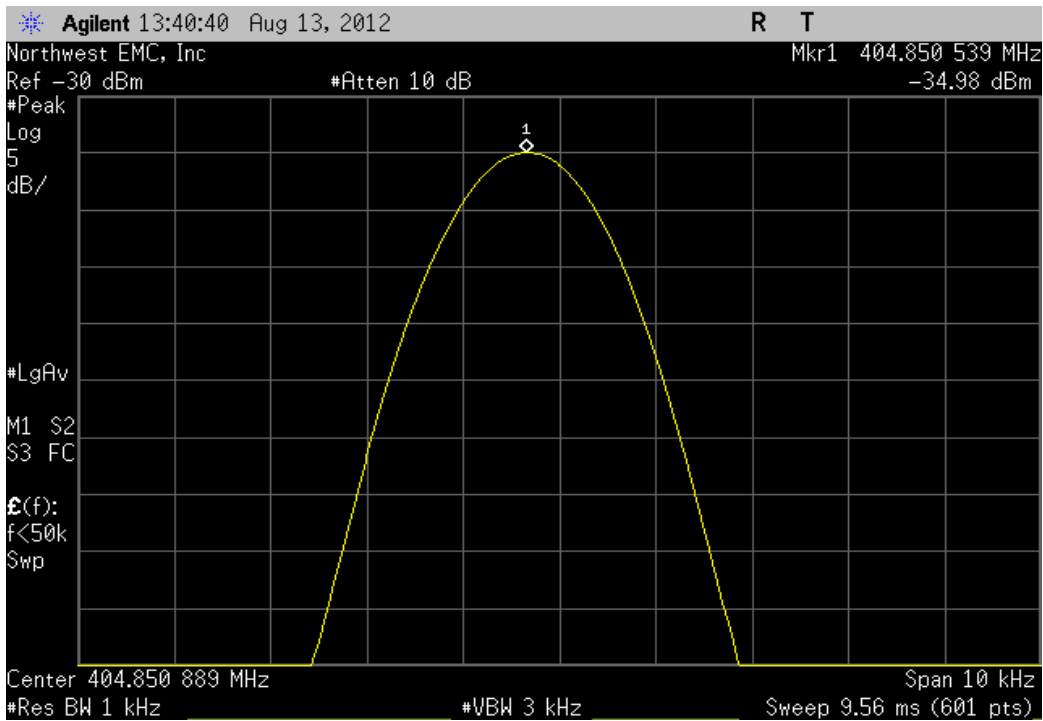
Extreme Temperature +45°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.150386	402.15	0.96	100	Pass



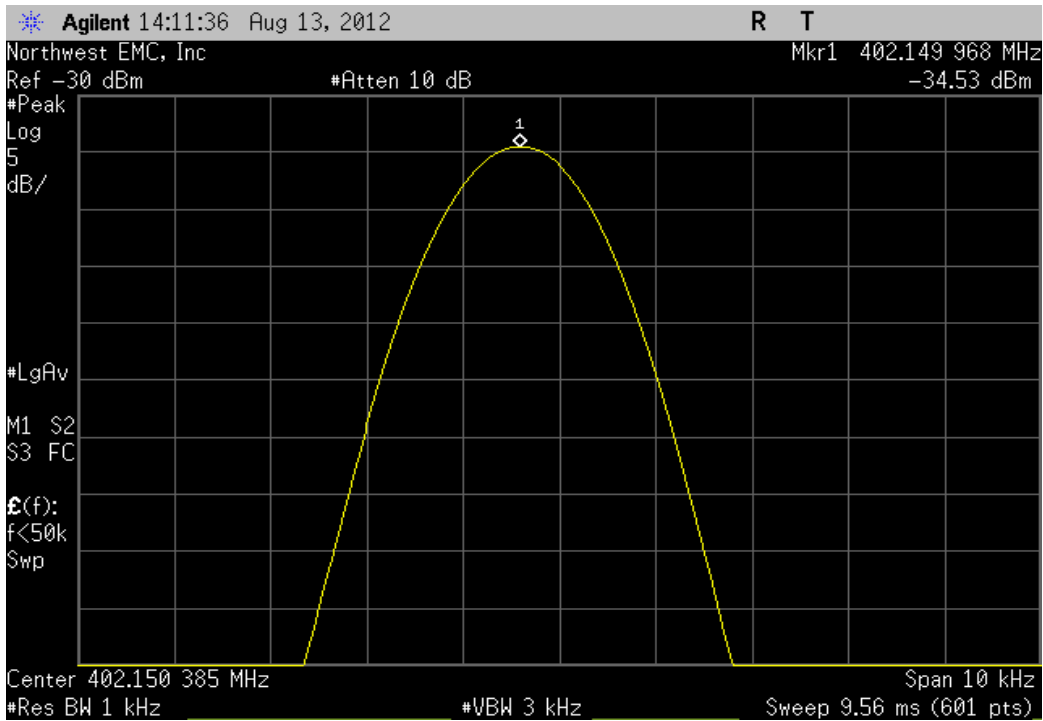
Extreme Temperature +45°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.350504	403.35	1.25	100	Pass



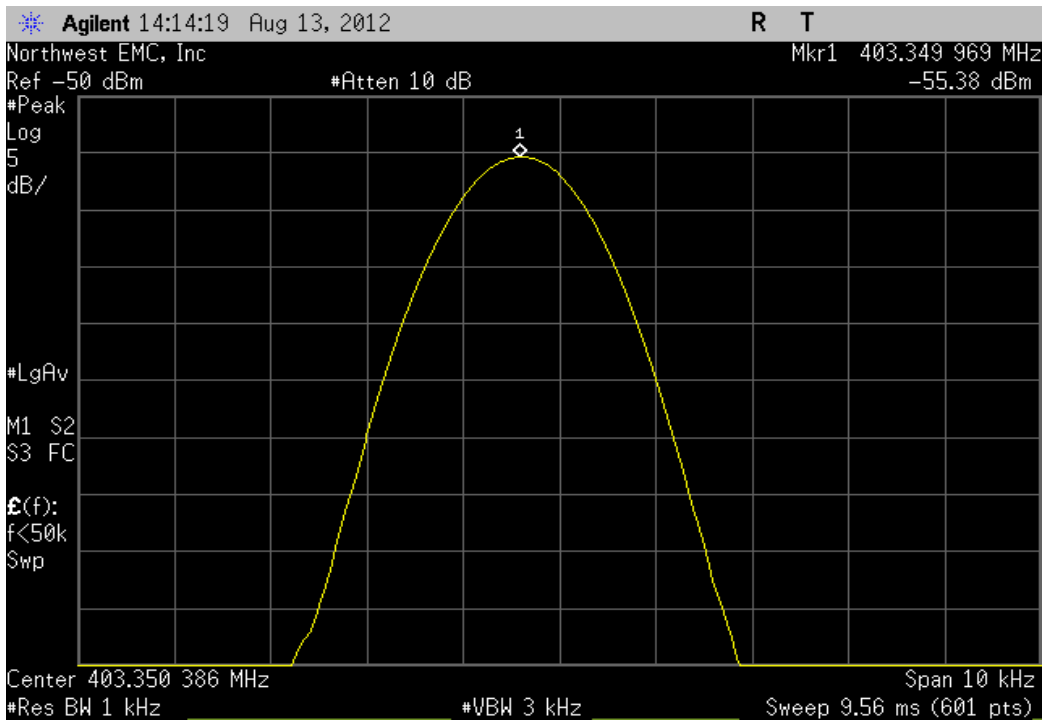
Extreme Temperature +45°C, High Channel, 404.85 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
404.850539	404.85	1.33	100	Pass	



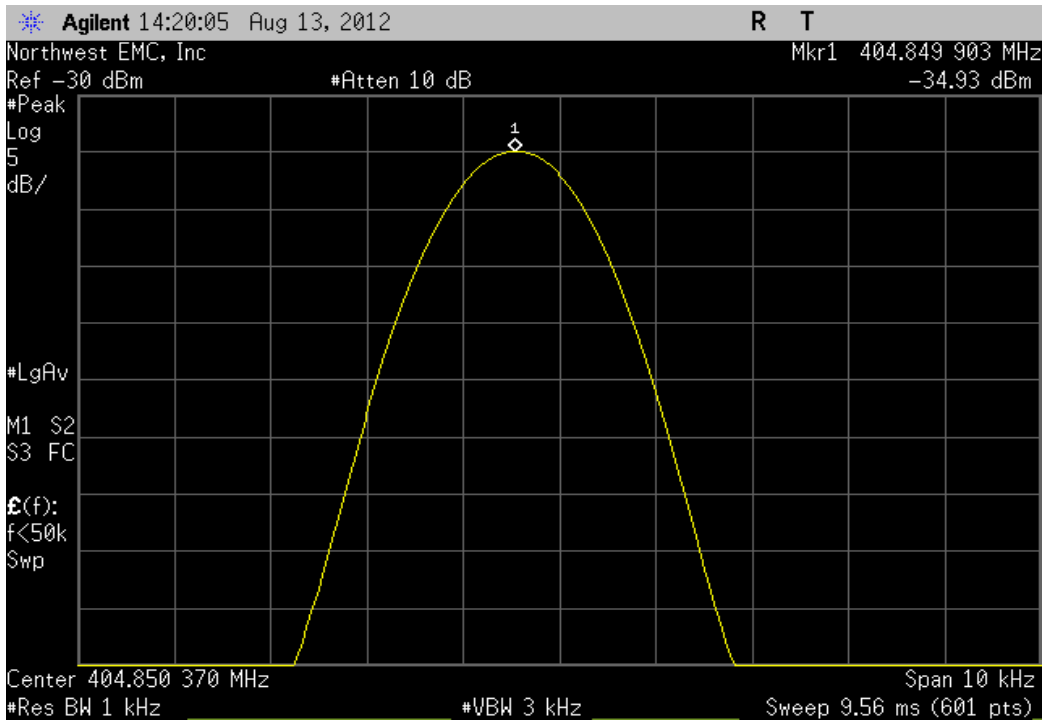
Extreme Temperature +35°C, Low Channel, 402.15 MHz					
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
402.149968	402.15	0.08	100	Pass	



