INFORMATION DISCLOSURE STATEMENT

Applicant	:	Ammar Al-Ali
App. No	:	Unknown
Filed	:	Herewith
For	:	LOW POWER PULSE OXIMETER
Examiner	:	Unknown
Art Unit	:	Unknown

CERTIFICATE OF EFS WEB TRANSMISSION

I hereby certify that this correspondence, and any other attachment noted on the automated Acknowledgement Receipt, is being transmitted from within the Pacific Time zone to the Commissioner for Patents via the EFS Web server on:

November 13, 2007
(Date)

John M. Grover, Reg. No. 42,610

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Enclosed is a PTO/SB/08 Equivalent listing 195 references that are of record in U.S. patent application No. 10/785,573, filed February 24, 2004, which is the parent of this continuation application, and is relied upon for an earlier filing date under 35 U.S.C. § 120. Copies of the references are not submitted pursuant to 37 C.F.R. § 1.98(d).

This Information Disclosure Statement is being filed within three months of the filing date, with an RCE or before receipt of a first office action after an RCE and no fee is required.

The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment, to Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 13, 2007

By: _____

John M. Grover
Registration No. 42,610
Attorney of Record
Customer No. 20,995
(949) 760-0404

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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 1 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	7,295,866	11/2007	Al-Ali	
	2	7,292,883	11/2007	De Felice et al.	
	3	7,289,835	10/2007	Mansfield et al.	
	4	D554,263	10/2007	Al-Ali	
	5	7,280,858	10/2007	Al-Ali et al.	
	6	7,274,955	09/2007	Kiani et al.	
	7	7,272,425	09/2007	Al-Ali	
	8	7,254,434	08/2007	Schulz et al.	
	9	7,254,433	08/2007	Diab et al.	
	10	7,254,431	08/2007	Al-Ali	
	11	7,245,953	07/2007	Parker	
	12	7,239,905	07/2007	Kiani-Azarbayjany et al.	
	13	RE39,672	06/2007	Shehada et al.	
	14	7,225,007	05/2007	Al-Ali	
	15	7,225,006	05/2007	Al-Ali et al.	
	16	7,221,971	05/2007	Diab	
	17	7,215,986	05/2007	Diab	
	18	7,215,984	05/2007	Diab	
	19	7,190,261	03/2007	Al-Ali	
	20	7,186,966	03/2007	Al-Ali	
	21	7,149,561	12/2006	Diab	
	22	7,142,901	11/2006	Kiani et al.	
	23	7,132,641	11/2006	Schulz et al.	
	24	7,096,054	08/2006	Abdul-Hafiz et al.	
	25	7,096,052	08/2006	Mason et al.	
	26	7,067,893	06/2006	Mills et al.	
	27	7,044,918	05/2006	Diab	
	28	7,041,060	05/2006	Flaherty et al	
	29	7,039,449	05/2006	Al-Ali	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 2 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	7,030,749	04/2006	Al-Ali	
	31	7,027,849	04/2006	Al-Ali	
	32	7,024,233	04/2006	Ali et al.	
	33	7,015,451	02/2006	Dalke et al.	
	34	7,003,339	02/2006	Diab et al.	
	35	7,003,338	02/2006	Weber et al.	
	36	6,999,904	02/2006	Weber et al.	
	37	6,996,427	02/2006	Ali et al.	
	38	6,993,371	01/2006	Kiani et al.	
	39	6,985,764	01/2006	Mason et al.	
	40	6,979,812	12/2005	Al-Ali	
	41	6,970,792	11/2005	Diab	
	42	6,961,598	11/2005	Diab	
	43	2005-0234317 A1	10/2005	Kiani	
	44	6,950,687	09/2005	Al-Ali	
	45	6,943,348	09/2005	Coffin IV	
	46	6,939,305	09/2005	Flaherty et al.	
	47	6,934,570	08/2005	Kiani et al.	
	48	6,931,268	08/2005	Kiani-Azarbayjany et al.	
	49	6,920,345	07/2005	Al-Ali et al.	
	50	6,898,452	05/2005	Al-Ali et al.	
	51	6,861,639	03/2005	Al-Ali	
	52	6,852,083	02/2005	Caro et al.	
	53	6,850,788	02/2005	Al-Ali	
	54	6,850,787	02/2005	Weber et al.	
	55	6,830,711	12/2004	Mills et al.	
	56	6,826,419	11/2004	Diab et al.	
	57	6,822,564	11/2004	Al-Ali	
	58	6,816,741	11/2004	Diab	

Examiner Signature	Date Considered
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 3 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	6,813,511	11/2004	Diab et al.	
	60	6,792,300	09/2004	Diab et al.	
	61	6,771,994	08/2004	Kiani et al.	
	62	6,770,028	08/2004	Ali et al.	
	63	6,760,607	07/2004	Al-Ali	
	64	6,745,060	06/2004	Diab et al.	
	65	6,735,459	05/2004	Parker	
	66	6,728,560	04/2004	Kollias, et al.	
	67	6,725,075	04/2004	Al-Ali	
	68	6,721,585	04/2004	Parker	
	69	6,721,582	04/2004	Trepagnier, et al.	
	70	RE38,492	04/2004	Diab et al.	
	71	6,714,804	03/2004	Al-Ali et al.	
	72	RE38,476	03/2004	Diab et al.	
	73	6,699,194	03/2004	Diab et al.	
	74	6,697,658	02/2004	Al-Ali	
	75	6,697,657	02/2004	Shehada, et al.	
	76	6,697,656	02/2004	Al-Ali	
	77	6,684,091	01/2004	Parker	
	78	6,684,090	01/2004	Ali et al.	
	79	6,678,543	01/2004	Diab et al.	
	80	6,671,531	12/2003	Al-Ali et al.	
	81	6,661,161	12/2003	Lanzo et al.	
	82	6,658,276	12/2003	Diab et al.	
	83	6,654,624	11/2003	Diab et al.	
	84	6,650,917	11/2003	Diab et al.	
	85	6,643,530	11/2003	Diab et al.	
	86	6,640,116	10/2003	Diab	
	87	6,639,668	10/2003	Trepagnier, Pierre	

Examiner Signature	Date Considered
***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 4 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	88	6,632,181	10/2003	Flaherty et al.	
	89	6,606,511	08/2003	Ali et al.	
	90	6,597,933	07/2003	Kiani et al.	
	91	6,597,932	07/2003	Tian et al.	
	92	6,595,316	07/2003	Cybulski et al.	
	93	6,584,336	06/2003	Ali et al.	
	94	6,580,086	06/2003	Schulz et al.	
	95	6,542,764	04/2003	Al-Ali et al.	
	96	6,541,756	04/2003	Schulz et al.	
	97	6,526,300	02/2003	Kiani et al.	
	98	6,525,386	02/2003	Mills et al.	
	99	6,519,487	02/2003	Parker	
	100	6,515,273	02/2003	Al-Ali	
	101	6,505,059	01/2003	Kollias, et al.	
	102	6,501,975	12/2002	Diab et al.	
	103	6,470,199	10/2002	Kopotic et al.	
	104	6,463,311	10/2002	Diab	
	105	6,430,525	08/2002	Weber et al.	
	106	6,397,091	05/2002	Diab et al.	
	107	6,388,240	05/2002	Schulz et al.	
	108	6,377,829	04/2002	Al-Ali	
	109	6,371,921	04/2002	Caro et al.	
	110	6,368,283	04/2002	Xu, et al.	
	111	6,360,114	03/2002	Diab et al.	
	112	6,349,228	02/2002	Kiani et al.	
	113	6,343,224	01/2002	Parker	
	114	6,334,065	12/2001	Al-Ali et al.	
	115	6,321,100	11/2001	Parker	
	116	6,285,896	09/2001	Tobler et al.	

