

Medtronic, Inc.

CareLink Encore™ 26901

FCC 15.207:2016 FCC 15.209:2016

Report # MDTR0451.2 Rev.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.





Last Date of Test: March 01, 2016 Medtronic, Inc. CareLink Encore™ 26901

Emissions

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.209:2016	ANSI 665.10.2015

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	AC – Powerline Conducted Emissions	Yes	Pass	
6.4	Field Strength of Fundamental	Yes	Pass	
6.4, 6.5	Spurious Radiated Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY



Revision Number	Description	Date	Page Number
01	Method Clauses were added to the Certificate of Test.	6-7-16	2

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

European Commission – Validated by the European Commission as a 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

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

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

EMISSIONS MEASUREMENTS



Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

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

Measurements were made using the bandwidths and detectors specified. No video filter was used.

Sample Calculations

Radiated Emissions:

Field Strength		Measured Level		Antenna Factor		Cable Factor		Amplifier Gain		Distance Adjustment Factor		External Attenuation
33.5	=	42.6	+	28.6	+	3.1	-	40.8	+	0.0	+	0.0

Conducted Emissions:

Adjusted Level		Measured Level		Transducer Factor		Cable Factor		External Attenuation
47.1	=	26.7	+	0.3	+	0.1	+	20.0

MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

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

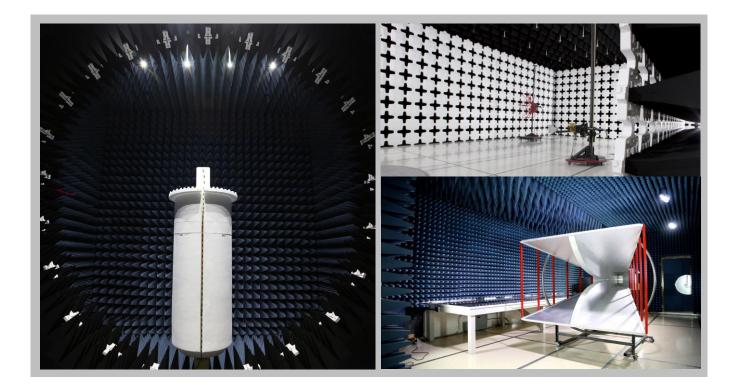
Test	+ MU	- <u>MU</u>
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%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

FACILITIES





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



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Medtronic, Inc.
Address:	710 Medtronic Parkway
City, State, Zip:	Minneapolis, MN 55432
Test Requested By:	Joel Peltier
Model:	CareLink Encore™ 26901
First Date of Test:	February 19, 2016
Last Date of Test:	March 01, 2016
Receipt Date of Samples:	February 17, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

A medical instrument for programming and monitoring Medtronic implantable medical devices.

Highest frequency generated or used in the device:

33kHz, 400kHz, 4MHz,12MHz, 24MHz, 25MHz, 27MHz, 33MHz, 48MHz, 65MHz

Testing Objective:

To demonstrate compliance of the inductive portion of the instrument to FCC Part 15.207 & 15.209 specifications.

CONFIGURATIONS



Configuration MDTR0451-1

EUT						
Description	Manufacturer	Model/Part Number	Serial Number			
Encore Programmer	Medtronic	29901 (REF 29901A)	JVD100008P			
Power Supply	Advanced Power Solutions	AP5100EM-190530	85192011001506001399			
Programming Head	Medtronic	26901	PXR001118P			

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
ICD (Implant)	Medtronic	Evera S VR	BWL604645S		

Remote Equipment Outside of Test Setup Boundary						
Description	Manufacturer	Model/Part Number	Serial Number			
Router	Belkin	F9K1103V1 / N750	12112466117433			
DC Power Supply (Router)	Leader Electronics	MU24-B120200-A1	PWB781122708646			
Laptop	Acer	NAV50	LUSAL0B137011502C81601			
DC Power Supply (Laptop)	Delta Electronics	N17908	AP0400100201108409P101			

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC	No	2.30m	No	AC Mains	Power Supply
DC	No	1.60m	No	Power Supply	Encore Programmer
Ethernet	No	1.60m	No	Encore Programmer	Unterminated
USB (x2)	No	3.0m	No	Encore Programmer	Unterminated
ECG	No	4.0m	No	Encore Programmer	Unterminated
Serial	No	3.0m	No	Encore Programmer	Unterminated
Programming Head Cable	No	2.50m	No	Encore Programmer	Programming Head
Ethernet	No	10.0m	No	Laptop	Router

CONFIGURATIONS



Configuration MDTR0451-6

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Encore Programmer	Medtronic	29901 (REF 29901A)	JVD100008P
Programming Head	Medtronic	26901	PXR001118P
Power Supply	Advanced Power Solutions	AP5100EM-190530	85192011001506001666

Peripherals in test se	etup boundary		
Description	Manufacturer	Model/Part Number	Serial Number
ICD (Implant)	Medtronic	Evera S VR	BWL604645S

