

## RF Exposure Report

**Report No.:** FCC\_MPE\_SL20020301-MED-020

**NIM4CM01 FCC ID:** LF5NIMVITAL1

**NIM4CPB1 FCC ID:** LF5NIMPAT1

**Models:** NIM4CM01, NIM4CPB1

**Issued Date:** 02/18/2020

**Applicant:** Medtronic, Inc.

**Address:** 710 Medtronic Parkway N.E, Minneapolis, MN 55432

**Manufacturer:** Medtronic, Inc.

**Address:** 710 Medtronic Parkway N.E, Minneapolis, MN 55432

**Issued By:** Bureau Veritas Consumer Products Services, Inc.

**Lab Address:** 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /  
Designation Number:** 540430



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### Release Control Record

Issue No.	Description	Date Issued
FCC_MPE_SL20020301-MED-020	Original Release	02/18/2020

## 1 Certificate of Conformity

**Product:** NIM Patient Interface / NIM Vital Console

**Brand:** Medtronic

**Applicant:** Medtronic, Inc.

**Standards:** FCC Part 2 (Section 2.1093)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** Deon , **Date:** 02/18/2020  
Deon Dai / Test Engineer

**Approved by :** Chen Ge , **Date:** 02/18/2020  
Chen Ge / Engineer Reviewer

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	30
30-300	27.5	0.073	0.2	30
300-1500	...	...	f/1500	30
1500-100,000	...	...	1.0	30

f = Frequency in MHz; \*Plane-wave equivalent power density

### 2.2 MPE Calculation Formula

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

Where

Pd = power density in mW/cm<sup>2</sup>

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user.  
So, this device is classified as Mobile Device.

### 2.4 Antenna Gain

The antenna type is Flex PIFA with 2 dBi gain.

**NIM4CM01 FCC ID:** LF5NIMVITAL1

Device contains 2 BT modules simultaneously transmitting.

**NIM4CPB1 FCC ID:** LF5NIMPAT1

Device contains 1 BT module. (BT-1)

## 2.5 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (dBm)	Max Power (mW)	Turn-Up Tolerance	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
BT1	4.53	2.83	±1dB	2	20	0.0011	1
BT2	9.15	8.22	±1dB	2	20	0.00259	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. Calculate SAR test exclusion thresholds from condition “1” formulas.

### Simultaneous Transmission

The formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

### Simultaneous Transmission Calculation

**Model: NIM4CM01**

$$\text{Total} = 0.0011/1 + 0.00259/1 = 0.00369 < 1$$

**Therefore the maximum calculations of above situations are less than the “1” limit.**

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