Examiner Signature	Date Considered

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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 5 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	117	6,280,213	08/2001	Tobler et al.	
	118	6,278,522	08/2001	Lepper, Jr. et al.	
	119	6,263,222	07/2001	Diab et al.	
	120	6,256,523	07/2001	Diab et al.	
	121	6,241,683	06/2001	Macklem, et al.	
	122	6,236,872	05/2001	Diab et al.	
	123	6,232,609	05/2001	Snyder, et al.	
	124	6,229,856	05/2001	Diab et al.	
	125	6,206,830	03/2001	Diab et al.	
	126	6,184,521	02/2001	Coffin, IV et al.	
	127	6,165,005	12/2000	Mills et al.	
	128	6,157,850	12/2000	Diab et al.	
	129	6,152,754	11/2000	Gerhardt et al.	
	130	6,151,516	11/2000	Kiani-Azarbayjany et al.	
	131	6,144,868	11/2000	Parker	
	132	6,124,597	09/2000	Shehada	
	133	6,110,522	08/2000	Lepper, Jr. et al.	
	134	6,088,607	07/2000	Diab et al.	
	135	6,081,735	06/2000	Diab et al.	
	136	6,067,462	05/2000	Diab et al.	
	137	6,045,509	04/2000	Caro et al.	
	138	6,036,642	03/2000	Diab et al.	
	139	6,027,452	02/2000	Flaherty et al.	
	140	6,011,986	01/2000	Diab et al.	
	141	6,002,952	12/1999	Diab et al.	
	142	5,997,343	12/1999	Mills et al.	
	143	5,995,855	11/1999	Kiani et al.	
	144	5,940,182	08/1999	Lepper, Jr. et al.	
	145	5,934,925	08/1999	Tobler et al.	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 6 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	146	5,924,979	07/1999	Swedlow et al.	
	147	5,919,134	07/1999	Diab	
	148	5,904,654	05/1999	Wohltmann et al.	
	149	5,890,929	04/1999	Mills et al.	
	150	5,860,919	01/1999	Kiani-Azarbayjany et al.	
	151	5,833,618	11/1998	Caro et al.	
	152	5,830,131	11/1998	Caro et al.	
	153	5,823,950	10/1998	Diab et al.	
	154	5,810,734	09/1998	Caro et al.	
	155	5,791,347	08/1998	Flaherty et al.	
	156	5,785,659	07/1998	Caro et al.	
	157	5,782,757	07/1998	Diab et al.	
	158	5,769,785	06/1998	Diab et al.	
	159	5,760,910	06/1998	Lepper, Jr. et al.	
	160	5,758,644	06/1998	Diab et al.	
	161	5,743,262	04/1998	Lepper, Jr. et al.	
	162	Des. 393,830	04/1998	Tobler et al.	
	163	5,685,299	11/1997	Diab et al.	
	164	5,645,440	07/1997	Tobler et al.	
	165	5,638,818	06/1997	Diab et al.	
	166	5,638,816	06/1997	Kiani-Azarbayjany et al.	
	167	5,632,272	05/1997	Diab et al.	
	168	5,602,924	02/1997	Durand et al.	
	169	5,590,649	01/1997	Caro et al.	
	170	5,562,002	10/1986	Lalin	
	171	5,561,275	10/1996	Savage, et al.	
	172	5,533,511	07/1996	Kaspari et al.	
	173	5,494,043	02/1996	O'Sullivan et al.	
	174	5,490,505	02/1996	Diab et al.	

Examiner Signature	Date Considered

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PTO/SB/08 Equivalent

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	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 7 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	175	5,482,036	01/1996	Diab et al.	
	176	D363,120	10/1995	Savage et al.	
	177	5,456,252	10/1995	Vari, et al.	
	178	5,452,717	09/1995	Branigan et al.	
	179	D362,063	09/1995	Savage et al.	
	180	D361,840	08/1995	Savage et al.	
	181	D359,546	06/1995	Savage, et al.	
	182	5,431,170	07/1995	Mathews	
	183	D353,196	12/1994	Savage et al.	
	184	D353,195	12/1994	Savage et al.	
	185	5,377,676	01/1995	Vari, et al.	
	186	5,341,805	08/1994	Stavridi, et al.	
	187	5,337,744	08/1994	Branigan	
	188	5,163,438	11/1992	Gordon et al.	
	189	5,069,213	12/1991	Polczynski	
	190	5,041,187	08/1991	Hink et al.	
	191	4,964,408	10/1990	Hink et al.	
	192	4,960,128	10/1990	Gordon et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	193	EP 0 872 210 A1	10/1998	European		
	194	WO 99/63883	12/1999	PCT		

Examiner Signature	Date Considered

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 8 OF 8	Attorney Docket No.	MASIMO.285C2

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	195	PCT International Search Report, App. No. PCT/US02/20675, App. Date: 06/28/2002, 4 pages.	

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Examiner Signature	Date Considered

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Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Filer:	John M. Grover/Lisa Sierra
Attorney Docket Number:	MASIMO.285C2

Filed as Large Entity

Utility Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Utility application filing	1011	1	310	310
Utility Search Fee	1111	1	510	510
Utility Examination Fee	1311	1	210	210
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1030**

Electronic Acknowledgement Receipt	
EFS ID:	2464095
Application Number:	11939519
International Application Number:	
Confirmation Number:	6131
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Customer Number:	20995
Filer:	John M. Grover/Alexandra Benitez
Filer Authorized By:	John M. Grover
Attorney Docket Number:	MASIMO.285C2
Receipt Date:	13-NOV-2007
Filing Date:	
Time Stamp:	20:40:40
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$1030
RAM confirmation Number	4221
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes) /Message Digest	Multi Part /.zip	Pages (if appl.)

1	Application Data Sheet	ADS_MASIMO285C2.pdf	257752 90c98a2d01044f3e11f3d29234700cb4c1f292ef	no	4
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Information:					
This is not an USPTO supplied ADS fillable form					
2		Specification_MASIMO285C2.pdf	1134759 40926c20cd32c4fa54c4c7ede8d6200b7ac84057	yes	20

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Specification	1	17
	Specification	18	19
	Abstract	20	20

Warnings:					
Information:					
3	Drawings-only black and white line drawings	Drawings_MASIMO285C2.pdf	230386 c682a16ce7b1bef52314c20fc81e87830315ade4	no	11
Warnings:					
Information:					
4	Oath or Declaration filed	Declaration_MASIMO285C2.pdf	54453 c3af87ccb8333decb94eb95c3d98c914b0ec7635	no	1
Warnings:					
Information:					
5	Power of Attorney	POA_MASIMO285C2.pdf	156061 0041453e51af9cdd6984738681f7d13bf2a938b	no	3
Warnings:					
Information:					
6	Information Disclosure Statement Letter	IDS_MASIMO285C2.pdf	478535 184fa178f3f1ec09f2d937a6e4bcb3708a30a935	no	9
Warnings:					
Information:					
7	Fee Worksheet (PTO-06)	fee-info.pdf	8352 62ad6dc74db78e658e3c8e4473ccabc6f32d2347	no	2
Warnings:					

