PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
WADE M. DEMMER	10/10/2017
YONG K. CHO	10/13/2017
MICHAEL F. HESS	10/13/2017
TODD J. SHELDON	10/10/2017

RECEIVING PARTY DATA

Name: MEDTRONIC, INC.	
Street Address: 710 MEDTRONIC PARKWAY, N.E.	
City: MINNEAPOLIS	
State/Country: MINNESOTA	
Postal Code: 55432	

PROPERTY NUMBERS Total: 1

Property Type	Number	
Application Number:	15783573	

CORRESPONDENCE DATA

Fax Number: (763)505-2500

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 763-505-5000

Email: medtronic_crdm_docketing@cardinal-ip.com

Correspondent Name: MEDTRONIC, INC. (CRDM)
Address Line 1: 710 MEDTRONIC PARKWAY NE
Address Line 2: MS: LC340 LEGAL PATENTS

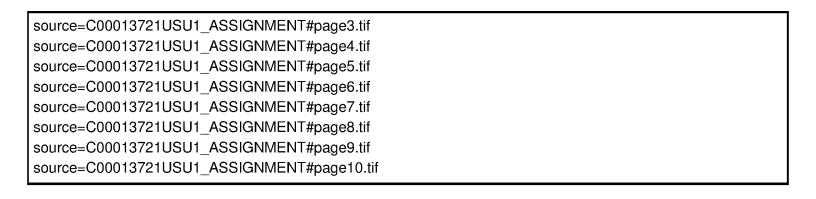
Address Line 4: MINNEAPOLIS, MINNESOTA 55432-9924

ATTORNEY DOCKET NUMBER:	C013721.USU1/1111-512US01
NAME OF SUBMITTER:	KAREN SORENSEN
SIGNATURE:	/Karen Sorensen/
DATE SIGNED:	10/13/2017

Total Attachments: 10

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PATENT 504593489 REEL: 043862 FRAME: 0069



PATENT REEL: 043862 FRAME: 0070 Attorney Docket No.: C00013721.USU1/1111-512US01

ASSIGNMENT OF APPLICATION(S)

Whereas I/we, the below named inventor(s), with residence and citizenship as indicated below, have made an invention in

POWER MANAGEMENT FOR IMPLANTABLE MEDICAL DEVICE SYSTEMS

\boxtimes	for which an application for a United States Patent or a U.S. Provisional Application is being filed contemporaneously herewith;
	for which an application for a United States Patent identified as U.S. Patent Application No. ; was filed on ;
	for which an application for a U.S. Provisional Application No. ; was filed on ;
	for which above application claims priority to U.S. Provisional Patent Application No. ; filed on ;
	which application is identified as PCT International Patent Application No.; filed;
	Whereas, Medtronic, Inc., a corporation organized and existing under the laws of the State of Minnesota and
	ring a principle place of business at 710 Medtronic Parkway N.E., Minneapolis, Minnesota 55432-5604, hereinafter
	erred to as "Corporation," is desirous of acquiring the entire right, title and interest in and to said invention for the
Un	ited States and for all foreign countries and in and to any and all foreign and domestic Letters Patent which may be

NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said applications(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its counsel or the counsel of its successors or assigns, learned in the law, shall advise that an amendment or division of, or continuation or any continuation-in-part thereof, or any other proceeding in connection with the filing or prosecution of said domestic or foreign patent applications, including interference proceedings, is lawful and desirable, or that a reissue of extension of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or

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Assignment Medironic, Inc., 710 Medironic Parkway, Minneapolis, MN 55432

granted therefore;

required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below.				
Given Name (first and middle initial [if any]): Family Name or Surname (last name):				
Wade M.	Demmer			
Inventor's Signature:	Date: 10 - 0 c j	1-2017		
City and State:	Country:	Citizenship:		
Coon Rapids, Minnesota	USA	USA and AU		
STATE OF MINNESOTA) ss. COUNTY OF RAMSEY On this	ng instrument, as said person's fr ••••	ne personally appeared the above-named, ee act and deed, on the day and year		

Given Name (first and middle initial [if any]): Yong K.	Family N Cho	ame or Surname (las	st name):		
Inventor's Signature:		Date:	+ 13	, 2017	
Residence (City and State):		Country:		Citizenship:	
Excelsior, Minnesota	************************	USA		USA	,
STATE OF MINNESOTA)					
On this day of October . July before me personally appeared the above-named,					
Yong K. Cho and who executed the foregoing instrument, as said person's free act and deed, on the day and year aforesaid.					
(Seal) (Seal) MADONNA M. SCHROEI Notary Public State of Minnesota My Commission Expir January 31 2020	DER es	WU Notary Public	wĻ		

Given Name (first and middle initial [if any]): Michael F.	Family Name or Surname (last name): Hess
Inventor's Signature:	Date:
Residence (City and State): Minneapolis, Minnesota	Country: Citizenship: USA USA
STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY) On this day of Michael F. Hess and who executed the foregoing aforesaid. (Seal)	before me personally appeared the above-named, instrument, as said person's free act and deed, on the day and year
	Notary Public

Given Name (first and middle initial [if any]): Todd J.	Family Name or Surname (last na Sheldon	ame):
Inventor's Signatures	Date: 10-0c4-7	2017
Residence (City and State):	Country:	Citizenship:
North Oaks, Minnesota	USA	USA
STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY) On this December day of Colored Todd J. Sheldon and who executed the foregoing aforesaid.		personally appeared the above-named, and deed, on the day and year
(Seal) MADONNA M. SCHROEDER Notary Public State of Minnesota My Commission Expires January 31, 2000	'I MIW	vd