Remote Equipment Ou	tside of Test Setup Boun	Idary	
Description	Manufacturer	Model/Part Number	Serial Number
Router	Belkin	F9K1103V1 / N750	12112466117433
DC Power Supply (Router)	Leader Electronics Inc	MU24-B120200-A1	PWB781122708646
Laptop	Acer	NAV50	LUSAL0B137011502C81601
DC Power Supply (Laptop)	Delta Electronics	N17908	AP0400100201108409P101

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC	No	2.30m	No	AC Mains	Power Supply
DC	No	1.60m	No	Power Supply	Encore Programmer
USB (x2)	No	3.0m	No	Encore Programmer	Unterminated
ECG	No	4.0m	No	Encore Programmer	Unterminated
Serial	No	3.0m	No	Encore Programmer	Unterminated
Programming Head Cable	No	2.50m	No	Encore Programmer	Programming Head
Ethernet	No	10.0m	No	Laptop	Router
DC	No	2.5m	No	Laptop	DC Power Supply

CONFIGURATIONS



Configuration MDTR0451-7

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Encore Programmer	Medtronic	29901 (REF 29901A)	JVD100008P
Power Supply	Advanced Power Solutions	AP5100EM-190530	85192011001506001666
Programming Head	Medtronic	26901	PXR001118P

Peripherals in test se	etup boundary		
Description	Manufacturer	Model/Part Number	Serial Number
IPG	Medtronic	ADDR01	NWB928834S

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC	No	2.30m	No	AC Mains	Power Supply
DC	No	1.60m	No	Power Supply	Encore Programmer
Ethernet	No	1.60m	No	Encore Programmer	Unterminated
USB (x2)	No	3.0m	No	Encore Programmer	Unterminated
ECG	No	4.0m	No	Encore Programmer	Unterminated
Serial	No	3.0m	No	Encore Programmer	Unterminated
Programming Head Cable	No	2.50m	No	Encore Programmer	Programming Head





Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2/19/2016	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	2/26/2016	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.
3	3/1/2016	Field Strength of Fundamental	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

ENC

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

150-200 kHz Telemetry B 175 kHz Telemetry A 175 kHz Telemetry A - Interrogation

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0451 - 1 MDTR0451 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency 9 kHz

Stop Frequency 490 kHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Cable	ESM Cable Corp.	MN04 Horn Cables	MNE	2/26/2016	12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	6/5/2015	12
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12
Antenna	ETS Lindgren	6502	AOB	4/28/2015	24
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

Per ANSI C63.10 sections 6.4.4.1 and 6.4.4.2, the emissions from the EUT were maximized by rotating the EUT on the turntable. Also, the EUT and/or associated antenna was positioned in 3 orthogonal planes. A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity per section 4.5.1. The center of the loop antenna was maintained at 1m above the ground plane during the testing.

As outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

If there are no detectable emissions above the noise floor, the data included will show noise floor measurements for reference only.