Information:	
Total Files Size (in bytes):	2320298

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
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PTO/SB/14 (08-05)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MASIMO.285C2
	Application Number	
Title of Invention	LOW POWER PULSE OXIMETER	

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Applicant 1

Applicant Authority ◉ Inventor ○ Legal Representative under 35 U.S.C. 117 ○ Party of Interest under 35 U.S.C. 118

Prefix	Given Name	Middle Name	Family Name	Suffix
	Ammar		Al-Ali	

Residence Information (Select One) ◉ US Residency ○ Non US Residency ○ Active US Military Service

City	Tustin	State/Province	CA	Country of Residence i	US

Citizenship under 37 CFR 1.41(b) i: US

Mailing Address of Applicant:

Address 1	10880 Phillips Street		
Address 2			
City	Tustin	State/Province	CA
Postal Code	92782	Country i	US

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Application Information:

Title of the Invention	LOW POWER PULSE OXIMETER		
Attorney Docket Number	MASIMO.285C2	Small Entity Status Claimed	☐
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	11	Suggested Figure for Publication (if any)	3

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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MASIMO.285C2
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Title of Invention	LOW POWER PULSE OXIMETER	

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☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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This section allows for the applicant to claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c). Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	10/785573	2004-02-24

Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
10/785573	Continuation of	10/184028	2002-06-26	6697658	2004-02-14

Prior Application Status	Expired		Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
10/184028	non provisional of	60/302564	2001-07-02

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			Remove
Application Number	Country i	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MASIMO.285C2
	Application Number	
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Assignee 1

If the Assignee is an Organization check here. ☐

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Signature		Date (YYYY-MM-DD)	2007-11-13
First Name	John	Last Name Grover	Registration Number	42610

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LOW POWER PULSE OXIMETER

REFERENCE TO RELATED APPLICATIONS

[0001] The present application is a continuation of U.S. Application No. 10/785,573, entitled "Low Power Pulse Oximeter," filed February 24, 2004, which is a continuation of Application No. 10/184,028, entitled "Low Power Pulse Oximeter," filed June 26, 2002, now Patent No. 6,697,658, which claims priority benefit under 35 U.S.C. § 119(e) from U.S. Provisional Application No. 60/302,564, entitled "Low Power Pulse Oximeter," filed July 2, 2001. The present application incorporates each of the foregoing disclosures herein by reference.

BACKGROUND OF THE INVENTION

[0002] Pulse oximetry is a widely accepted noninvasive procedure for measuring the oxygen saturation level of a person's arterial blood, an indicator of their oxygen supply. Oxygen saturation monitoring is crucial in critical care and surgical applications, where an insufficient blood supply can quickly lead to injury or death. FIG. **1** illustrates a conventional pulse oximetry system **100**, which has a sensor **110** and a monitor **150**. The sensor **110**, which can be attached to an adult's finger or an infant's foot, has both red and infrared LEDs **112** and a photodiode detector **114**. For a finger, the sensor is configured so that the LEDs **112** project light through the fingernail and into the blood vessels and capillaries underneath. The photodiode **114** is positioned at the finger tip opposite the fingernail so as to detect the LED emitted light as it emerges from the finger tissues. A pulse oximetry sensor is described in U.S. Patent 6,088,607 entitled "Low Noise Optical Probe," which is assigned to the assignee of the present invention and incorporated by reference herein.

[0003] Also shown in FIG. **1**, the monitor **150** has LED drivers **152**, a signal conditioning and digitization front-end **154**, a signal processor **156**, a display driver **158** and a display **159**. The LED drivers **152** alternately activate the red and IR LEDs **112** and the front-end **154** conditions and digitizes the resulting current generated by the photodiode **114**, which is proportional to the intensity of the detected light. The signal processor **156** inputs the conditioned photodiode signal and determines oxygen saturation based on the differential absorption by arterial blood of the two wavelengths emitted by the LEDs **112**. Specifically, a

ratio of detected red and infrared intensities is calculated by the signal processor **156**, and an arterial oxygen saturation value is empirically determined based on the ratio obtained. The display driver **158** and associated display **159** indicate a patient's oxygen saturation, heart rate and plethysmographic waveform.

SUMMARY OF THE INVENTION

[0004] Increasingly, pulse oximeters are being utilized in portable, battery-operated applications. For example, a pulse oximeter may be attached to a patient during emergency transport and remain with the patient as they are moved between hospital wards. Further, pulse oximeters are often implemented as plug-in modules for multiparameter patient monitors having a restricted power budget. These applications and others create an increasing demand for lower power and higher performance pulse oximeters. A conventional approach for reducing power consumption in portable electronics, typically utilized by devices such as calculators and notebook computers, is to have a "sleep mode" where the circuitry is powered-down when the devices are idle.

[0005] FIG. **2** illustrates a sleep-mode pulse oximeter **200** utilizing conventional sleep-mode power reduction. The pulse oximeter **200** has a pulse oximeter processor **210** and a power control **220**. The power control **220** monitors the pulse oximeter output parameters **212**, such as oxygen saturation and pulse rate, and controls the processor power **214** according to measured activity. For example, if there is no significant change in the oxygen saturation value over a certain time period, the power control **220** will power down the processor **210**, except perhaps for a portion of memory. The power control **220** may have a timer that triggers the processor **210** to periodically sample the oxygen saturation value, and the power control **220** determines if any changes in this parameter are occurring. If not, the power control **220** will leave the processor **210** in sleep mode.

[0006] There are a number of disadvantages to applying consumer electronic sleep mode techniques to pulse oximetry. By definition, the pulse oximeter is not functioning during sleep mode. Unlike consumer electronics, pulse oximetry cannot afford to miss events, such as patient oxygen desaturation. Further, there is a trade-off between shorter but more frequent sleep periods to avoid a missed event and the increased processing overhead to

power-up after each sleep period. Also, sleep mode techniques rely only on the output parameters to determine whether the pulse oximeter should be active or in sleep mode. Finally, the caregiver is given no indication of when the pulse oximeter outputs were last updated.

[0007] One aspect of a low power pulse oximeter is a sensor interface adapted to drive a pulse oximetry sensor and receive a corresponding input signal. A processor derives a physiological measurement corresponding to the input signal, and a display driver communicates the measurement to a display. A controller generates a sampling control output to at least one of said sensor interface and said processor so as to reduce the average power consumption of the pulse oximeter consistent with a predetermined power target.

[0008] In one embodiment, a calculator derives a signal status output responsive to the input signal. The signal status output is communicated to the controller to override the sampling control output. The signal status output may indicate the occurrence of a low signal quality or the occurrence of a physiological event. In another embodiment, the sensor interface has an emitter driver adapted to provide a current output to an emitter portion of the sensor. Here, the sampling control output determines a duty cycle of the current output. In a particular embodiment, the duty cycle may be in the range of about 3.125% to about 25%.

[0009] In another embodiment, the sensor interface has a front-end adapted to receive the input signal from a detector portion of the sensor and to provide a corresponding digitized signal. Here, the sampling control output determines a powered-down period of the front-end. A confidence indicator responsive to a duration of the powered-down period may be provided and displayed.

[0010] In yet another embodiment, the pulse oximeter comprises a plurality of data blocks responsive to the input signal, wherein the sampling control output determines a time shift of successive ones of the data blocks. The time shift may vary in the range of about 1.2 seconds to about 4.8 seconds.