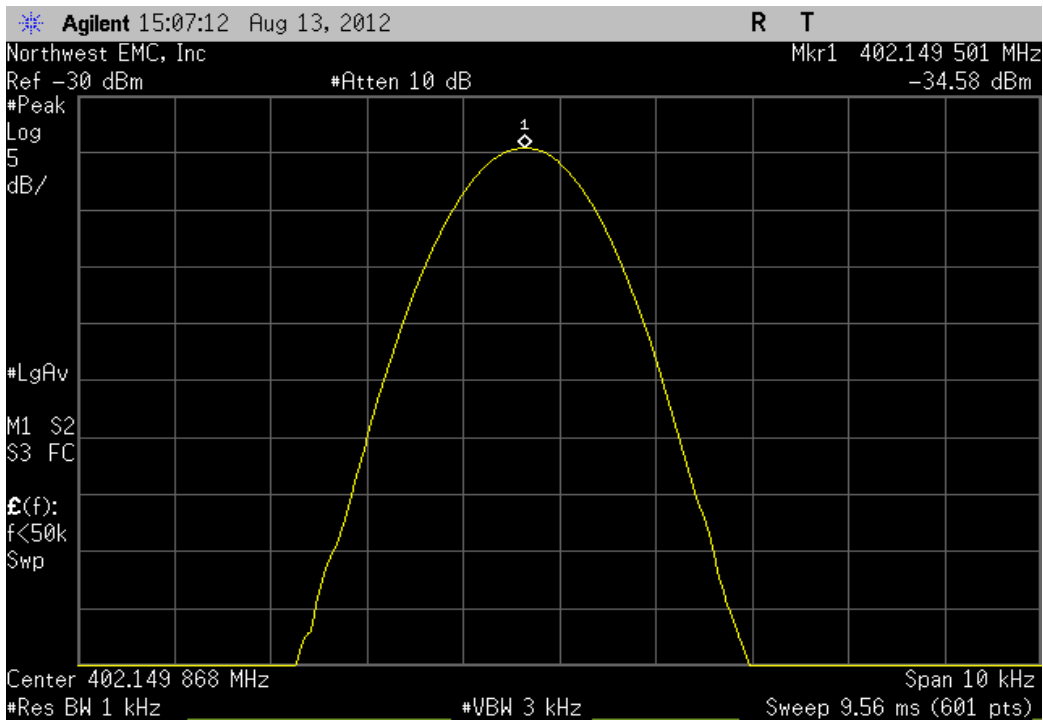
Extreme Temperature +35°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349969	403.35	0.08	100	Pass



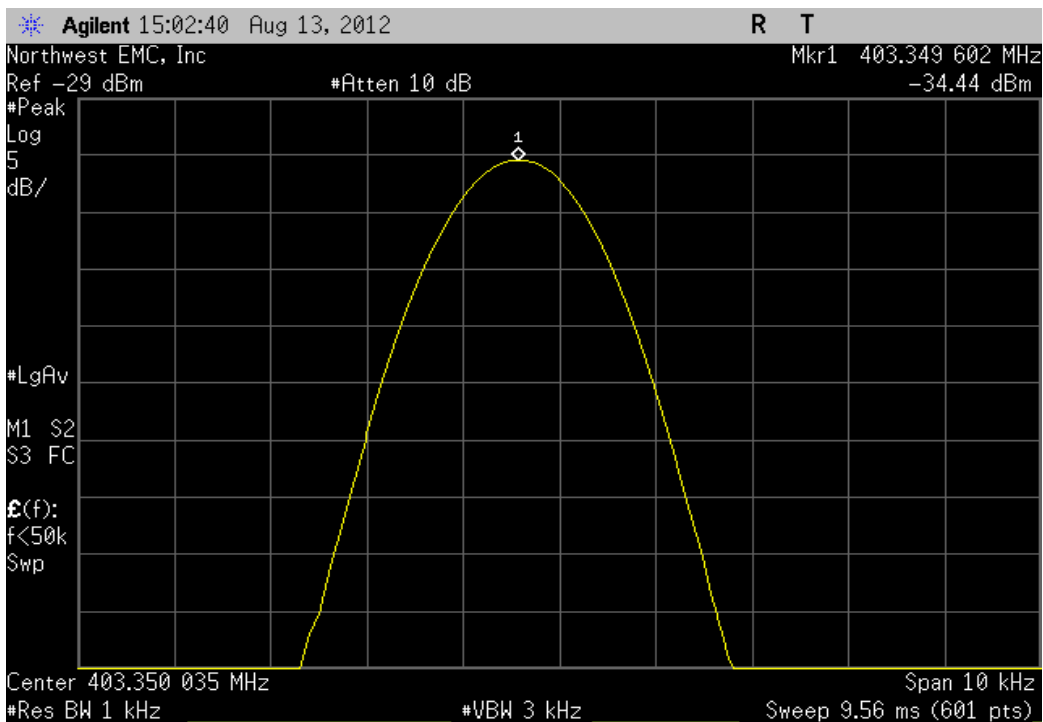
Extreme Temperature +35°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849903	404.85	0.24	100	Pass



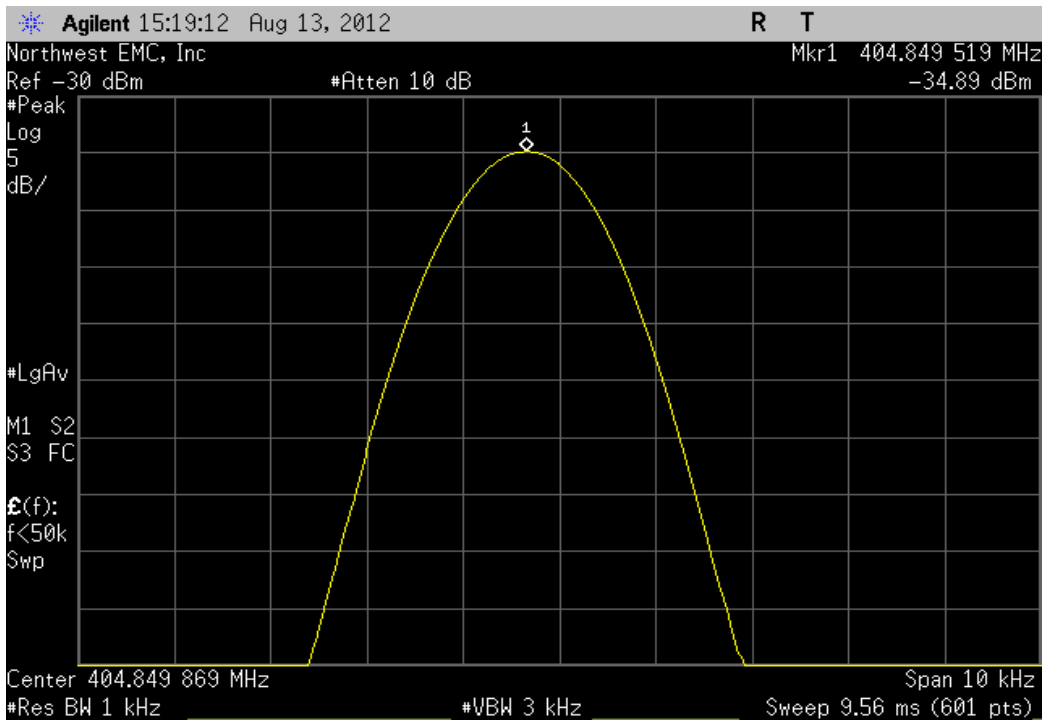
Extreme Temperature +25°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149501	402.15	1.24	100	Pass



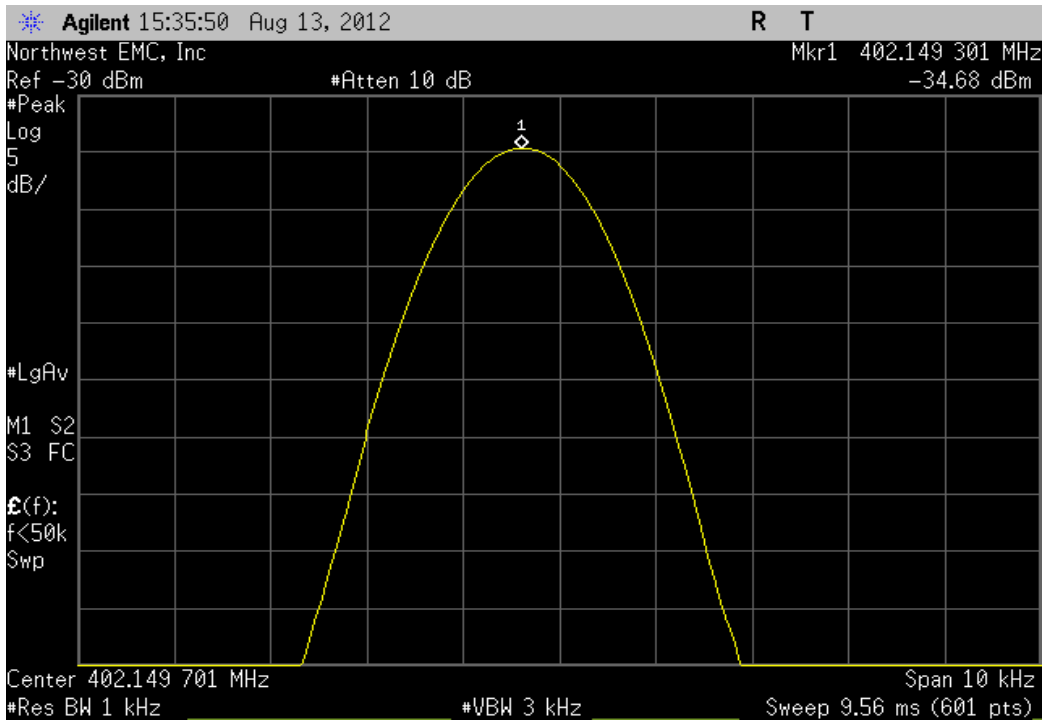
Extreme Temperature +25°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349602	403.35	0.99	100	Pass



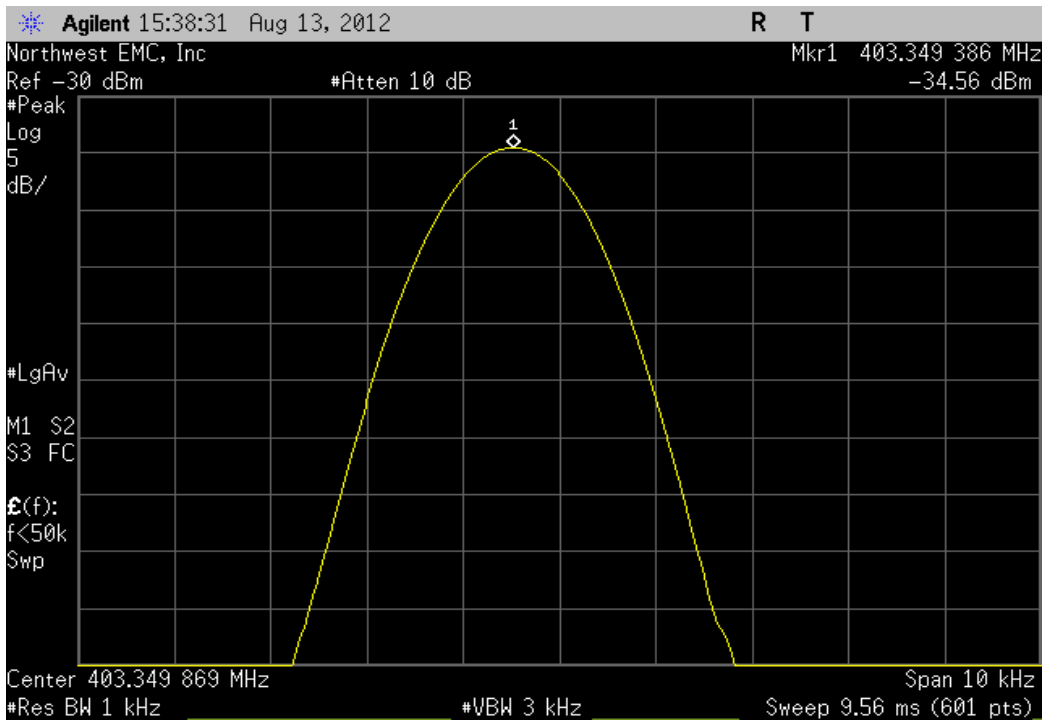
Extreme Temperature +25°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849519	404.85	1.19	100	Pass