FIELD STRENGTH OF FUNDAMENTAL

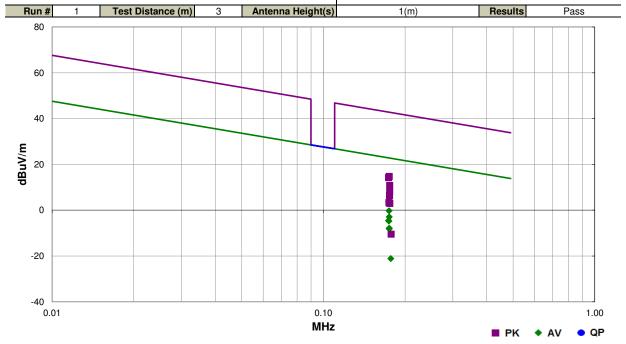
	ork Order:	MDTR0451	Dat	e: 02/19/16			
	Project:	None	Temperatur	e: 22.1 °C	\sim	22	
	Job Site:	MN05	Humidit	y: 26.2% RH			
Seria	I Number:	JVD100008P	Barometric Pres	963.4 mba		ed by: Jared Ison	
	EUT:	CareLink Encore™ 26	901				
	iguration:						
		Medtronic, Inc.					
		Taylor Dowden					
El	JT Power:						
Operat	ing Mode:	Inductive radio set to c	continuous transmit.	Carrier set to frequ	ency range of 150-20	0 kHz.	
D	eviations:	None					
с	omments:	Telemetry B setup. RF span is set wide enoug				communication rate. M	leasuremen
st Spec	ifications			Test	Method		
C 15.20	9:2016	1			C63.10:2013		
Run #	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
Run # 60	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50 40	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50 40	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50 40 30 20	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50 40 30 20	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results	Pass
60 50 40 30 20	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 W	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 W 10 0	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 UMD 10	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 10 -10	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 10 0	0	Test Distance (m)	3 Anten	na Height(s)		Results Image: state	Pass
60 50 40 30 20 0 10 -10	0	Test Distance (m)	3 Anten	na Height(s)		Results Image: state	Pass
60 50 40 30 20 WANGO 0 -10	0	Test Distance (m)	3 Anten	na Height(s)	1(m)	Results Image: state	Pass
60 50 40 30 20 10 -10 -20	0	Test Distance (m)	3 Anten	na Height(s)		Results Image: state	Pass
60 50 40 30 20 10 -10 -20		Test Distance (m)	3 Anten	na Height(s)		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
0.149	65.8	11.7	1.0	29.1	3.0	0.0	Para to EUT	AV	-80.0	-2.5	24.1	-26.7	EUT On Side
0.150	65.2	11.6	1.0	26.1	3.0	0.0	Para to EUT	AV	-80.0	-3.2	24.1	-27.2	EUT Vert
0.151	63.1	11.6	1.0	274.0	3.0	0.0	Perp To Gnd	AV	-80.0	-5.3	24.0	-29.3	EUT On Side
0.151	62.8	11.6	1.0	307.9	3.0	0.0	Perp To Gnd	AV	-80.0	-5.6	24.1	-29.6	EUT Vert
0.150	59.9	11.7	1.0	1.1	3.0	0.0	Para to Gnd	AV	-80.0	-8.4	24.1	-32.6	EUT On Side
0.199	56.4	11.6	1.0	340.9	3.0	0.0	Para to Gnd	AV	-80.0	-12.0	21.6	-33.6	EUT Vert
0.152	58.2	11.6	1.0	279.0	3.0	0.0	Para to Gnd	AV	-80.0	-10.2	24.0	-34.2	EUT Horz
0.149	50.1	11.7	1.0	95.1	3.0	0.0	Para to EUT	AV	-80.0	-18.2	24.2	-42.4	EUT Horz
0.150	69.0	11.6	1.0	26.1	3.0	0.0	Para to EUT	PK	-80.0	0.6	44.1	-43.4	EUT Vert
0.150	68.3	11.7	1.0	29.1	3.0	0.0	Para to EUT	PK	-80.0	0.0	44.1	-44.2	EUT On Side
0.150	66.4	11.7	1.0	274.0	3.0	0.0	Perp To Gnd	PK	-80.0	-1.9	44.1	-46.1	EUT On Side
0.150	66.1	11.7	1.0	307.9	3.0	0.0	Perp To Gnd	PK	-80.0	-2.2	44.1	-46.4	EUT Vert
0.200	42.4	11.6	1.0	28.0	3.0	0.0	Perp To Gnd	AV	-80.0	-26.0	21.6	-47.6	EUT Horz
0.150	63.2	11.6	1.0	1.1	3.0	0.0	Para to Gnd	PK	-80.0	-5.2	44.1	-49.2	EUT On Side
0.150	61.6	11.6	1.0	279.0	3.0	0.0	Para to Gnd	PK	-80.0	-6.8	44.1	-50.8	EUT Horz
0.151	60.7	11.6	1.0	340.9	3.0	0.0	Para to Gnd	PK	-80.0	-7.7	44.0	-51.7	EUT Vert
0.150	54.2	11.6	1.0	95.1	3.0	0.0	Para to EUT	PK	-80.0	-14.2	44.1	-58.2	EUT Horz



FIELD STRENGTH OF FUNDAMENTAL

Work Order: IMD FR0431 Date: 0300/16 Project: None Temperature: 22.7 °C Jumber: Job Site: MN04 Humidity: 14.8% RH Jumber: JVD100008P Barometric Pres.: 991.58 mbar Tested by: Trevor Buls, William Ho EUT: CareLink Encore™ 26901 Configuration: 7 Customer: Medtronic, Inc. Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. None Comments: None Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. Cot 15.209:2016 ANSI C63.10:2013	Work Order:	MDTR0451	Date:	03/01/16								
Serial Number: JVD100008P Barometric Pres.: 991.58 mbar Tested by: Trevor Buls, William Ho EUT: CareLink Encore™ 26901 7 Configuration: 7 Customer: Medtronic, Inc. Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Project:	None	Temperature:	22.7 °C	The Bull							
EUT: CareLink Encore ™ 26901 Configuration: 7 Customer: Medtronic, Inc. Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Job Site:	MN04	Humidity:	14.8% RH	starte come							
Configuration: 7 Customer: Medtronic, Inc. Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Serial Number:	JVD100008P	Barometric Pres.:	991.58 mbar	Tested by: Trevor Buls, William Hoffa							
Customer: Medtronic, Inc. Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	EUT:	CareLink Encore™ 26	901									
Attendees: Taylor Dowden EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Configuration:	7										
EUT Power: 120VAC/60Hz Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Customer:	Medtronic, Inc.										
Operating Mode: Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method	Attendees:	Taylor Dowden										
Operating Mode: None Deviations: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. est Specifications Test Method												
Deviations: Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate.	Operating Mode:	Inductive radio set to continuous transmit. Carrier set to frequency 175 kHz.										
Comments: est Specifications Test Method	Deviations:	None										
	Comments:	Telemetry A setup. RF	- Head communicating t	o implant. Radio setu	up using typical communication rate.							
CC 15.209:2016 ANSI C63.10:2013	est Specifications			Test Meth	od							
	CC 15.209:2016			ANSI C63	.10:2013							