[0011] An aspect of a low power pulse oximetry method comprises the steps of setting a power target and receiving an input signal from a pulse oximetry sensor. Further steps include calculating signal status related to the input signal, calculating power status

related to the power target, and sampling based upon the result of the calculating signal status and the calculating power status steps.

[0012] In one embodiment, the calculating signal status step comprises the substeps of receiving a signal statistic related to the input signal, receiving a physiological measurement related to the input signal, determining a low signal quality condition from the signal statistic, determining an event occurrence from the physiological measurement, and indicating an override based upon the low signal quality condition or the event occurrence. The calculating power status step may comprise the substeps of estimating an average power consumption for at least a portion of the pulse oximeter, and indicating an above power target condition when the average power consumption is above the power target. The sampling step may comprise the substep of increasing sampling as the result of the override. The sampling step may also comprise the substep of decreasing sampling as the result of the above power target condition, except during the override.

[0013] Another aspect of a low power pulse oximetry method comprises the steps of detecting an override related to a measure of signal quality or a physiological measurement event, increasing the pulse oximeter power to a higher power level when the override exists, and reducing the pulse oximeter power to a lower power level when the override does not exist. The method may comprise the further steps of predetermining a target power level for a pulse oximeter and cycling between the lower power level and the higher power level so that an average pulse oximeter power is consistent with the target power level.

[0014] In one embodiment, the reducing step comprises the substep of decreasing the duty cycle of an emitter driver output to the sensor. In another embodiment, the reducing step comprises the substep of powering-down a detector front-end. A further step may comprise displaying a confidence indicator related to the duration of the powering-down substep. In yet another embodiment, the reducing step comprises the substep of increasing the time-shift of post-processor data blocks.

[0015] Another aspect of a low power pulse oximeter comprises a sensor interface adapted to receive an input signal from a sensor, a signal processor configured to communicate with the sensor interface and to generate an internal parameter responsive to the input signal, and a sampling controller responsive to the internal parameter so as to generate a

sampling control to alter the power consumption of at least one of the sensor interface and the signal processor. The signal processor may be configured to generate an output parameter and the sampling controller may be responsive to a combination of the internal and output parameters so as to generate a sampling control to alter the power consumption of at least one of the sensor interface and the signal processor. The internal parameter may be indicative of the quality of the input signal. The output parameter may be indicative of oxygen saturation.

[0016] In another embodiment, the sampling controller is responsive to a predetermined power target in combination with the internal parameter so as to generate a sampling control to alter the power consumption of at least one of the sensor interface and the signal processor. The signal processor may be configured to generate an output parameter and the sampling controller may be responsive to a combination of the internal and output parameters and the power target so as to generate a sampling control to alter the power consumption of at least one of the sensor interface and the signal processor. The sensor interface may comprise an emitter driver and the sampling control may modify a duty cycle of the emitter driver. The sensor interface may comprise a detector front-end and the sampling control may intermittently power-down the detector front-end. The processor may generate a plurality of data blocks corresponding to the input signal, where each of the data blocks have a time shift from a preceding one of the data blocks, and where the sampling control may determine the amount of the time shift.

[0017] A further aspect of a low power pulse oximeter comprises an interface means for communicating with a sensor, a processor means for generating an internal parameter and an output parameter, and a controller means for selectively reducing the power consumption of at least one of the interface means and the processor means based upon the parameters. In one embodiment, the interface means comprises a driver means for determining the duty cycle of emitter current to the sensor, the driver means being responsive to the controller means. In another embodiment, the interface means comprises a detector front-end means for receiving an input signal from the sensor, the power for the detector front-end means being responsive to the controller means. In yet another embodiment, the processor means comprises a post-processor means for determining a time shift between data blocks, the post-processor means being responsive to the controller means. In a further

embodiment, the controller means comprises a signal status calculator means for generating an indication of a low signal quality or a physiological event based upon at least one of an internal signal statistic and an output physiological measurement, and a control engine means in communications with the signal status calculator means for generating a sampling control responsive to the indication. In yet a further embodiment, the controller means comprises a power status calculator means for generating a power indication of power consumption relative to a power target, and a control engine means in communications with the power status calculator means for generating a sampling control responsive to the power indication.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] FIG. **1** is a block diagram of a conventional pulse oximeter sensor and monitor;

[0019] FIG. **2** is a block diagram of a pulse oximeter having a conventional sleep mode;

[0020] FIG. **3** is a top-level block diagram of a low power pulse oximeter;

[0021] FIG. **4** is a detailed block diagram of a low power pulse oximeter illustrating a sensor interface, a signal processor and a sampling controller;

[0022] FIG. **5** is a graph of emitter drive current versus time illustrating variable duty cycle processing;

[0023] FIG. **6** is a graph of oxygen saturation versus time illustrating intermittent sample processing;

[0024] FIGS. **7A-B** are graphs of data buffer content versus time illustrating variable data block overlap processing;

[0025] FIG. **8** is a graph of power versus time illustrating power dissipation conformance to an average power target using variable duty cycle and intermittent sample processing;

[0026] FIG. **9** is a state diagram of the sampling controller for variable duty cycle and intermittent sample processing;

[0027] FIG. **10** is a graph of power versus time illustrating power dissipation using variable data block overlap processing; and

[0028] FIG. **11** is a state diagram of the sampling controller for variable data block overlap processing.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0029] FIG. **3** illustrates one embodiment of a low power pulse oximeter. The pulse oximeter **300** has a sensor interface **320**, a signal processor **340**, a sampling controller **360** and a display driver **380**. The pulse oximeter **300** also has a sensor port **302** and a display port **304**. The sensor port **302** connects to an external sensor, e.g. sensor **110** (FIG. **1**). The sensor interface **320** drives the sensor port **302**, receives a corresponding input signal from the sensor port **302**, and provides a conditioned and digitized sensor signal **322** accordingly. Physiological measurements **342** are input to a display driver **380** that outputs to the display port **304**. The display port **304** connects to a display device, such as a CRT or LCD, which a healthcare provider typically uses for monitoring a patient's oxygen saturation, pulse rate and plethysmograph.

[0030] As shown in FIG. **3**, the signal processor **340** derives the physiological measurements **342**, including oxygen saturation, pulse rate and plethysmograph, from the input signal **322**. The signal processor **340** also derives signal statistics **344**, such as signal strength, noise and motion artifact. The physiological measurements **342** and signal statistics **344** are input to the sampling controller **360**, which outputs sampling controls **362**, **364**, **366** accordingly. The sampling controls **362**, **364**, **366** regulate pulse oximeter power dissipation by causing the sensor interface **320** to vary the sampling characteristics of the sensor port **302** and by causing the signal processor **340** to vary its sample processing characteristics, as described in further detail with respect to FIG. **4**, below. Advantageously, power dissipation is responsive not only to output parameters, such as the physiological measurements **342**, but also to internal parameters, such as the signal statistics **344**.

[0031] FIG. **4** illustrates further detail regarding the sensor interface **320**, the signal processor **340** and the sampling controller **360**. The sensor interface **320** has emitter drivers **480** and a detector front-end **490**. The emitter drivers **480** are responsive to a sampling control **362**, described below, and provide emitter drive outputs **482**. The emitter drive outputs **482** activate the LEDs of a sensor attached to the sensor port **302** (FIG. **3**). The

detector front-end **490** receives an input signal **492** from a sensor attached to the sensor port **302** (FIG. **3**) and provides a corresponding conditioned and digitized input signal **322** to the signal processor **340**. A sampling control **364** controls power to the detector front-end **490**, as described below.