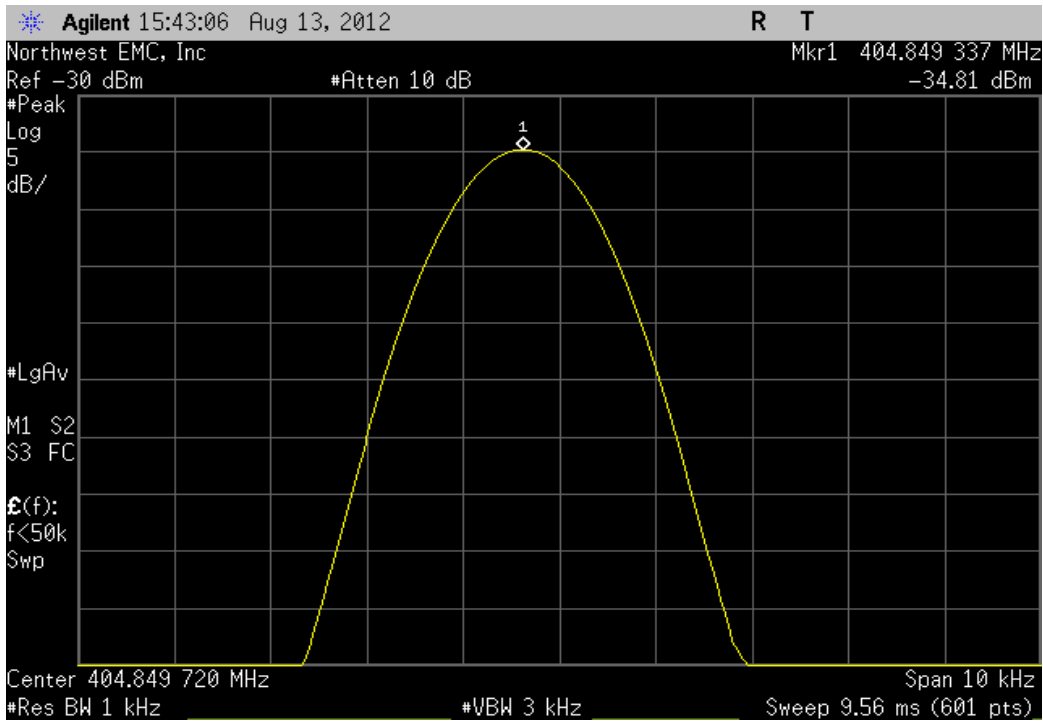
Extreme Temperature +15°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.149301	402.15	1.74	100	Pass



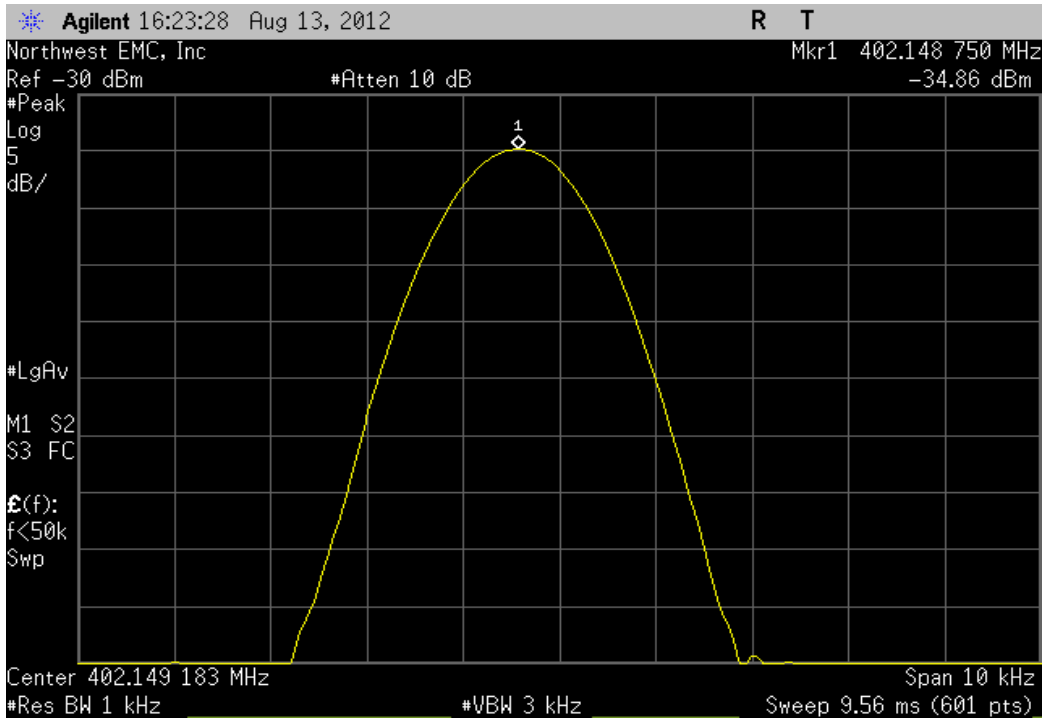
Extreme Temperature +15°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.349386	403.35	1.52	100	Pass



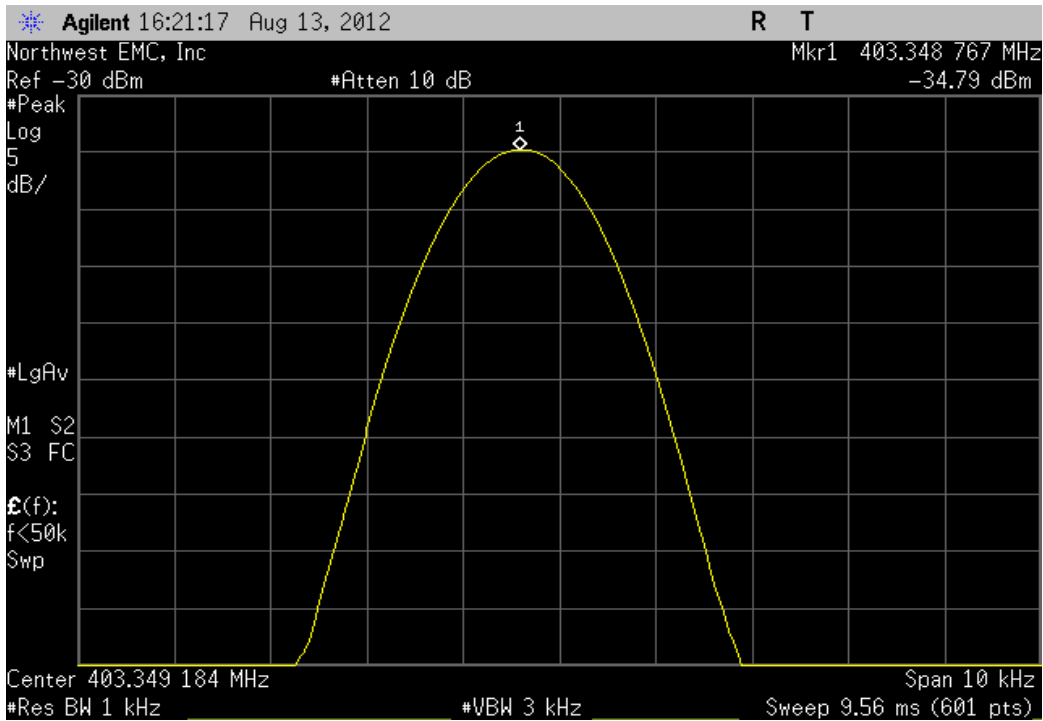
Extreme Temperature +15°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.849337	404.85	1.64	100	Pass



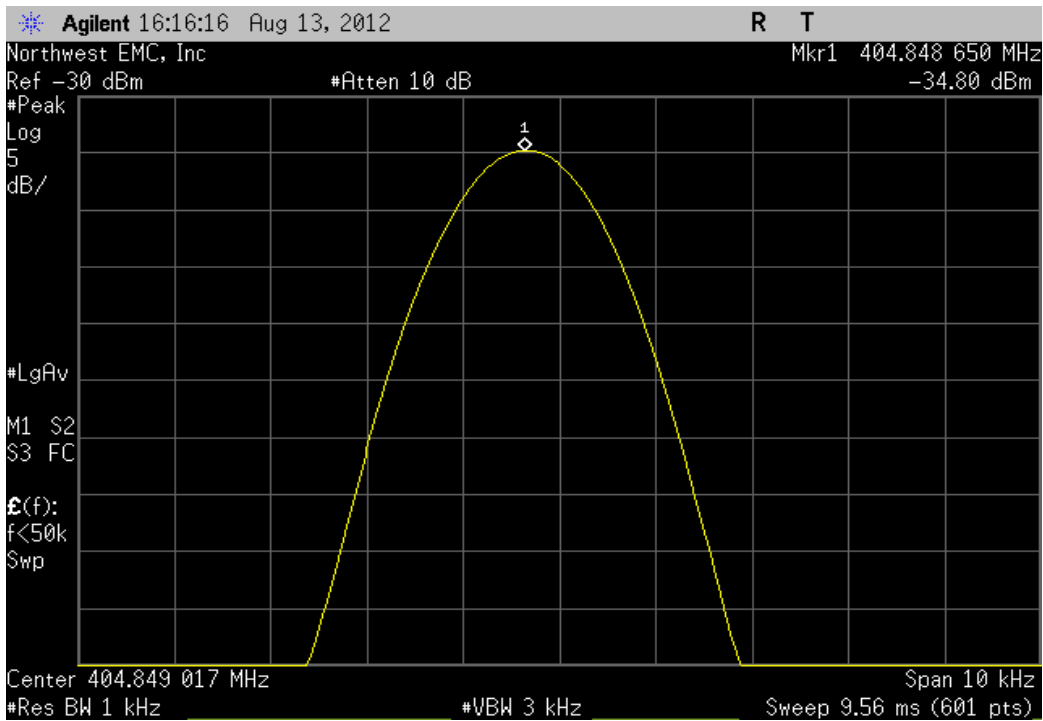
Extreme Temperature +5°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.14875	402.15	3.11	100	Pass