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
0.174	72.1	11.5	1.0	21.0	3.0	0.0	Par to EUT	AV	-80.0	3.6	22.8	-19.2	EUT vertical
0.176	71.6	11.5	1.0	187.0	3.0	0.0	Par to EUT	AV	-80.0	3.1	22.7	-19.6	EUT on side
0.175	68.2	11.5	1.0	263.0	3.0	0.0	Perp to GND	AV	-80.0	-0.3	22.8	-23.1	EUT on side
0.175	65.5	11.5	1.0	240.0	3.0	0.0	Perp to GND	AV	-80.0	-3.0	22.8	-25.7	EUT vertical
0.174	63.9	11.5	1.0	55.0	3.0	0.0	Par to GND	AV	-80.0	-4.6	22.8	-27.4	EUT horizontal
0.174	63.7	11.5	1.0	6.0	3.0	0.0	Par to GND	AV	-80.0	-4.8	22.8	-27.6	EUT vertical
0.175	83.2	11.5	1.0	21.0	3.0	0.0	Par to EUT	PK	-80.0	14.7	42.8	-28.0	EUT vertical
0.174	82.7	11.5	1.0	187.0	3.0	0.0	Par to EUT	PK	-80.0	14.2	42.8	-28.6	EUT on side
0.175	60.6	11.5	1.0	120.0	3.0	0.0	Par to EUT	AV	-80.0	-7.9	22.8	-30.6	EUT horizontal
0.175	60.3	11.5	1.0	0.0	3.0	0.0	Par to GND	AV	-80.0	-8.2	22.8	-30.9	EUT on side
0.176	79.3	11.5	1.0	263.0	3.0	0.0	Perp to GND	PK	-80.0	10.8	42.7	-31.9	EUT on side
0.176	76.6	11.5	1.0	240.0	3.0	0.0	Perp to GND	PK	-80.0	8.1	42.7	-34.6	EUT vertical
0.175	75.0	11.5	1.0	6.0	3.0	0.0	Par to GND	PK	-80.0	6.5	42.8	-36.2	EUT vertical
0.175	74.8	11.5	1.0	55.0	3.0	0.0	Par to GND	PK	-80.0	6.3	42.8	-36.4	EUT horizontal
0.174	71.8	11.5	1.0	120.0	3.0	0.0	Par to EUT	PK	-80.0	3.3	42.8	-39.5	EUT horizontal
0.176	71.4	11.5	1.0	0.0	3.0	0.0	Par to GND	PK	-80.0	2.9	42.7	-39.8	EUT on side
0.177	47.3	11.5	1.0	194.0	3.0	0.0	Perp to GND	AV	-80.0	-21.2	22.7	-43.8	EUT horizontal
0.178	58.0	11.5	1.0	194.0	3.0	0.0	Perp to GND	PK	-80.0	-10.5	42.6	-53.1	EUT horizontal