[0032] As shown in FIG. **4**, the signal processor **340** has a pre-processor **410** and a post processor **430**. The pre-processor **410** demodulates red and IR signals from the digitized signal **322**, performs filtering, and reduces the sample rate. The pre-processor provides a demodulated output, having a red channel **412** and an IR channel **414**, which is input into the post-processor **430**. The post processor **430** calculates the physiological measurements **342** and the signal statistics **344**, which are output to a signal status calculator **450**. The physiological measurements **342** are also output to a display driver **380** (FIG. **3**) as described above. A pulse oximetry signal processor is described in U.S. Patent 6,081,735 entitled "Signal Processing Apparatus," which is assigned to the assignee of the present invention and incorporated by reference herein.

[0033] Also shown in FIG. **4**, the sampling controller **360** has a control engine **440**, a signal status calculator **450** and a power status calculator **460**. The control engine **440** outputs sampling controls **362**, **364**, **366** to reduce the power consumption of the pulse oximeter **300**. In one embodiment, the control engine **440** advantageously utilizes multiple sampling mechanisms to alter power consumption. One sampling mechanism is an emitter duty cycle control **362** that is an input to the emitter drivers **480**. The emitter duty cycle control **362** determines the duty cycle of the current supplied by the emitter drive outputs **482** to both red and IR sensor emitters, as described with respect to FIG. **5**, below. Another sampling mechanism is a front-end control **364** that intermittently removes power to the detector front-end **490**, as described with respected to FIG. **6**, below. Yet another sampling mechanism is a data block overlap control **366** that varies the number of data blocks processed by the post processor **430**. These various sampling mechanisms provide the flexibility to reduce power without sacrificing performance during, for example, high noise conditions or oxygen desaturation events, as described below in further detail.

[0034] The sampling controls **362**, **364**, **366** modify power consumption by, in effect, increasing or decreasing the number of input samples received and processed.

Sampling, including acquiring input signal samples and subsequent sample processing, can be reduced during high signal quality periods and increased during low signal quality periods or when critical measurements are necessary. In this manner, the control engine **440** regulates power consumption to satisfy a predetermined power target, to minimize power consumption, or to simply reduce power consumption, as described with respect to FIGS. **8** and **10**, below. The current state of the control engine is provided as a control state output **442** to the power status calculator **460**. The control engine **440** utilizes the power status output **462** and the signal status output **452** to determine its next control state, as described with respect to FIG. **9** and **11**, below.

[0035] Further shown in FIG. **4**, the signal status calculator **450** receives physiological measurements and signal statistics from the post processor **430** and determines the occurrence of an event or a low signal quality condition. An event determination is based upon the physiological measurements output **342** and may be any physiological-related indication that justifies the processing of more sensor samples and an associated higher power consumption level, such as an oxygen desaturation, a fast or irregular pulse rate or an unusual plethysmograph waveform to name a few. A low signal quality condition is based upon the signal statistics output **344** and may be any signal-related indication that justifies the processing of more sensor samples and an associated higher power consumption level, such as a low signal level, a high noise level or motion artifact to name a few. The signal status calculator **450** provides the signal status output **452** that is input to the control engine **440**.

[0036] In addition, FIG. **4** shows that the power status calculator **460** has a control state input **442** and a power status output **462**. The control state input **442** indicates the current state of the control engine **440**. The power status calculator **460** utilizes an internal time base, such as a counter, timer or real-time clock, in conjunction with the control engine state to estimate the average power consumption of at least a portion of the pulse oximeter **300**. The power status calculator **460** also stores a predetermined power target and compares its power consumption estimate to this target. The power status calculator **460** generates the power status output **462** as an indication that the current average power estimate is above or below the power target and provides this output **462** to the control engine **440**.

[0037] FIG. **5** illustrates emitter driver output current versus time. The graph **500** depicts the combination of a red LED drive current **510** and an IR drive current **560**. The solid line graph **502** illustrates drive currents having a high duty cycle. The dashed line graph **504** illustrates drive currents having a low duty cycle. In a typical pulse oximeter, the duty cycle of the drive signals is constant and provides sufficient dark bands **508** to demodulate the detector response into red and IR channels. The emitter drivers **480** (FIG. **4**), however, require a significant portion of the overall pulse oximeter power budget. Intermittently reducing the drive current duty cycle can advantageously reduce power dissipation without compromising signal integrity. As an example, a low power pulse oximeter implementation nominally consuming 500 mw may be able to reduce power consumption on the order of 70 mw by such drive current duty cycle reductions. In a preferred embodiment, the drive current duty cycle is varied within a range from about 25% to about 3.125%. In a more preferred embodiment, the drive current duty cycle is intermittently reduced from about 25% to about 3.125%. In conjunction with an intermittently reduced duty cycle or as an independent sampling mechanism, there may be a "data off" time period longer than one drive current cycle where the emitter drivers **480** (FIG. **4**) are turned off. The detector front-end **490** (FIG. **4**) may also be powered down during such a data off period, as described with respect to FIGS. **8** and **9**, below.

[0038] FIG. **6** is a graph **600** of a pre-processor output signal **610** over time depicting the result of intermittent sampling at the detector front-end **490** (FIG. **4**). The output signal **610** is a red channel **412** (FIG. **4**) or an IR channel **414** (FIG. **4**) output from the pre-processor **410** (FIG. **4**), which is input to the post processor **430** (FIG. **4**), as described above. The output signal **610** has "on" periods **612**, during which time the detector front-end **490** (FIG. **4**) is powered-up and "off" periods **614**, during which time the detector front-end **490** (FIG. **4**) is powered-down. The location and duration of the on periods **612** and off periods **614** are determined by the front-end control **364** (FIG. **4**).

[0039] Also shown in FIG. **6** is a corresponding timeline **601** of overlapping data blocks **700**, which are "snap-shots" of the pre-processor output signal **610** over specific time intervals. Specifically, the post processor **430** (FIG. **4**) processes a sliding window of samples of the pre-processor output signal **610**, as described with respect to FIGS. **7A-B**,

below. Advantageously, the post processor **430** (FIG. **4**) continues to function during off portions **614**, marking as invalid those data blocks **640** that incorporate off portions **614**. A freshness counter can be used to measure the time period **660** between valid data blocks **630**, which can be displayed on a pulse oximeter monitor as an indication of confidence in the current measurements.

[0040] FIGS. **7A-B** illustrate data blocks **700**, which are processed by the post processor **430** (FIG. **4**). Each data block **700** has *n* samples **702** of the pre-processor output and corresponds to a time interval **704** of n/f_s, where f_s is the sample frequency. For example, in one embodiment n = 600 and f_s = 62.5 Hz. Hence, each data block time interval **704** is nominally 9.6 sec.