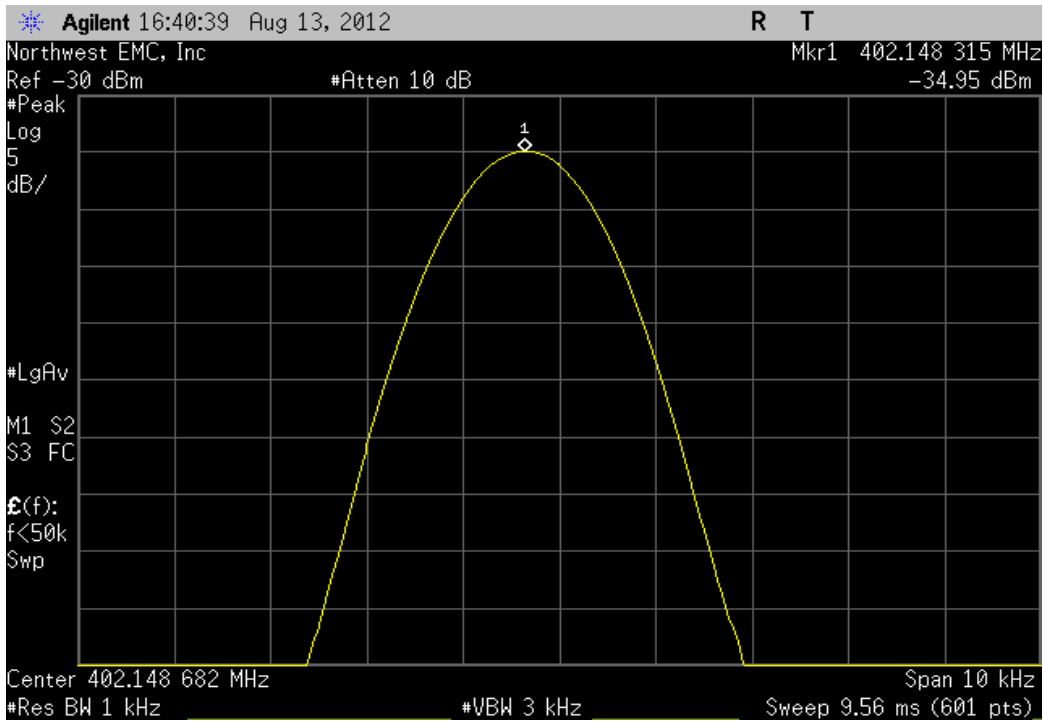
Extreme Temperature +5°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.348767	403.35	3.06	100	Pass



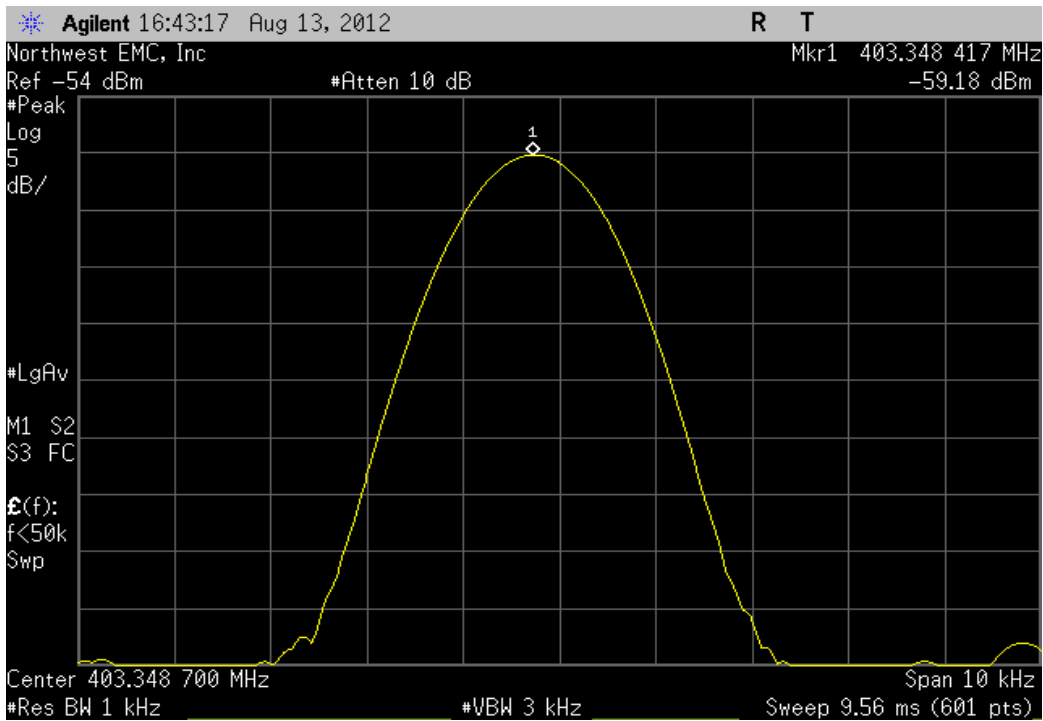
Extreme Temperature +5°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.84865	404.85	3.33	100	Pass



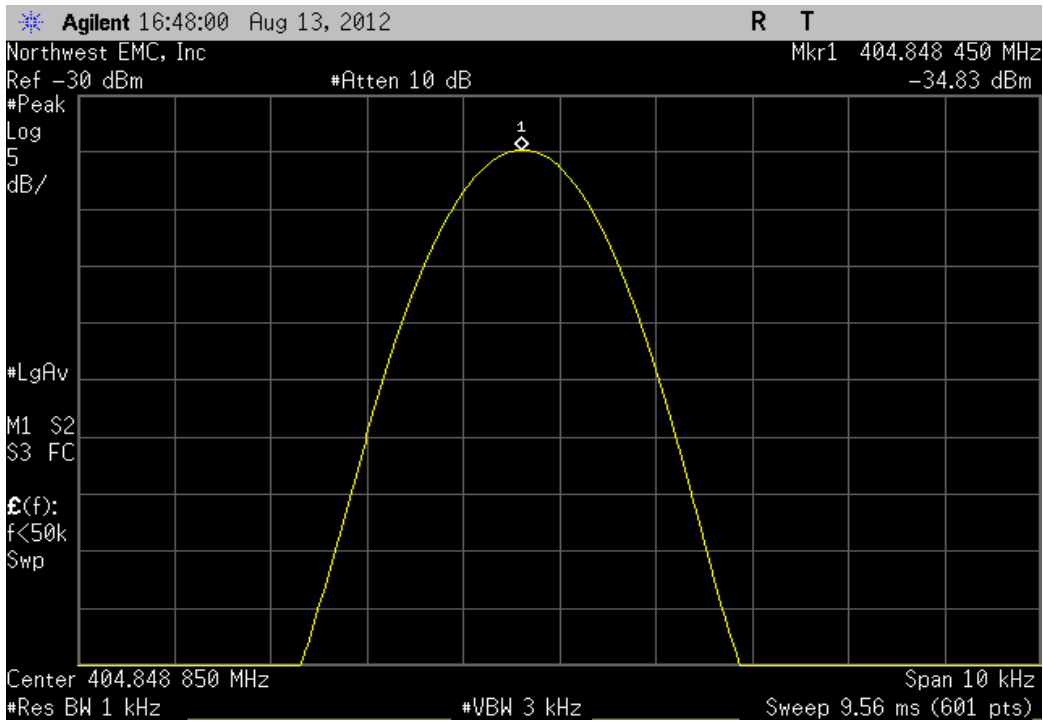
Extreme Temperature 0°C, Low Channel, 402.15 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	402.148315	402.15	4.19	100	Pass



Extreme Temperature 0°C, Mid Channel, 403.35 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.348417	403.35	3.92	100	Pass



Extreme Temperature 0°C, High Channel, 404.85 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	404.84845	404.85	3.83	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

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 it's maximum data rate.



Output Power

EUT: Intellis - Models 97745 (PTM), 97755 (RTM)		Work Order: MDTR0182
Serial Number: NLD001683N		Date: 07/17/12
Customer: Medtronic Inc.		Temperature: 24.32°C
Attendees: Scott Straka		Humidity: 60%
Project: None		Barometric Pres.: 1008.9
Tested by: Trevor Buls	Power: 5 VDC	Job Site: MN08

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

COMMENTS
Per MDTR0043 test plan configuration: 5 and 6

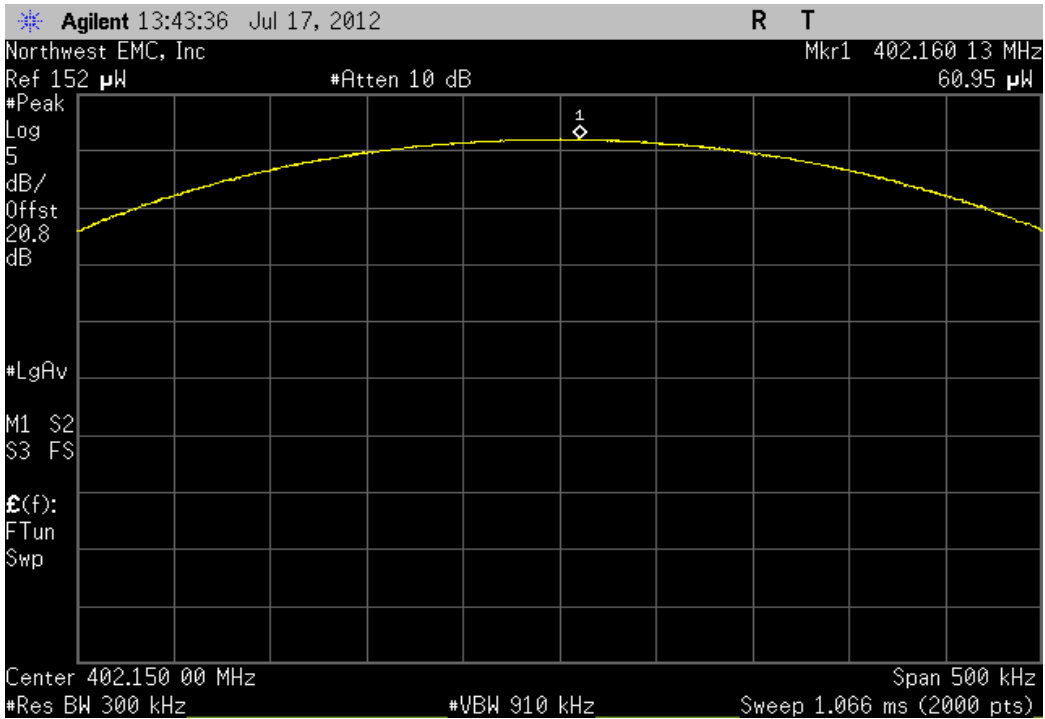
DEVIATIONS FROM TEST STANDARD
None

Configuration #	8, 9	Signature <i>Trevor Buls</i>
-----------------	------	------------------------------