NORTHWEST

FIELD STRENGTH OF FUNDAMENTAL

Work Order: MDTR0451 Date: 0.03(1/6 22.7 % JJUD MOME Job Site: MM04 Humidity: 14.8%, RH JJUD MOME Serial Number: JVD 10008P Barcenetric Press: 391.58 mbar Tested by: Trevor Buls, William Hofa EUT: CareLink Encore® 28001 Configuration: 7 Customer: Medicates 160 Configuration: 7 Customer: Medicates 170 180 170 Operating Mode: Inductive Radio set to Tel A Interrogation. Carrier set to frequency 175 kHz. 170 170 170 170 Deviations: None Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical ANSI C63.10.2013 1(m) Results Pass 615.209:2016 Antenna Height(s) 1(m) Results Pass 1.00 0.01 0.01 0.01 0.01 0.01 1.00 1.00 Midd Market Marke															
Serial Number: JV0100000P Barometric Pres: 191.58 mbar Tested by: Trevor Buis, William Hoffa Configuration: 7	Wo								-			0	0		
Serial Number: JV0100000P Barometric Pres: 191.58 mbar Tested by: Trevor Buis, William Hoffa Configuration: 7					Ter				Jacor Buls						
EUT: CareLink Encore [™] 28901 Configuration: 7 Custome: Meditoric, Inc. Attendes: Taylor Dowden EUT Power: 120VAC/60H2 Operating Mode: Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Deviations: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Sta Specifications: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Sta Specifications: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Sta Specifications: Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Sta Specifications: Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Sta Specifications: Comments: Influence (m) 3 Antenna Height(s) 1(m) Results Pass Sta Specifications: Comments: Influence (m) Sta Specifications Influence (m) Influence (m) Influence (m) Influence (m) Influence (m) Influence (m) </th <th></th> <th>Job Site:</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th colspan="7"></th>		Job Site:													
Configuration: 7 Construer Meditoric, Inc. Attendees: Taylor Dowden EUT Power 120VACROHz Operating Mode Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Deviations: None Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Set Specifications Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass 80 0 <th>Seria</th> <th>I Number:</th> <th></th> <th></th> <th></th> <th>etric Pres.:</th> <th>991.5</th> <th>8 mbar</th> <th></th> <th>Tested by:</th> <th>Trevor Bul</th> <th>s, William</th> <th>Hoffa</th>	Seria	I Number:				etric Pres.:	991.5	8 mbar		Tested by:	Trevor Bul	s, William	Hoffa		
Custome: Methonic, Inc. Attendee: Taylor Dowden EUT Powe: 120/X0/60H2 Operating Mode: Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Deviations: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical est Specifications: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical est Specifications: Test Method C0 15 209/2016 Antenna Height(s) 1(m) Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass additional and additional				Encore™ 26	901										
Attendees: Taylor Dowden EUT Power 120VACROHZ Operating Mode Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Deviations: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Set Specifications: Test Method ANSI C63.10.2013 Antenna Height(s) 1(m) Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass #0 0	Conf	iguration:	7												
EUT Power: IDVAC/60Hz Operating Mode Inductive Radio set to Tel A Interrogation. Carrier set to frequency 175 kHz. Deviations: None Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical St Specifications Test Method ANSI C63.10.2013 More # Comments Pass Test Distance (m) 3 Antenna Height(s) (m) Results Pass More # 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <th <="" colspan="2" th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th></th>														
Operating Mode: Inductive Radio set to Tel A interrogation. Carrier set to frequency 175 kHz. Deviations: Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Set Specifications Test Method Anterna Height(s) 1(m) Results Peas Mone Test Distance (m) 3 Anterna Height(s) 1(m) Results Peas Mone 100 0 0 0 0 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 <th cols<="" th=""><th>Α</th><th>ttendees:</th><th>Taylor Do</th><th>wden</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th></th>	<th>Α</th> <th>ttendees:</th> <th>Taylor Do</th> <th>wden</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th> <th></th>	Α	ttendees:	Taylor Do	wden										
Comments: None Comments: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical Set Specifications Test Method C0 15.209-2016 ANSI C63.10-2013 Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass 60 0 <th></th>															
Deviations: Telemetry A setup. RF Head communicating to implant. Radio setup using typical communication rate. EUT Vertical St Specifications Control Test Distance (m) 3 Antenna Height(s) 1 (m) Results Pass Mode Antenna Height(s) 1 (m) Results Pass On the second of the se	Operati	ing Mode:	Inductive	Radio set to	Tel A inter	rogation. Ca	arrier set to	frequency	175 kHz.						
Comments: Test Method S0: 15:209:2016 ANSI C63:10:2013 Run # 2 Test Distance (m) 3 Antenna Height(g) 1(m) Results Pass 60 0	D	eviations:													
CC 15.209:2016 ANSI C63.10:2013 Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass 80 0										te. EUT Ve	ertical				
CC 15.209:2016 ANSI C63.10:2013 Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass 80 0	et Spool	ifications	1					Tost Moth	od	1			-		
Run # 2 Test Distance (m) 3 Antenna Height(s) 1(m) Results Pass 000000000000000000000000000000000000															
80	Bup #	2	Taet D	istance (m)	3	Antenna	Height(c)		1(m)		Regulte		255		
60 60<		2	1651 D		5	Antenna	ineigin(S)		1(11)		nesuits	ļ r	433		
Ereg (MHz) Anglitude (dB) Factor (dB) Antenna Height (meters) Test Distance (meters) External Meters Polarity/ Transducer (MB) Detector (dB) Distance (dB) Adjusted (dB) Spec. Limit (dB) Compare Spec. (dB) 0.16 84.3 11.5 1.0 44.0 3.0 0.0 Parto EUT AV -8.0 15.8 22.7 -6.9	60														
0 -20	-														
-20 -40 -40 0.01 Freq (MHz) Amplitude (dBuV) Amplitude (dBuV) Factor (dB) Antenna Height (dButh	20 gBn//m														
-40 0.01	0														
0.01 0.10	-20														
0.01 0.10															
Freq (MHz) Amplitude (dBuV) Factor (dB) Antenna Height (meters) Azimuth (degrees) Test Distance (meters) External Attenuation (dB) Polarity/ Transducer Type Detector Distance Adjusted (dB) Adjusted (dBuV/m) Spec. Limit (dB) Compare Spec. (dB) 0.176 84.3 11.5 1.0 44.0 3.0 0.0 Parto EUT AV -80.0 15.8 22.7 -6.9	-40														
Freq (MHz) Amplitude (dBuV) Factor (dB) Antenna Height (meters) Azimuth (degrees) Test Distance (meters) External Attenuation (dB) Polarity/ Transducer Type Detector Distance Adjusted (dB) Adjusted (dBuV/m) Spec. Limit (dB) Compare Spec. (dB) 0.176 84.3 11.5 1.0 44.0 3.0 0.0 Par to EUT AV -80.0 15.8 22.7 -6.9	0.0)1					1.00								
Freq (MHz)Amplitude (dBvV)Factor (dB)Antenna Height (meters)Azimuth Azimuth (degrees)Test Distance Test Distance (dB)Transducer TypeDistance Adjusted (dB)Distance Adjusted (dB)Adjusted (dB)Spec. Limit (dB)Compared Spec.0.17684.311.51.044.03.00.0Par to EUTAV-80.015.822.7-6.9							MHz	:			PK	◆ AV	• QP		
							Attenuation	Transducer	Detector	Adjustment					
	0.170	84.3	11.5	1.0	44.0	3.0	0.0	Par to EUT	AV	-80.0	15.8	22.7	-6.9		
	0.176	04.0													