[0041] As shown in FIG. **7A**, each data block **700** also has a relative time shift **706** from the preceding data block, where is an integral number of sample periods. That is, = m/f_s, where m is an integer representing the number of samples dropped from the preceding data block and added to the succeeding data block. In the embodiment described above, m = 75 and = 1.2 sec, nominally. The corresponding overlap **708** of two adjacent data blocks **710**, **720** is $(n-m)/f_s$. In the embodiment described above, the overlap **708** is nominally 9.6 sec - 1.2 sec = 8.4 sec. The greater the overlap **708**, i.e. the smaller the time shift **706**, the more data blocks there are to process in the post-processor **430** (FIG. **4**), with a corresponding greater power consumption. The overlap **708** between successive data blocks **710**, **720** may vary from *n-1* samples to no samples, i.e. no overlap. Also, as shown in FIG. **7B**, there may be a sample gap **756** or negative overlap, i.e. samples between data blocks that are not processed by the post-processor, allowing further post-processor power savings. Sample gaps **756** may correspond to detector front-end off periods **614** (FIG. **6**).

[0042] FIG. **8** illustrates an exemplar power consumption versus time profile **800** for the pulse oximeter **300** (FIG. **3**) during various control engine states. In one embodiment, the control engine **440** (FIG. **4**) has three states related to the sampling control outputs **362**, **364** that affect pulse oximeter power consumption accordingly. One of ordinary skill in the art will recognize that the control engine **440** (FIG. **4**) may have greater or fewer states and associated power consumption levels. The profile **800** shows the three control engine states

810 and the associated power consumption levels **820**. These three states are high duty cycle **812**, low duty cycle **814** and data off **818**.

[0043] In the high duty cycle state **812**, the control engine **440** (FIG. **4**) causes the emitter drivers **480** (FIG. **4**) to turn on sensor emitters for a relatively long time period, such as 25% on time for each of the red **510** and IR **560** drive currents. In the low duty cycle state **814**, the control engine **440** (FIG. **4**) causes the emitter drivers **480** (FIG. **4**) to turn on sensor emitters for a relatively short time period, such as 3.125% of the time for each of the red **510** and IR **560** drive currents. In the data off state **818**, the control engine **440** (FIG. **4**) turns off the emitter drivers **480** (FIG. **4**) and powers down the detector front-end **490** (FIG. **4**). Also shown is a predetermined target power consumption level **830**. The control engine **440** (FIG. **4**) alters the sensor sampling of the pulse oximeter **300** (FIG. **3**) so that the average power consumption matches the target level **830**, as indicated by the power status output **462** (FIG. **4**), except when overridden by the signal status output **452** (FIG. **4**).

[0044] As shown in FIG. **8**, power consumption changes according to the control states **810** during each of the time intervals **850**. In a first time interval **851**, the pulse oximeter is in a low duty cycle state **814** and transitions to a high duty cycle state **812** during a second time interval **852** due to an event or low quality signal. During a third time interval **853**, the pulse oximeter is able to enter the data off state **818**, during which time no sensor samples are processed. In a forth time interval **854**, sensor samples are again taken, but at a low duty cycle **814**. During the fifth and sixth time intervals **855**, **856**, sensor samples are shut off and turned on again as the pulse oximeter **300** (FIG. **3**) alternates between the data off state **818** and the low duty cycle state **814** so as to maintain an average power consumption at the target level **830**.

[0045] FIG. **9** illustrates a state diagram **900** for one embodiment of the control engine **440** (FIG. **4**). In this embodiment, there are three control states, high duty cycle **910**, low duty cycle **940** and data off **970**, as described with respect to FIG. **8**, above. If the control state is data off **970**, an event triggers a data-off to high-duty-cycle transition **972**. If the control state is low duty cycle **940**, an event similarly triggers a low-duty cycle to high-duty-cycle transition **942**. In this manner, the occurrence of an event initiates high duty sensor sampling, allowing high fidelity monitoring of the event. Similarly, if the control state

is low duty cycle **940**, low signal quality triggers a low-duty cycle to high-duty-cycle transition **942**. In this manner, low signal quality initiates higher duty sensor sampling, providing, for example, a larger signal-to-noise ratio.

[0046] Also shown in FIG. **9**, if the control state is high duty cycle **910** and either an event is occurring or signal quality is low, then a null transition **918** maintains the high duty cycle state **910**. If the pulse oximeter is not above the power target for more than a particular time interval, a null transition **948** maintains the low duty cycle state **940**, so that sampling is turned-off only when necessary to track the power target. Further, if the control state is data off **970** and no time-out has occurred, a null transition **978** maintains the data off state **970**, providing a minimum power consumption.

[0047] In addition, FIG. **9** shows that when the control state is in a high duty cycle state **910**, if neither an event nor low signal quality are occurring, then a high-duty-cycle to low-duty-cycle transition **912** occurs by default. Also, if the control state is low duty cycle **940**, if neither an event nor low signal quality are occurring and the power consumption is above the target level for longer than a particular time interval, a low-duty-cycle to data-off transition **944** occurs by default, allowing power consumption to come down to the target level. Further, if the control state is data off **970**, if no event occurs and a timeout does occur, a data-off to low-duty-cycle transition **974** occurs by default, preventing excessively long periods of no sensor sampling.

[0048] FIG. **10** illustrates an exemplar power consumption versus time profile **1000** for the post processor **430** (FIG. **4**) during various control engine states. In one embodiment, the control engine **440** (FIG. **4**) has three states related to the sampling control output **366** (FIG. **4**) that affect post processor power consumption accordingly. One of ordinary skill in the art will recognize that the control engine may have greater or fewer states and associated power consumption levels. The profile **1000** shows the three control engine states **1010** and the associated post processor power consumption levels **1020**. These three states are large overlap **1012**, medium overlap **1014** and small overlap **1018**.

[0049] As shown in FIG. **10**, in the large overlap state **1012**, the control engine **440** (FIG. **4**) causes the post processor to process data blocks that have a comparatively small time shift **706** (FIG. **7A**), and the post processor exhibits relatively high power consumption

under these conditions, say 300 mw. In the medium overlap state **1014**, the control engine **440** (FIG. **4**) causes the post processor to process data blocks that have a comparatively larger time shift **706** (FIG. **7A**). For example, the data blocks may be time shifted twice as much as for the large overlap state **1012**, and, as such, the post processor performs only half as many computations and consumes half the nominal power, say 150 mw. In the small overlap state **1018**, the control engine **440** (FIG. **4**) causes the post processor to process data blocks that have a comparatively large time shift. For example, the data blocks may be time shifted twice as much as for the medium overlap state **1014**. As such, the post processor performs only a quarter as many computations and consumes a quarter of the nominal power, say 75 mw, as for the large overlap state 1012. In one embodiment, the control engine **440** (FIG. **4**) alters the data block overlap of the post processor in conjunction with the duty cycle of the emitter drivers described with respect to FIG. **5**, above, and the front-end sampling described with respect to FIG. **6**, above, so that the average power consumption of the pulse oximeter matches a target level indicated by the power status output **462** (FIG. **4**) or so that the power consumption is otherwise reduced or minimized.

[0050] In a preferred embodiment, data blocks are time shifted by either about 0.4 sec or about 1.2 sec, depending on the overlap state of the control engine **440** (FIG. **4**). In a more preferred embodiment, the data blocks are varied between about 1.2 sec and about 4.8 sec. In a most preferred embodiment, the data blocks are time shifted by either about 1.2 sec, about 2.4 sec or about 4.8 sec, depending on the overlap state of the control engine **440** (FIG. **4**). Although the post-processing of data blocks is described above with respect to only a few overlap states and a corresponding number of particular data block time shifts, there may be many overlap states and a corresponding range of data block time shifts.