	Value	Limit	Result
Per MDTR0043 test plan configuration: 5			
Low Channel, 402.15 MHz	60.954 uW	N/A	N/A
Mid Channel, 403.35 MHz	64.047 uW	N/A	N/A
High Channel, 404.85 MHz	38.869 uW	N/A	N/A
Per MDTR0043 test plan configuration: 6			
Low Channel, 402.15 MHz	61.745 uW	N/A	N/A
Mid Channel, 403.35 MHz	63.944 uW	N/A	N/A
High Channel, 404.85 MHz	38.761 uW	N/A	N/A

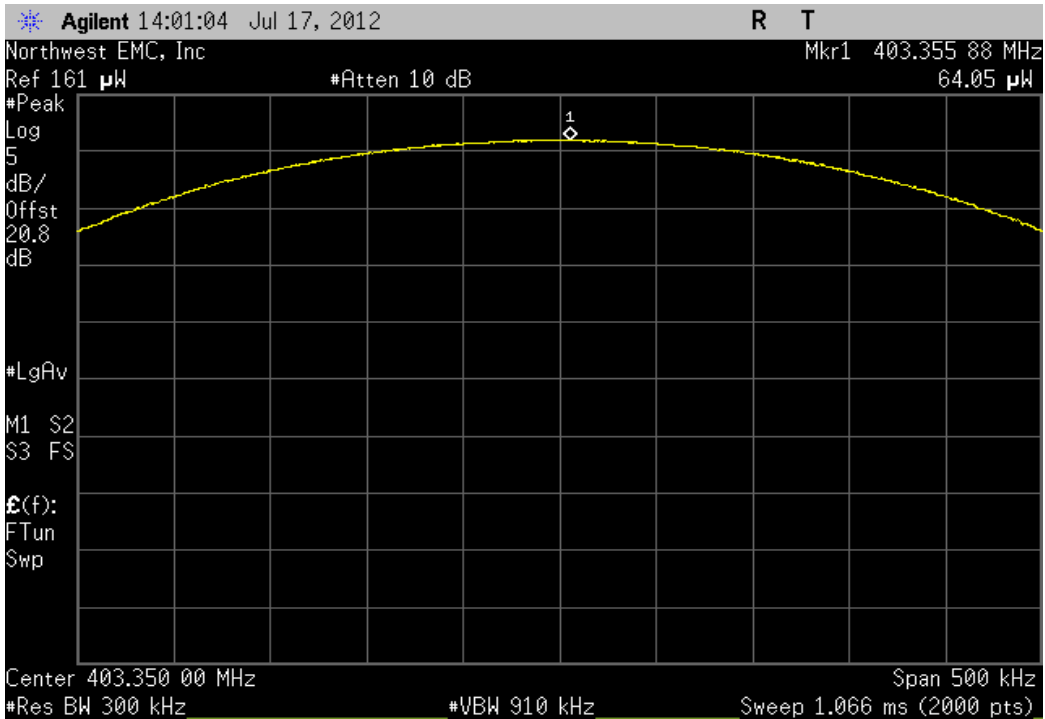
Per MDTR0043 test plan configuration: 5, Low Channel, 402.15 MHz

Value	Limit	Result
60.954 uW	N/A	N/A



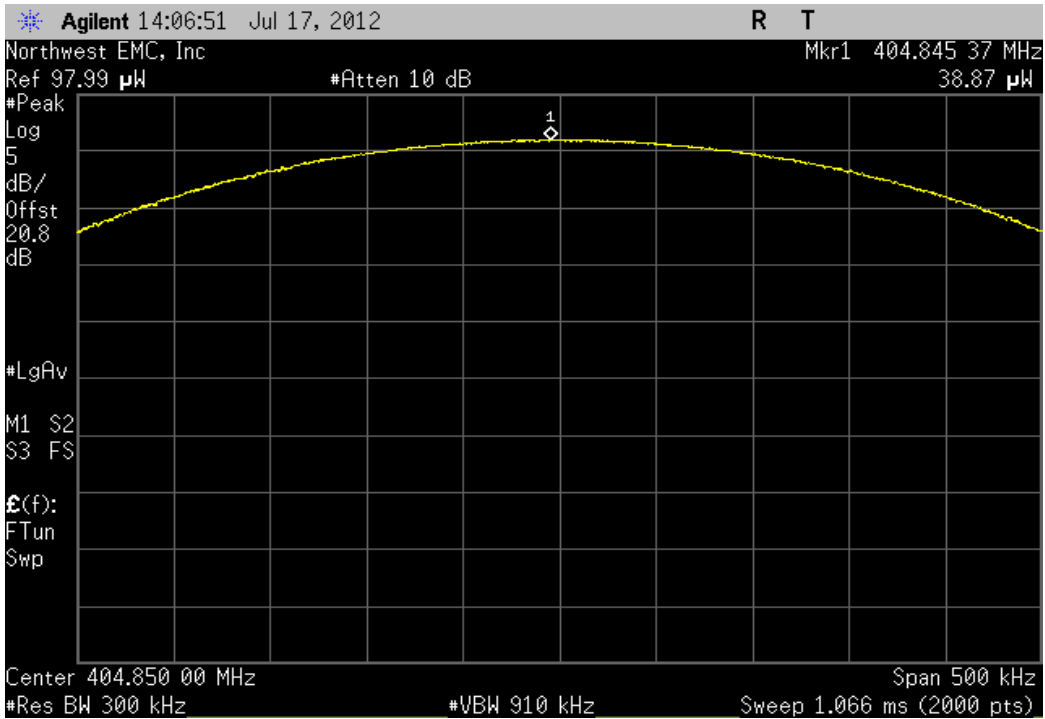
Per MDTR0043 test plan configuration: 5, Mid Channel, 403.35 MHz

Value	Limit	Result
64.047 uW	N/A	N/A



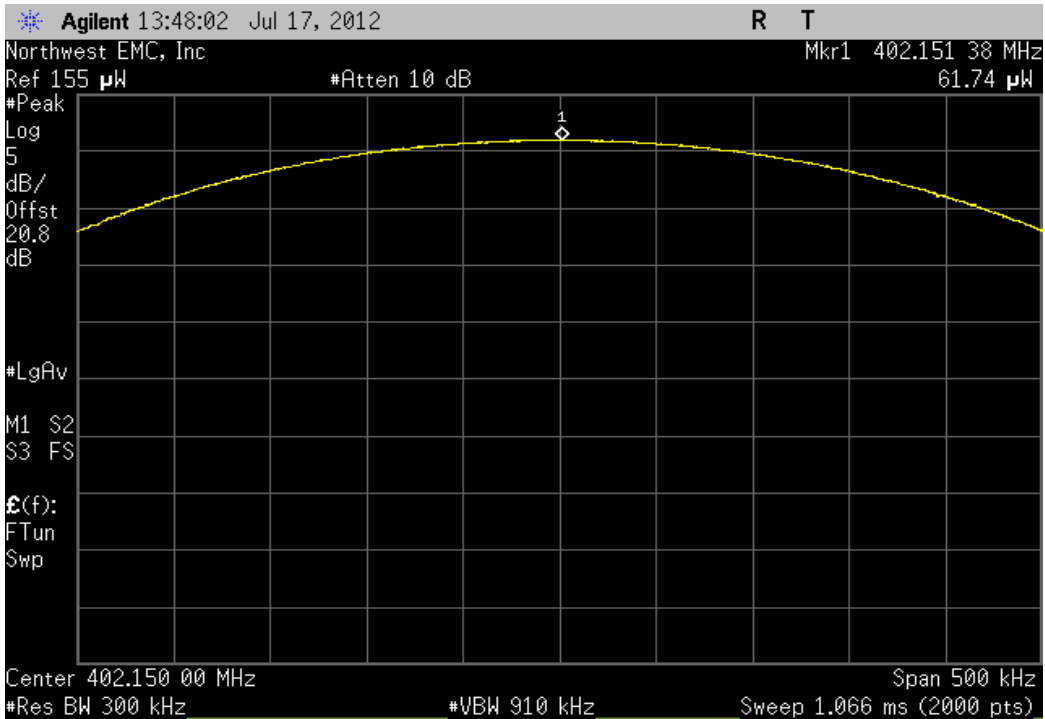
Per MDTR0043 test plan configuration: 5, High Channel, 404.85 MHz

Value	Limit	Result
38.869 uW	N/A	N/A



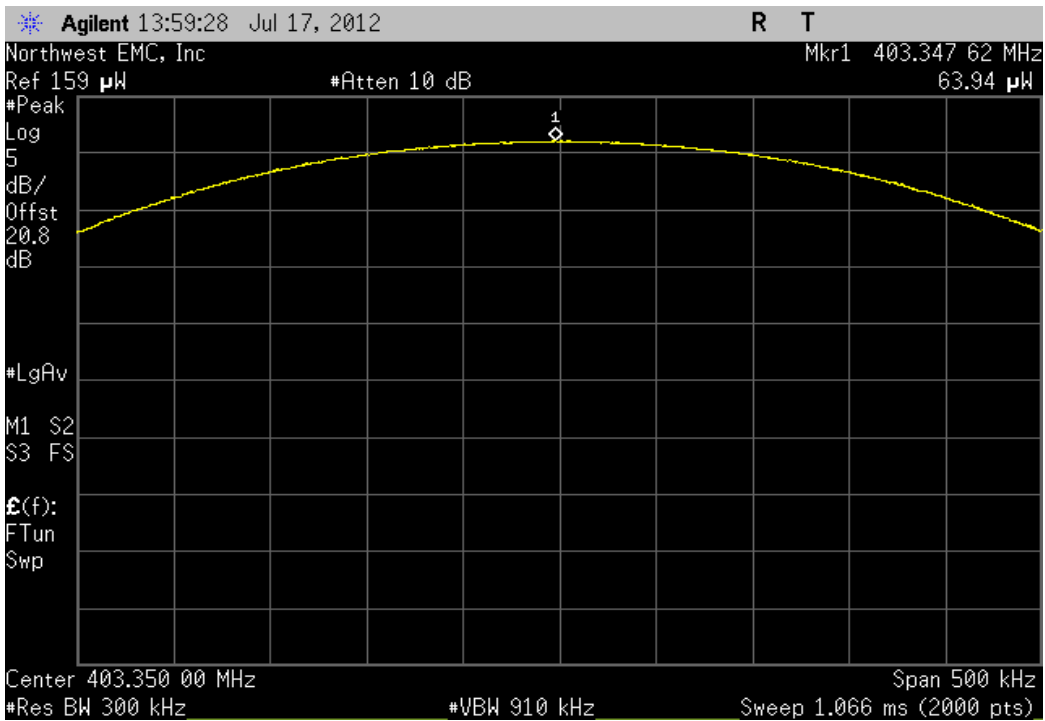
Per MDTR0043 test plan configuration: 6, Low Channel, 402.15 MHz