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

150-200 kHz, Telemetry B and Telemetry A modes investigated

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

MDTR0451 - 1

MDTR0451 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency 9 kHz

Stop Frequency 1000 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Cable	ESM Cable Corp.	MN04 Horn Cables	MNE	2/26/2016	12
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	6/5/2015	12
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVY	11/12/2015	12
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/7/2015	12
Antenna	ETS Lindgren	6502	AOB	4/28/2015	24
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	4/20/2015	12

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

Per ANSI C63.10 sections 6.4.4.1 and 6.4.4.2, the emissions from the EUT were maximized by rotating the EUT on the turntable. Also, the EUT and/or associated antenna was positioned in 3 orthogonal planes. A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity per section 4.5.1. The center of the loop antenna was maintained at 1m above the ground plane during the testing.

For measurements below 30 MHz, as outlined in 15.209(e) and 15.31(f)(2), measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit. Per FCC 15.33(a)(4), measurements were taken up to the highest frequency range of either the 10th harmonic of the fundamental or the applicable digital frequency test range.

If there are no detectable emissions above the noise floor, the data included will show noise floor measurements for reference only.



SPURIOUS RADIATED EMISSIONS

			HHHH										
Wo	ork Order:	MDT	R0451		Date:	02/1	9/16			\bigcirc			7
	Project:	No	one	Tei	mperature:		1 °C	\leq					
	Job Site:	MM	105		Humidity:	26.2	% RH						
Seria	I Number:	JVD10	00008P	Barom	etric Pres.:		mbar		Tested by:	Jared Ison	, Trevor Bu	ıls	-
	EUT:		Encore™ 26	901					•				-
Conf	iguration:												-
		Medtronic,	Inc.										-
		Taylor Dov											_
		120VAC/6											-
	ing Mode:	Inductive r	adio set to o		transmit. Ca	arrier set to	frequency i	ange of 15	50-200 kHz a	and worst c	ase measu	urements of	f
	eviations:	all modes i None	noted below	Ι.									_
Co	omments:	RF Head communicating to implant. Radio setup using typical communication rate. Measurement span is set wide enough to cover the entire emission envelope.									_		
Test Speci	ifications						Test Meth	od					-
-CC 15.20		1					ANSI C63.						_
													_
Run #	2	Test Dis	stance (m)	3	Antenna	Height(s)		1(m)		Results	Pa	ass	_
80													
60													
00													
40													
ε													
ш/ ЛиВ р													
9													
0													
Ŭ													
-20													
-20													
									- 💻 I				
-40									•				
	1					0.10						1.00	
0.0)					0.10						1.00	
						MHz				PK	♦ AV		
						External	Polarity/		Distance			Company	
Freq	Amplitude	Factor	Antenna Height	Azimuth	Test Distance	External Attenuation	Transducer Type	Detector	Distance Adjustment	Adjusted	Spec. Limit	Compared to Spec.	
(MHz)	(dBuV)	(dB)	(meters)	(degrees)	(meters)	(dB)	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	20100101	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
													Comments
0.379	35.5	11.6	1.0	325.0	3.0	0.0	Par to EUT	AV	-80.0	-32.9	16.0	-49.0	EUT On Side Te
0.307	34.5	11.4	1.0	321.0	3.0	0.0	Par to EUT	AV	-80.0	-34.1	17.9	-51.9	EUT Vertical Te
0.383	40.7	11.6	1.0	325.0	3.0	0.0	Par to EUT	PK	-80.0	-27.7	35.9	-63.7	EUT On Side Te
0.306	41.1	11.4	1.0	321.0	3.0	0.0	Par to EUT	PK	-80.0	-27.5	37.9	-65.4	EUT Vertical Tel