[0051] Further shown in FIG. **10**, power consumption **1020** changes according to the control states **1010** during each of the time intervals **1050**. In a first time interval **1052**, the post processor is in a large overlap state **1012** and transitions to a medium overlap state **1014** during a second time interval **1054**, so as to meet a power target during a high signal quality period, for example. During a third time interval **1055**, the post processor enters a small overlap state **1018**, for example to meet a power target by further reducing power

consumption. In a forth time interval **1056**, the post processor transitions back to a large overlap state **1012**, such as during an event or low signal quality conditions.

[0052] FIG. **11** illustrates a state diagram **1100** for one embodiment of the control engine **440** (FIG. **4**). These states may function in parallel with, or in combination with, the sampling states described with respect to FIG. **9**, above. In the illustrated embodiment, there are three control states, large overlap **1110**, medium overlap **1140** and small overlap **1170**, as described with respect to FIG. **10**, above. If the control state is small overlap **1170**, an event triggers a small overlap to large overlap transition **1172**. If the control state is medium overlap **1140**, an event similarly triggers a medium overlap to large-overlap transition **1142**. In this manner, the occurrence of an event initiates the processing of more data blocks, allowing more robust signal statistics and higher fidelity monitoring of the event. Similarly, if the control state is medium overlap **1140**, low signal quality triggers a medium overlap to large overlap transition **1142**. In this manner, low signal quality initiates the processing of more data blocks, providing more robust signal statistics during lower signal-to-noise ratio periods.

[0053] Also shown in FIG. **11**, if the control state is large overlap **1110** and either an event is occurring or signal quality is low, then a null transition **1118** maintains the large overlap state **1110**. If the pulse oximeter is not above the power target for more than a particular time interval, a null transition **1148** maintains the medium overlap state **1140**, so that reduced data processing occurs only when necessary to track the power target. Further, if the control state is small overlap **1170**, a null transition **1178** maintains this power saving state until the power target is reached or an event or low signal quality condition occurs.

[0054] In addition, FIG. **11** shows that when the control state is in a large overlap state **1110**, if neither an event nor low signal quality are occurring, then a large overlap to medium overlap transition **1112** occurs by default. Also, if the control state is medium overlap **1140**, if the power consumption is above the target level for longer than a particular time interval and no low signal quality condition or event is occurring, a medium overlap to small overlap transition **1174** occurs, allowing power consumption to come down to the target level. Further, if the control state is small overlap **1170**, if no event occurs but the power target has been met, a small overlap to medium overlap transition **1174** occurs.

[0055] A low power pulse oximeter embodiment is described above as having a power status calculator **460** (FIG. **4**) and an associated power target. Another embodiment of a low power pulse oximeter, however, functions without either a power status calculator or a power target, utilizing the sampling controls **362**, **364**, **366** (FIG. **3**) in response to internal parameters and/or output parameters, such as signal statistics **344** (FIG. **3**) and/or physiological measurements **342** (FIG. **3**) to reduce power consumption except during, say, periods of low signal quality and physiological events.

[0056] One of ordinary skill in the art will recognize that various state diagrams are possible representing control of the emitter drivers, the detector front-end and the post-processor. Such state diagrams may have fewer or greater states with differing transitional characteristics and with differing relationships between sampling mechanisms than the particular embodiments described above. In relatively simple embodiments of the control engine **440** (FIG. **4**), only a single sampling mechanism is used, such as the sampling mechanism used to vary the duty cycle of the emitter drivers. The single sampling mechanism may be based only upon internal parameters, such as signal quality, only upon output parameters, such as those that indicate the occurrence of physiological events, or upon a combination of internal and output parameters, with or without a power target.

[0057] In relatively more complex embodiments of the control engine **440** (FIG. **4**), sampling mechanisms are used in combination. These sampling mechanisms may be based only upon internal parameters, only upon output parameters, or upon a combination of internal and output parameters, with or without a power target. In a particular embodiment, the emitter duty-cycle, front-end duty-cycle and data block overlap sampling mechanisms described above are combined. A "reduced overlap" state relating to the post-processing of data blocks is added to the diagram of FIG. **9** between the "low duty cycle" state and the "data off" state. That is, sampling is varied between a high duty cycle state, a low duty cycle state, a reduced overlap state and a data off state in response to signal quality and physiological events, with or without a power target.

[0058] The low power pulse oximeter has been disclosed in detail in connection with various embodiments. These embodiments are disclosed by way of examples only and

are not to limit the scope of the claims that follow. One of ordinary skill in the art will appreciate many variations and modifications.

WHAT IS CLAIMED IS:

1. 1. A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:

continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;

comparing processing characteristics to a predetermined threshold; and

when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level.

2. The method of Claim 1, wherein said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor.

3. The method of Claim 2, wherein said reducing activation comprises reducing a duty cycle of said sensor.

4. The method of Claim 2, wherein said attached sensor comprises an optical sensor configured to detect emitted light attenuated by body tissue of said patient.

5. The method of Claim 1, wherein said continuously operating at said lower power consumption level comprises reducing an amount of processing by a signal processor.

6. The method of Claim 5, wherein said reducing comprises processing less data.

7. The method of Claim 6, wherein said processing less data comprises reducing an overlap in data blocks being processed.

8. The method of Claim 1, wherein during said operating at said higher power consumption level, monitoring when said processing characteristics recedes from said threshold; and when receded, transitioning to continuously operating said patient monitor at said lower power consumption level.

9. The method of Claim 1, wherein said processing characteristics comprise signal characteristics from one or more light sensitive detectors.

10. The method of Claim 9, wherein said signal characteristics comprises signal strength.

11. The method of Claim 9, wherein said signal characteristics comprises a presence of noise.

12. The method of Claim 9, wherein said signal characteristics comprises a presence of motion induced noise.

13. The method of Claim 1, wherein said processing characteristics include determining an estimate of current power consumption and comparing said estimate with a target power consumption.

14. The method of Claim 1, wherein said processing characteristics include an override condition.

15. The method of Claim 14, wherein said override condition comprises measurements during a critical care environment.

16. The method of Claim 14, wherein said override condition comprises one or more monitored parameters exhibiting predefined behavior.

LOW POWER PULSE OXIMETER

Abstract of the Disclosure

A pulse oximeter may reduce power consumption in the absence of overriding conditions. Various sampling mechanisms may be used individually or in combination. Various parameters may be monitored to trigger or override a reduced power consumption state. In this manner, a pulse oximeter can lower power consumption without sacrificing performance during, for example, high noise conditions or oxygen desaturations.