Value	Limit	Result
61.745 uW	N/A	N/A



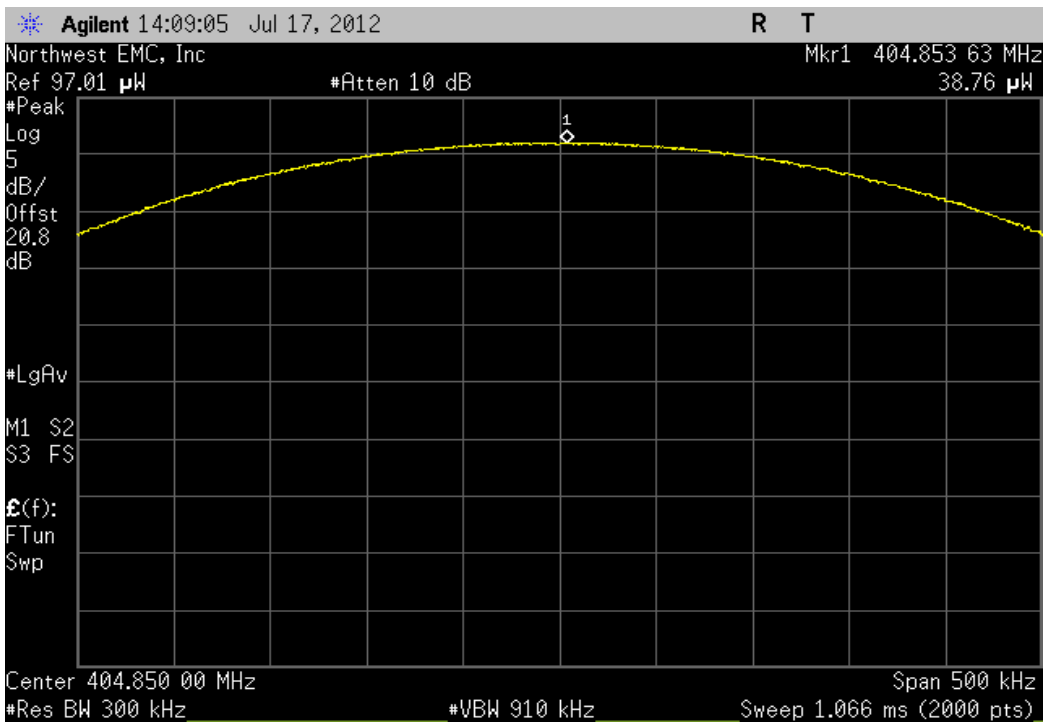
Per MDTR0043 test plan configuration: 6, Mid Channel, 403.35 MHz

Value	Limit	Result
63.944 uW	N/A	N/A



Per MDTR0043 test plan configuration: 6, High Channel, 404.85 MHz

Value	Limit	Result
38.761 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

PTM Receiving MICS Ch 1: 402.15 MHz. PTM connected to RTM. Li-Ion battery.
 PTM Receiving MICS Ch 1: 402.15 MHz. PTM connected to AC Adapter. Li-Ion battery.

POWER SETTINGS INVESTIGATED

5 VDC

CONFIGURATIONS INVESTIGATED

MDTR0182 - 4
 MDTR0182 - 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
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	5/30/2012	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cabl	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

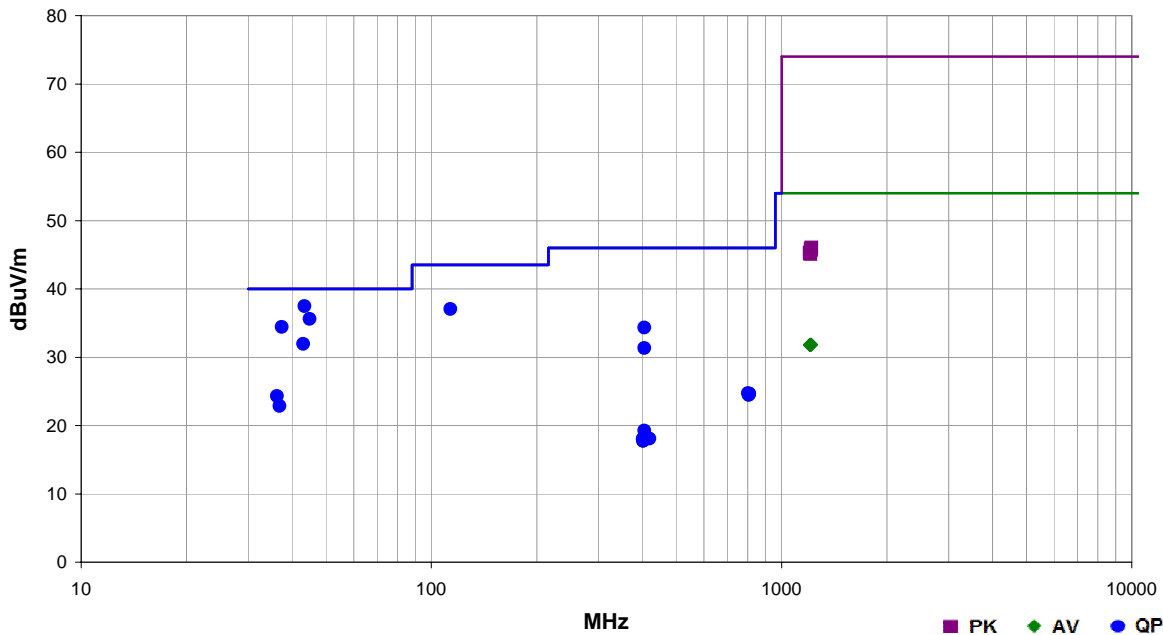
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band receive frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. 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 axes, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4). A preamp was used for this test in order to provide sufficient measurement sensitivity.

Receiver Spurious Emissions

Work Order:	MDTR0182	Date:	07/17/12	
Project:	None	Temperature:	22.98 °C	
Job Site:	MN05	Humidity:	62.82% RH	
Serial Number:	NLD001856N	Barometric Pres.:	1007.7 mbar	
EUT:	Intellis - Models 97745 (PTM), 97755 (RTM)			
Configuration:	1			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5 VDC			
Operating Mode:	PTM Receiving MICS Ch 1: 402.15 MHz. PTM connected to AC Adapter. Li-Ion battery.			
Deviations:	None			
Comments:	Per MDTR0043 test plan configuration: 5			

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

Run #	27	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
--------------	----	--------------------------	---	--------------------------	------	----------------	------



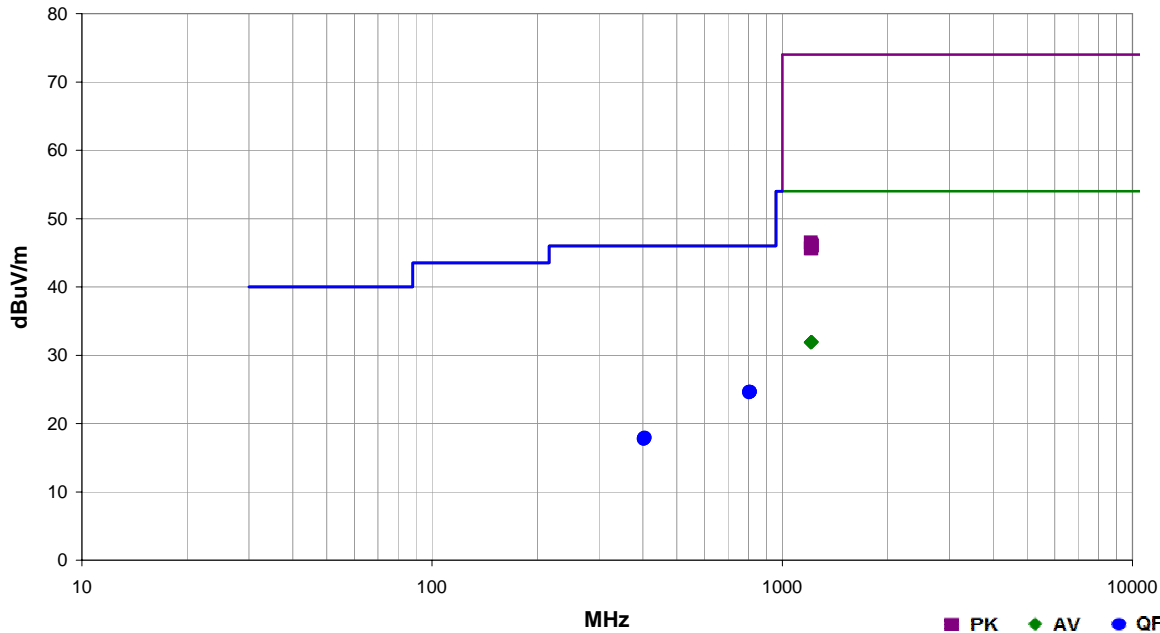
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
43.444	38.8	-1.3	1.0	253.0	3.0	0.0	Vert	QP	0.0	37.5	40.0	-2.5	EUT Vertical, High Ch
44.902	37.5	-1.9	1.0	359.0	3.0	0.0	Vert	QP	0.0	35.6	40.0	-4.4	EUT Vertical, Mid Ch
37.427	33.2	1.2	1.0	191.0	3.0	0.0	Vert	QP	0.0	34.4	40.0	-5.6	EUT Vertical, High Ch
113.417	43.2	-6.2	2.5	240.0	3.0	0.0	Horz	QP	0.0	37.0	43.5	-6.5	EUT Vertical, High Ch
43.082	33.1	-1.2	1.0	232.0	3.0	0.0	Vert	QP	0.0	31.9	40.0	-8.1	EUT Vertical, low Ch
405.348	33.5	0.8	1.0	53.0	3.0	0.0	Vert	QP	0.0	34.3	46.0	-11.7	EUT Vertical, High Ch
405.350	30.5	0.8	1.9	214.0	3.0	0.0	Horz	QP	0.0	31.3	46.0	-14.7	EUT Vertical, High Ch
36.242	22.6	1.7	1.7	286.0	3.0	0.0	Horz	QP	0.0	24.3	40.0	-15.7	EUT Vertical, low Ch
36.875	21.4	1.4	2.0	118.0	3.0	0.0	Horz	QP	0.0	22.8	40.0	-17.2	EUT Vertical, Mid Ch
802.269	16.9	7.8	1.0	276.0	3.0	0.0	Vert	QP	0.0	24.7	46.0	-21.3	EUT Vertical, low Ch
809.965	16.9	7.7	1.0	296.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Vertical, High Ch
809.578	16.9	7.7	1.5	209.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Vertical, High Ch
807.018	16.9	7.7	1.0	297.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Vertical, Mid Ch
804.885	16.8	7.7	2.4	218.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT Vertical, low Ch
806.948	16.8	7.7	1.0	152.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT Vertical, Mid Ch
1213.517	27.1	4.7	1.0	67.0	3.0	0.0	Vert	AV	0.0	31.8	54.0	-22.2	EUT Vertical, High Ch
1212.808	27.1	4.7	1.7	292.0	3.0	0.0	Horz	AV	0.0	31.8	54.0	-22.2	EUT Vertical, High Ch
1207.758	27.1	4.7	2.1	223.0	3.0	0.0	Vert	AV	0.0	31.8	54.0	-22.2	EUT Vertical, Mid Ch
1207.650	27.1	4.7	1.0	299.0	3.0	0.0	Horz	AV	0.0	31.8	54.0	-22.2	EUT Vertical, Mid Ch
1206.167	27.1	4.7	3.2	208.0	3.0	0.0	Horz	AV	0.0	31.8	54.0	-22.2	EUT Vertical, Low Ch