Attorney Docket No.: C00013721.USU1/1111-512US01

ASSIGNMENT OF APPLICATION(S)

Whereas I/we, the below named inventor(s), with residence and citizenship as indicated below, have made an invention in

	# # # # # # # # # # # # # # # # # # #
	POWER MANAGEMENT FOR IMPLANTABLE MEDICAL DEVICE SYSTEMS
Ø	for which an application for a United States Patent or a U.S. Provisional Application is being filed contemporaneously herewith;
	for which an application for a United States Patent identified as U.S. Patent Application No. ; was filed on ;
	for which an application for a U.S. Provisional Application No. ; was filed on ;
	for which above application claims priority to U.S. Provisional Patent Application No. ; filed on ;
	which application is identified as PCT International Patent Application No.; filed;
ref Un	Whereas, <u>Medtronic, Inc.</u> , a corporation organized and existing under the laws of the State of Minnesota and ring a principle place of business at 710 Medtronic Parkway N.E., <u>Minneapolis</u> , <u>Minnesota 55432-5604</u> , hereinafter erred to as "Corporation," is desirous of acquiring the entire right, title and interest in and to said invention for the ited States and for all foreign countries and in and to any and all foreign and domestic Letters Patent which may be inted therefore;

NOW, Therefore, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, we have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Corporation, its successors and assigns, the entire right, title and interest in and to said invention and the application(s) identified above and in and to any application claiming benefit thereto and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefore including our rights under the International Convention for the Protection of Industrial Property, which include the right to claim priority based on the filing date of said applications(s), and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Letters Patent that may be granted, the same to be held and enjoyed by Corporation for its own use and benefit and use and benefit of its successors and assigns to the full end of the term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made, including the right to enforce such Letters Patent as fully and entirely as the same would have been held and enjoyed by the assignors if this assignment had not been made; together with all claims by assignors for damages by reason of past infringement or for provisional rights and including the right to sue for, and collect the same for its own use and benefit, and for the use and benefit of its successors, assigns, and other legal representatives;

AND, for the consideration aforesaid, we materially represent to Corporation, its successors and assigns, that at the time of the execution and delivery of these presents, we are the sole lawful owners of the entire right, title and interest in and to the invention, application and Letters Patent above mentioned, and that the same are unencumbered, and that we have good right and lawful authority to sell and convey the same in the manner herein set forth;

AND, for the consideration aforesaid, we hereby individually covenant and agree to and with Corporation, its successors and assigns, that whenever its counsel or the counsel of its successors or assigns, learned in the law, shall advise that an amendment or division of, or continuation or any continuation-in-part thereof, or any other proceeding in connection with the filing or prosecution of said domestic or foreign patent applications, including interference proceedings, is lawful and desirable, or that a reissue of extension of said Letters Patent is lawful and desirable, we, or our executors, administrators or assigns will sign all papers and drawings, take all rightful oaths, and do all acts necessary or

Assignment

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Medtronic, Inc., 710 Medtronic Parkway, Minneapolis, MN 55432

required to be done for the procurement of valid Letters Patent for said invention, or for the reissue or extension of the same, without charge to Corporation, its successors or assigns, but at Corporation's expense.

I/We do hereby authorize and request the Commissioner of Patents to issue any and all Letters Patent which may be granted upon any of the said applications, to said Medtronic, Inc., as the assignee of the entire right, title, and interest therein.

In witness whereof, I/we have signed my/our name(s) on the day and year set forth below. Given Name (first and middle initial [if any]): Family Name or Surname (last name): Wade M. Demmer Inventor's Signature: Date: City and State: Country: Citizenship: Coon Rapids, Minnesota USA USA and AU STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY On this _____ day of ____ , before me personally appeared the above-named, Wade M. Demmer and who executed the foregoing instrument, as said person's free act and deed, on the day and year aforesaid. (Seal) Notary Public

Medtronic, Inc., 710 Medtronic Parkway, Minneapolis, MN 55432

Given Name (first and middle initial [if any]): Yong K.	Family Name or Sumame (last name): Cho			
Inventor's Signature:	Date: *			
Residence (City and State): Excelsior, Minnesota	Country: USA	Citizenship: USA		
STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY) On this day of,, before me personally appeared the above-named, Yong K. Cho and who executed the foregoing instrument, as said person's free act and deed, on the day and year aforesaid.				
Yong K. Cho and who executed the foregoing instrument, as said person's free act and deed, on the day and year aforesaid. (Seal)				
	Notary Public	::		

Given Name (first and middle initial [if any]): Michael F.	Family Name or Surname (last name): Hess			
Inventor's Signature:	4 (A)	Date: October 13,	2017:	
Residence (City and State): Minneapolis, Minnesota		Country: USA	Citizenship: USA	
STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY) On this /3 day of OCHODEL Michael F. Hess and who executed the foregoing aforesaid. JANICE MASON Notary Public State of Minnesota My Commission Expire Jonuary 31, 2020	g instrumen			

Given Name (first and middle initial [if any]): Todd J.	Family Name or Surname (last name): Sheldon				
Inventor's Signature:		Date:	3 8		
Residence (City and State): North Oaks, Minnesota		Country: USA	Citizenship: USA	-	
STATE OF MINNESOTA)) ss. COUNTY OF RAMSEY) On this day of,, before me personally appeared the above-named,					
Todd J. Sheldon and who executed the foregoing aforesaid.	g instrument	, as said person's f	free act and deed, on the day and year		
(Seal)		Notary Public			

Assignment

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PATENT REEL: 043862 FRAME: 0080

RECORDED: 10/13/2017