SPURIOUS RADIATED EMISSIONS

			HHHM	41									
Wo	rk Order:	MDTF	R0451		Date:	02/1	9/16			\sim			1
	Project:	No		Ter	nperature:		1 °C	\leq		S			
	Job Site:	MN			Humidity:		% RH				_		
Serial	Number:	JVD10 CareLink E			etric Pres.:	963.4	mbar		Tested by:	Jared Ison,	I revor Bu	ls	-
Confi	guration:	CareLink E	Incore IIII 26	901									-
Conn	ustomer:	Medtronic,	Inc										-
		Taylor Dow											-
		120VAC/60											-
	ng Mode:			ontinuous	transmit. Ca	arrier set to	frequency r	ange of 15	60-200 kHz a	and worst c	ase measu	rements of	-
Operati	ng mode.	all modes r	noted below					-					_
De	eviations:	None											
			ammuniaati	na ta imali	ant Dadia a	atun usina	turniaal aamm	nunication	rata Maaa	wamantan	on io oot wi	de eneurse	_
C c		to cover the				etup using	typical comr	nunication	rate. Measi	urement spa	an is set w	ide enougn	
	minents.	to cover the		SSION EIIVE	lope.								
Test Speci	liantiana						Toot Mothe	ad .	r				=
FCC 15.209		ANSI C63.10:2013								-			
FGG 15.208	9.2010						ANSI 003.1	10.2013					
													_
Run #	3	Test Dis	stance (m)	3	Antenna	Height(s)		1(m)		Results	Pa	ass	_
80 _													
CO													
60													
40													
_													
<u>ب</u>													
ш/ Л 20													
Β													
0 -			•										
0				▼ 									
					•••								
-20													
-40													
0.1	0			1.00				10.00				100.00	
						MHz							
										PK	AV	QP	
							Polarity/						
Freq	Amplitude	Factor	Antenna Height	Azimuth	Test Distance	External Attenuation	Transducer Type	Detector	Distance Adjustment	Adjusted	Spec. Limit	Compared to Spec.	
(MHz)	(dBuV)	(dB)	(meters)	(degrees)	(meters)	(dB)	Type	Detector	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
	00.1	11.0	1.0	000.0	0.0	0.0	Dente FUZ	05	40.0	0.0	00.0		Comments
0.829 0.527	28.4 30.9	11.6 11.7	1.0 1.0	209.0 44.0	3.0 3.0	0.0 0.0	Par to EUT Par to EUT	QP QP	-40.0 -40.0	0.0 2.6	29.2 33.2	-29.2 -30.6	EUT Vertical, Tel A EUT Vertical, Tel A Interrogation
0.504	30.8	11.7	1.0	53.0	3.0	0.0	Par to EUT	QP	-40.0	2.5	33.6	-30.0	EUT Vertical, Tel A
0.511	30.5	11.8	1.0	140.0	3.0	0.0	Para to EUT	QP	-40.0	2.3	33.4	-31.1	EUT On Side Tel B
0.655	28.2	11.7	1.0	40.1	3.0	0.0	Para to EUT	QP	-40.0	-0.1	31.3	-31.4	EUT On Side Tel B
0.658 1.017	28.3 23.9	11.6 12.0	1.0 1.0	76.0 33.0	3.0 3.0	0.0 0.0	Par to EUT Par to EUT	QP QP	-40.0 -40.0	-0.1 -4.1	31.3 27.5	-31.4 -31.6	EUT Vertical, Tel A EUT Vertical, Tel A
1.178	23.9	12.0	1.0	200.0	3.0	0.0	Par to EUT	QP	-40.0	-4.1	26.2	-31.8	EUT Vertical, Tel A
1.358	20.8	11.9	1.0	49.0	3.0	0.0	Par to EUT	QP	-40.0	-7.3	25.0	-32.2	EUT Vertical, Tel A
1.529	19.7	11.9	1.0	103.0	3.0	0.0	Par to EUT	QP QP	-40.0	-8.4	23.9	-32.4	EUT Vertical, Tel A
1.700	18.7	11.9	1.0	360.0	3.0	0.0	Par to EUT	QP	-40.0	-9.4	23.0	-32.5	EUT Vertical, Tel A



TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 500hm measuring port is terminated by a 500hm EMI meter or a 500hm resistive load. All 500hm measuring ports of the LISN are terminated by 500hm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESR7	ARI	5/21/2015	5/21/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/23/2015	3/23/2016
Cable - Conducted Cable Assembly	Northwest EMC	MNC, HGN, TYK	MNCA	1/29/2016	1/29/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MDTR0451-6

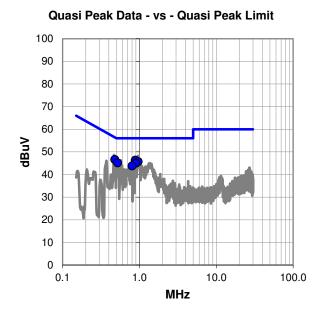
MODES INVESTIGATED

Standard operating with inductive communication and wifi pinging at 5GHz.