Receiver Spurious Emissions

Work Order:	MDTR0182	Date:	07/17/12	<i>Trevor Buls</i>	
Project:	None	Temperature:	22.98 °C		
Job Site:	MN05	Humidity:	62.82% RH		
Serial Number:	NLD001856N	Barometric Pres.:	1007.7 mbar		Tested by: Trevor Buls
EUT:	Intellis - Models 97745 (PTM), 97755 (RTM)				
Configuration:	4				
Customer:	Medtronic Inc.				
Attendees:	Scott Straka				
EUT Power:	Battery				
Operating Mode:	PTM Receiving MICS Ch 1: 402.15 MHz. PTM connected to RTM. Li-Ion battery.				
Deviations:	None				
Comments:	Per MDTR0043 test plan configuration: 6				

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

Run #	8	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
-------	---	-------------------	---	-------------------	------	---------	------



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
804.354	16.9	7.7	1.0	142.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Low Ch
809.322	16.9	7.7	1.0	310.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, High Ch
809.212	16.9	7.7	1.4	213.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, High Ch
807.030	16.9	7.7	1.0	89.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
806.858	16.9	7.7	1.0	245.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
804.490	16.8	7.7	1.0	180.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT Horizontal, Low Ch
1213.883	27.2	4.7	1.0	88.0	3.0	0.0	Horz	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, High Ch
1212.333	27.2	4.7	1.0	223.0	3.0	0.0	Vert	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, High Ch
1208.050	27.2	4.7	2.9	179.0	3.0	0.0	Vert	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, Mid Ch
1208.000	27.2	4.7	1.4	217.0	3.0	0.0	Horz	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, Mid Ch
1205.792	27.2	4.7	1.3	80.0	3.0	0.0	Vert	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, Low Ch
1205.625	27.2	4.7	1.0	313.0	3.0	0.0	Horz	AV	0.0	31.9	54.0	-22.1	EUT Horizontal, Low Ch
1207.183	41.8	4.7	1.3	80.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	EUT Horizontal, Low Ch
1212.675	41.5	4.7	1.0	88.0	3.0	0.0	Horz	PK	0.0	46.2	74.0	-27.8	EUT Horizontal, High Ch
1215.842	41.3	4.7	1.0	223.0	3.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	EUT Horizontal, High Ch
1210.358	41.3	4.7	2.9	179.0	3.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	EUT Horizontal, Mid Ch
404.641	17.1	0.8	1.0	245.0	3.0	0.0	Vert	QP	0.0	17.9	46.0	-28.1	EUT Horizontal, High Ch
404.578	17.1	0.8	1.0	80.0	3.0	0.0	Horz	QP	0.0	17.9	46.0	-28.1	EUT Horizontal, High Ch
403.515	17.1	0.7	3.5	123.0	3.0	0.0	Vert	QP	0.0	17.8	46.0	-28.2	EUT Horizontal, Mid Ch
403.438	17.1	0.7	1.0	245.0	3.0	0.0	Horz	QP	0.0	17.8	46.0	-28.2	EUT Horizontal, Mid Ch

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

PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz. PTM connected to RTM. Li-Ion battery.

PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz. PTM connected to AC Adapter. Li-Ion battery.

POWER SETTINGS INVESTIGATED

5 VDC

CONFIGURATIONS INVESTIGATED

MDTR0182 - 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
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	5/30/2012	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn	MNI	5/30/2012	12 mo
Antenna, Horn (DRG)		Cables			
Pre-Amplifier	ETS Lindgren	3115	AIP	6/29/2011	24 mo
MN05 Cables	Miteq	AM-1616-1000	AVY	5/31/2012	12 mo
Antenna, Bilog	ESM Cable Corp.	Bilog Cables	MNH	5/31/2012	12 mo
	Teseq	CBL 6141B	AYD	12/19/2011	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. A preamp was used for this test in order to provide sufficient measurement sensitivity.

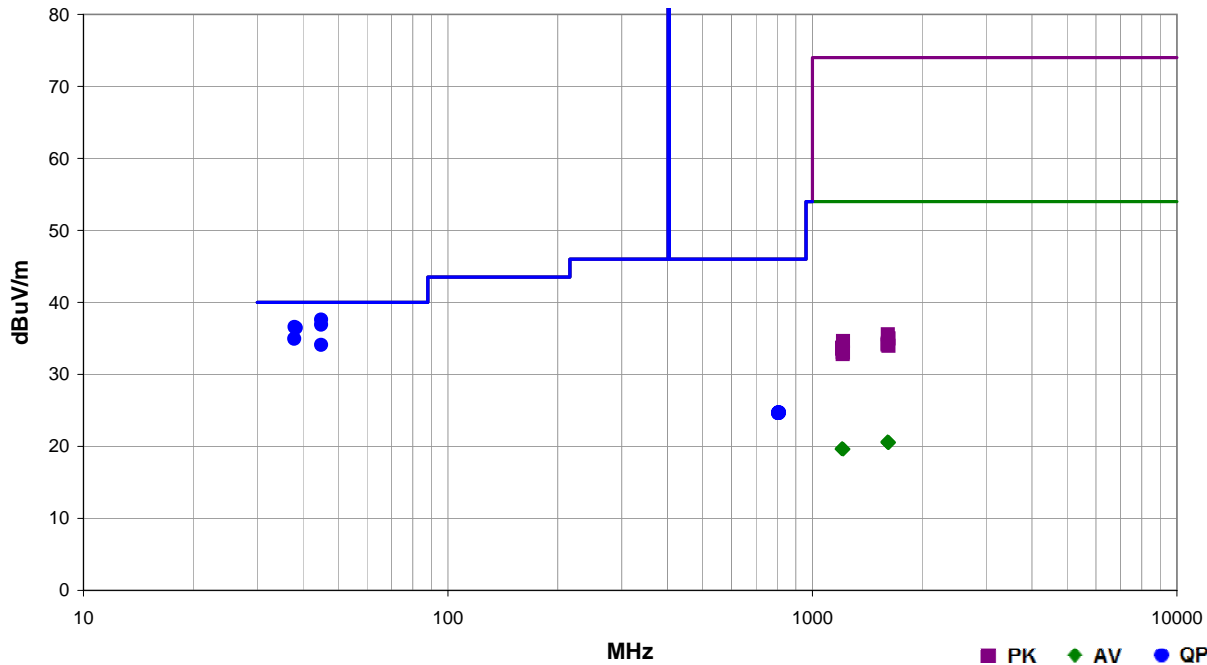


Spurious Radiated Emissions

Work Order:	MDTR0182	Date:	07/18/12	
Project:	None	Temperature:	23.02 °C	
Job Site:	MN05	Humidity:	59.56% RH	
Serial Number:	NLD001856N	Barometric Pres.:	1010.8 mbar	
EUT:	Intellis - Models 97745 (PTM), 97755 (RTM)			
Configuration:	1			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5 VDC			
Operating Mode:	PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz. PTM connected to AC Adapter. Li-Ion battery.			
Deviations:	None			
Comments:	Per MDTR0043 test plan configuration: 5			

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

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




Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
44.921	39.5	-1.9	1.0	229.0	3.0	0.0	Vert	QP	0.0	37.6	40.0	-2.4	EUT Vertical, High Ch
44.928	38.8	-1.9	1.0	274.0	3.0	0.0	Vert	QP	0.0	36.9	40.0	-3.1	EUT Vertical, Low Ch
37.977	35.6	1.0	1.0	321.0	3.0	0.0	Vert	QP	0.0	36.6	40.0	-3.4	EUT Vertical, Low Ch
38.245	35.6	0.9	1.0	303.0	3.0	0.0	Vert	QP	0.0	36.5	40.0	-3.5	EUT Vertical, High Ch
37.866	33.9	1.0	1.0	244.0	3.0	0.0	Vert	QP	0.0	34.9	40.0	-5.1	EUT Horizontal, Mid Ch
44.934	36.0	-1.9	1.2	332.0	3.0	0.0	Vert	QP	0.0	34.1	40.0	-5.9	EUT Horizontal, Mid Ch
809.693	17.0	7.7	1.7	145.0	3.0	0.0	Horz	QP	0.0	24.7	46.0	-21.3	EUT Vertical, High Ch
808.435	17.0	7.7	2.1	103.0	3.0	0.0	Vert	QP	0.0	24.7	46.0	-21.3	EUT Vertical, Mid Ch
808.291	17.0	7.7	1.0	223.0	3.0	0.0	Horz	QP	0.0	24.7	46.0	-21.3	EUT on Side, Mid Ch
806.673	17.0	7.7	1.0	328.0	3.0	0.0	Vert	QP	0.0	24.7	46.0	-21.3	EUT on Side, Mid Ch
809.728	16.9	7.7	3.1	38.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Vertical, High Ch
804.818	16.9	7.7	2.4	263.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Vertical, Low Ch
807.534	16.9	7.7	1.0	330.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
807.277	16.9	7.7	2.1	192.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
806.303	16.9	7.7	2.9	163.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Vertical, Mid Ch
805.419	16.9	7.7	1.0	291.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Vertical, Low Ch
1607.092	26.7	-6.0	1.0	195.0	3.0	0.0	Vert	AV	0.0	20.7	54.0	-33.3	EUT Vertical, Low Ch
1618.092	26.6	-6.0	1.0	202.0	3.0	0.0	Vert	AV	0.0	20.6	54.0	-33.4	EUT Vertical, High Ch