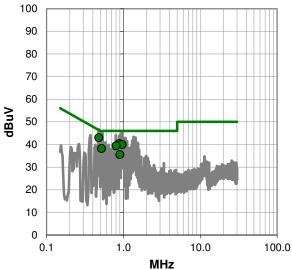


EUT:	EUT: CareLink Encore™ 26901 Work Order: MDTR0451										
Serial Number:	JVD100008F	>			Date:	02/26/2016					
Customer:	Medtronic, Ir	IC.			Temperature:	22.7°C					
Attendees:	Taylor Dowd	en			Relative Humidity:	20.7%					
Customer Project:	None				Bar. Pressure:	992.9 mb					
Tested By:	Kyle McMulla	an, Trevor	Buls		Job Site:	MN03					
Power:	120VAC/60H	lz			Configuration:	MDTR0451-6					
TEST SPECIFICATIONS											
Specification: Equipment Class B Method:											
FCC 15.207:2016 ANSI C63.10:2013											
TEST PARAMETERS											
Run #: 19 Line: Neutral Add. Ext. Attenuation (dB): 0											
COMMENTS											
None											
EUT OPERATING MODES											
Standard operating with inductive communication and wifi pinging at 5GHz.											
DEVIATIONS FROM TEST STANDARD											

None









RESULTS - Run #19

NLOULI												
Q	Quasi Peak Data - vs - Quasi Peak Limit											
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)							
0.885	26.2	20.1	46.3	56.0	-9.7							
0.478	26.5	20.1	46.6	56.4	-9.8							
0.962	25.6	20.1	45.7	56.0	-10.3							
0.520	25.0	20.1	45.1	56.0	-10.9							
0.899	24.9	20.1	45.0	56.0	-11.0							
0.801	23.7	20.1	43.8	56.0	-12.2							

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.478	22.9	20.1	43.0	46.4	-3.4
0.885	20.3	20.1	40.4	46.0	-5.6
0.962	19.9	20.1	40.0	46.0	-6.0
0.801	19.3	20.1	39.4	46.0	-6.6
0.520	18.1	20.1	38.2	46.0	-7.8
0.899	15.4	20.1	35.5	46.0	-10.5

CONCLUSION

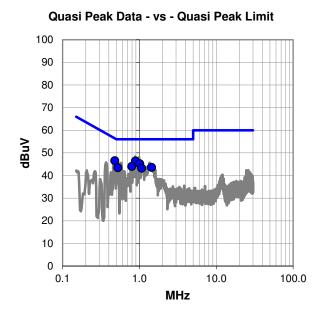
Pass

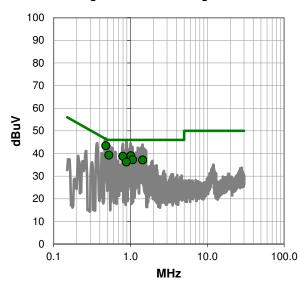
Trevor Buls Tested By



EUT:	CareLink Encore [™] 26901				Work Order:	MDTR0451		
Serial Number:	JVD100008P			Date:	02/26/2016			
Customer:	Medtronic, In	Medtronic, Inc.				22.7°C		
Attendees:	Taylor Dowd	Taylor Dowden			Relative Humidity:	20.7%		
Customer Project:	None				Bar. Pressure:	992.9 mb		
Tested By:	Kyle McMullan, Trevor Buls			Job Site:	MN03			
Power:	120VAC/60Hz			Configuration:	MDTR0451-6			
TEST SPECIFICATIONS								
	Specification: Equipment Class B Me				Method:			
FCC 15.207:2016	FCC 15.207:2016			ANSI C63.	ANSI C63.10:2013			
TEST PARAMETERS								
Run #: 20	Line: High Line			Add. Ext. Attenuation (dB): 0				
COMMENTS								
None								
EUT OPERATING MODES								
Standard operating with inductive communication and wifi pinging at 5GHz.								
DEVIATIONS FROM TEST STANDARD								

None





Average Data - vs - Average Limit



RESULTS - Run #20

RESULIS - Rull #20						
Quasi Peak Data - vs - Quasi Peak Limit						
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	
0.887	26.3	20.1	46.4	56.0	-9.6	
0.478	26.4	20.1	46.5	56.4	-9.9	
1.010	25.1	20.1	45.2	56.0	-10.8	
0.797	23.9	20.1	44.0	56.0	-12.0	
1.438	23.4	20.1	43.5	56.0	-12.5	
0.525	23.3	20.1	43.4	56.0	-12.6	
1.069	23.1	20.1	43.2	56.0	-12.8	

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.478	23.3	20.1	43.4	46.4	-3.0
0.525	19.2	20.1	39.3	46.0	-6.7
1.010	18.9	20.1	39.0	46.0	-7.0
0.797	18.7	20.1	38.8	46.0	-7.2
1.069	17.1	20.1	37.2	46.0	-8.8
1.438	17.0	20.1	37.1	46.0	-8.9
0.887	16.1	20.1	36.2	46.0	-9.8

CONCLUSION

Pass

Trevor Buls Tested By