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
1613.325	26.6	-6.0	3.8	272.0	3.0	0.0	Horz	AV	0.0	20.6	54.0	-33.4	EUT Vertical, Mid Ch
1613.192	26.6	-6.0	1.0	303.0	3.0	0.0	Vert	AV	0.0	20.6	54.0	-33.4	EUT Vertical, Mid Ch
1606.992	26.6	-6.0	1.0	34.0	3.0	0.0	Horz	AV	0.0	20.6	54.0	-33.4	EUT Vertical, Low Ch
1616.925	26.5	-6.0	1.0	27.0	3.0	0.0	Horz	AV	0.0	20.5	54.0	-33.5	EUT Vertical, High Ch
1207.983	27.1	-7.4	1.0	337.0	3.0	0.0	Vert	AV	0.0	19.7	54.0	-34.3	EUT Vertical, Mid Ch
1207.833	27.1	-7.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	19.7	54.0	-34.3	EUT Vertical, Mid Ch
1205.017	27.1	-7.4	2.6	247.0	3.0	0.0	Vert	AV	0.0	19.7	54.0	-34.3	EUT Vertical, Low Ch
1204.608	27.1	-7.4	1.0	22.0	3.0	0.0	Horz	AV	0.0	19.7	54.0	-34.3	EUT Vertical, Low Ch
1215.033	27.0	-7.4	1.0	89.0	3.0	0.0	Horz	AV	0.0	19.6	54.0	-34.4	EUT Vertical, High Ch
1214.142	27.0	-7.4	1.0	124.0	3.0	0.0	Vert	AV	0.0	19.6	54.0	-34.4	EUT Vertical, High Ch
1610.125	41.6	-6.0	1.0	34.0	3.0	0.0	Horz	PK	0.0	35.6	74.0	-38.4	EUT Vertical, Low Ch
1617.617	41.0	-6.0	1.0	202.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Vertical, High Ch
1613.775	41.0	-6.0	1.0	303.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Vertical, Mid Ch
1214.025	42.0	-7.4	1.0	89.0	3.0	0.0	Horz	PK	0.0	34.6	74.0	-39.4	EUT Vertical, High Ch
1611.342	40.4	-6.0	3.7	272.0	3.0	0.0	Horz	PK	0.0	34.4	74.0	-39.6	EUT Vertical, Mid Ch
1607.633	40.2	-6.0	1.0	195.0	3.0	0.0	Vert	PK	0.0	34.2	74.0	-39.8	EUT Vertical, Low Ch
1618.817	40.0	-6.0	1.0	27.0	3.0	0.0	Horz	PK	0.0	34.0	74.0	-40.0	EUT Vertical, High Ch
1206.992	41.1	-7.4	2.6	247.0	3.0	0.0	Vert	PK	0.0	33.7	74.0	-40.3	EUT Vertical, Low Ch
1206.808	41.0	-7.4	1.0	22.0	3.0	0.0	Horz	PK	0.0	33.6	74.0	-40.4	EUT Vertical, Low Ch
1210.833	40.5	-7.4	1.0	194.0	3.0	0.0	Horz	PK	0.0	33.1	74.0	-40.9	EUT Vertical, Mid Ch
1213.708	40.4	-7.4	1.0	124.0	3.0	0.0	Vert	PK	0.0	33.0	74.0	-41.0	EUT Vertical, High Ch
1211.633	40.2	-7.4	1.0	337.0	3.0	0.0	Vert	PK	0.0	32.8	74.0	-41.2	EUT Vertical, Mid Ch



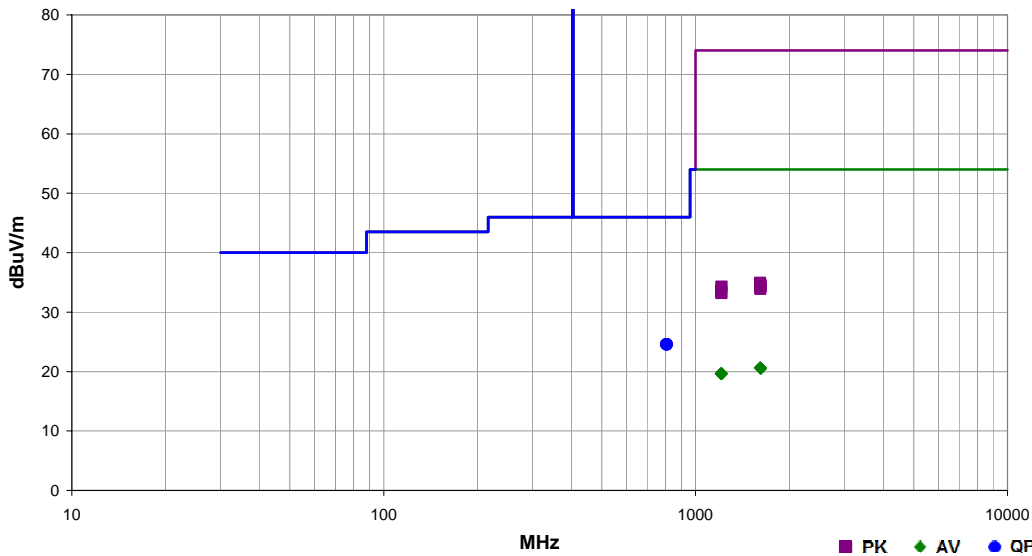
Spurious Radiated Emissions

PSA-ESCI 2012.05.07
PSA-ESCI Version 2011.12.21

Work Order:	MDTR0182	Date:	07/18/12	
Project:	None	Temperature:	23.02 °C	
Job Site:	MN05	Humidity:	59.56% RH	
Serial Number:	NLD001856N	Barometric Pres.:	1010.8 mbar	
EUT:	Intellis - Models 97745 (PTM), 97755 (RTM)			
Configuration:	1			
Customer:	Medtronic Inc.			
Attendees:	None			
EUT Power:	5 VDC			
Operating Mode:	PTM Transmitting MICS Ch 1, 5, 10: 402.15, 403.35, 404.85 MHz. PTM connected to RTM. Li-Ion battery.			
Deviations:	None			
Comments:	Per MDTR0043 test plan configuration: 6			

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

Run #	16	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
--------------	----	--------------------------	---	--------------------------	------	----------------	------



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
809.898	16.9	7.7	1.9	53.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Vertical, High Ch
809.688	16.9	7.7	1.0	89.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT on Side, High Ch
809.661	16.9	7.7	2.4	10.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, High Ch
806.698	16.9	7.7	3.2	191.0	3.0	0.0	Horz	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
806.389	16.9	7.7	3.1	25.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Mid Ch
803.883	16.8	7.8	2.1	191.0	3.0	0.0	Vert	QP	0.0	24.6	46.0	-21.4	EUT Horizontal, Low Ch
804.414	16.8	7.7	2.4	317.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT Horizontal, Low Ch
809.625	16.8	7.7	1.0	57.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT on Side, High Ch
809.518	16.8	7.7	2.2	54.0	3.0	0.0	Horz	QP	0.0	24.5	46.0	-21.5	EUT Horizontal, High Ch
810.075	16.8	7.7	1.0	91.0	3.0	0.0	Vert	QP	0.0	24.5	46.0	-21.5	EUT Vertical, High Ch
1609.192	26.7	-6.0	1.6	31.0	3.0	0.0	Horz	AV	0.0	20.7	54.0	-33.3	EUT Horizontal, Low Ch
1608.775	26.7	-6.0	1.5	31.0	3.0	0.0	Vert	AV	0.0	20.7	54.0	-33.3	EUT Horizontal, Low Ch
1618.125	26.6	-6.0	1.0	202.0	3.0	0.0	Vert	AV	0.0	20.6	54.0	-33.4	EUT Horizontal, High Ch
1613.092	26.6	-6.0	1.0	268.0	3.0	0.0	Vert	AV	0.0	20.6	54.0	-33.4	EUT Horizontal, Mid Ch
1612.692	26.6	-6.0	1.0	232.0	3.0	0.0	Horz	AV	0.0	20.6	54.0	-33.4	EUT Horizontal, Mid Ch
1617.808	26.5	-6.0	3.9	180.0	3.0	0.0	Horz	AV	0.0	20.5	54.0	-33.5	EUT Horizontal, High Ch
1205.892	27.2	-7.4	2.8	249.0	3.0	0.0	Horz	AV	0.0	19.8	54.0	-34.2	EUT Horizontal, Low Ch
1213.325	27.1	-7.4	3.9	189.0	3.0	0.0	Vert	AV	0.0	19.7	54.0	-34.3	EUT Horizontal, High Ch
1204.292	27.1	-7.4	3.9	113.0	3.0	0.0	Vert	AV	0.0	19.7	54.0	-34.3	EUT Horizontal, Low Ch
1213.158	27.0	-7.4	1.0	1.0	3.0	0.0	Horz	AV	0.0	19.6	54.0	-34.4	EUT Horizontal, High Ch
1208.775	27.0	-7.4	1.2	14.0	3.0	0.0	Horz	AV	0.0	19.6	54.0	-34.4	EUT Horizontal, Mid Ch
1207.867	27.0	-7.4	1.0	56.0	3.0	0.0	Vert	AV	0.0	19.6	54.0	-34.4	EUT Horizontal, Mid Ch
1611.825	41.0	-6.0	1.0	268.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	EUT Horizontal, Mid Ch
1619.475	40.6	-6.0	3.8	180.0	3.0	0.0	Horz	PK	0.0	34.6	74.0	-39.4	EUT Horizontal, High Ch
1608.617	40.6	-6.0	1.6	31.0	3.0	0.0	Horz	PK	0.0	34.6	74.0	-39.4	EUT Horizontal, Low Ch
1213.933	41.7	-7.4	3.8	189.0	3.0	0.0	Vert	PK	0.0	34.3	74.0	-39.7	EUT Horizontal, High Ch
1620.858	40.3	-6.0	1.0	202.0	3.0	0.0	Vert	PK	0.0	34.3	74.0	-39.7	EUT Horizontal, High Ch
1209.342	41.6	-7.4	1.2	14.0	3.0	0.0	Horz	PK	0.0	34.2	74.0	-39.8	EUT Horizontal, Mid Ch
1610.867	40.1	-6.0	1.5	31.0	3.0	0.0	Vert	PK	0.0	34.1	74.0	-39.9	EUT Horizontal, Low Ch
1613.200	39.9	-6.0	1.0	232.0	3.0	0.0	Horz	PK	0.0	33.9	74.0	-40.1	EUT Horizontal, Mid Ch
1206.733	41.1	-7.4	2.8	249.0	3.0	0.0	Horz	PK	0.0	33.7	74.0	-40.3	EUT Horizontal, Low Ch
1206.225	40.9	-7.4	3.8	113.0	3.0	0.0	Vert	PK	0.0	33.5	74.0	-40.5	EUT Horizontal, Low Ch
1212.525	40.7	-7.4	1.0	1.0	3.0	0.0	Horz	PK	0.0	33.3	74.0	-40.7	EUT Horizontal, High Ch
1209.000	40.6	-7.4	1.0	56.0	3.0	0.0	Vert	PK	0.0	33.2	74.0	-40.8	EUT Horizontal, Mid Ch