PATENT

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111307

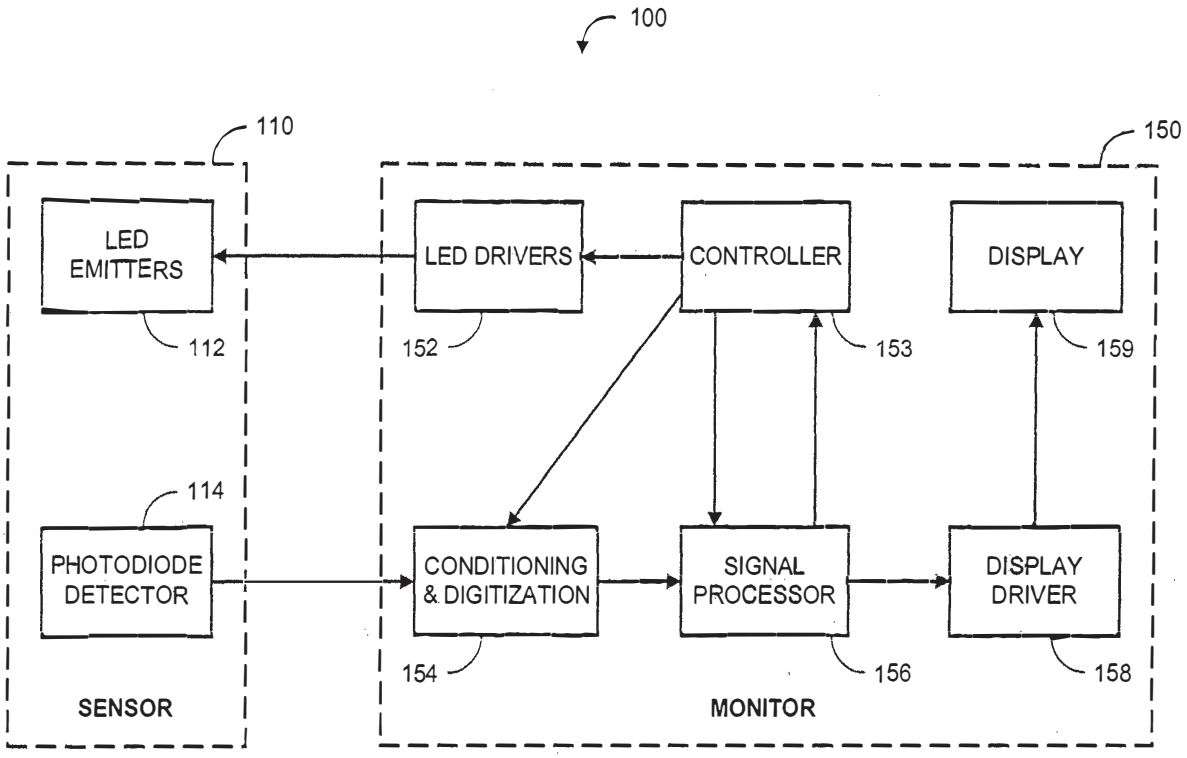


FIG. 1 (Prior Art)

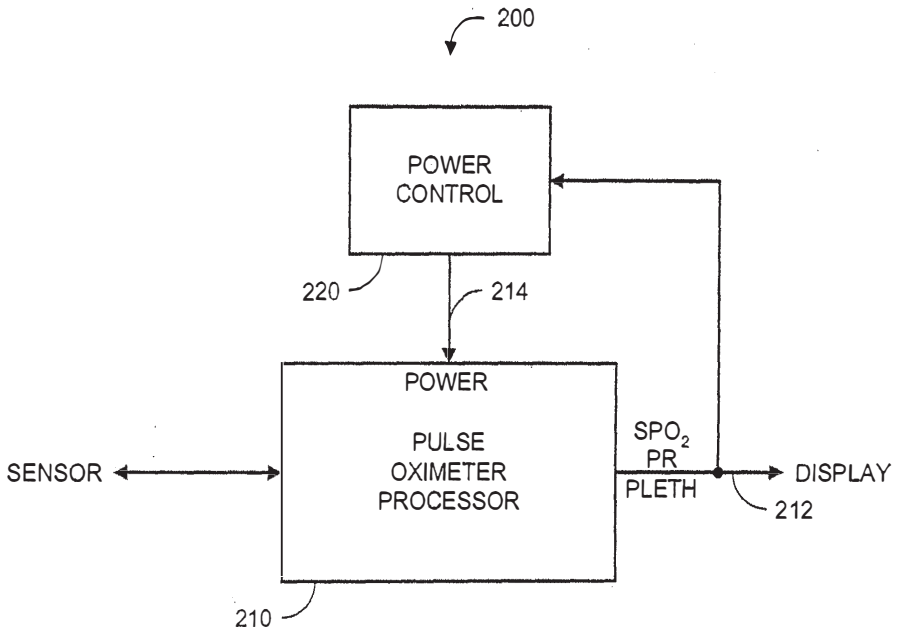
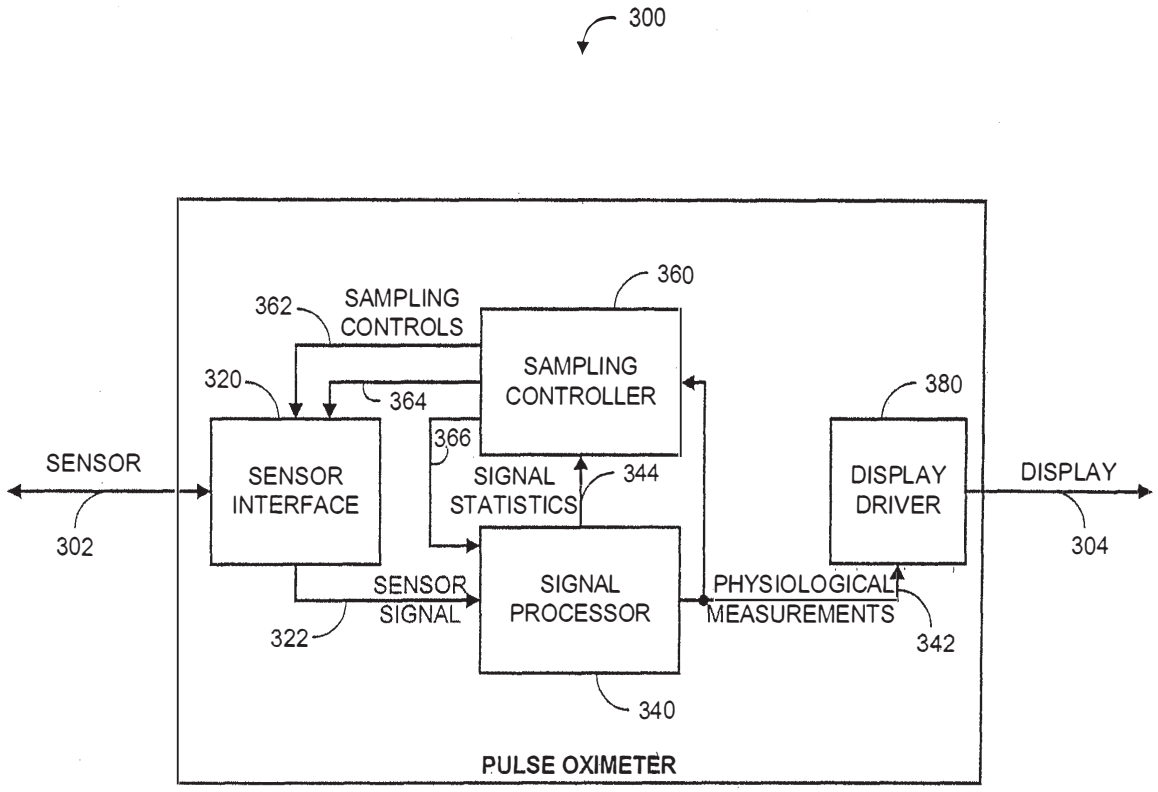


FIG. 2 (Prior Art)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360
362
SAMPLING
CONTROLS
SAMPLING
CONTROLLER
320
364
380
366
SENSOR
SENSOR
INTERFACE
SIGNAL
STATISTICS
344
DISPLAY
DRIVER
DISPLAY
302
304
SENSOR
SIGNAL
SIGNAL
PROCESSOR
PHYSIOLOGICAL
MEASUREMENTS
322
342
340
PULSE OXIMETER

FIG. 3

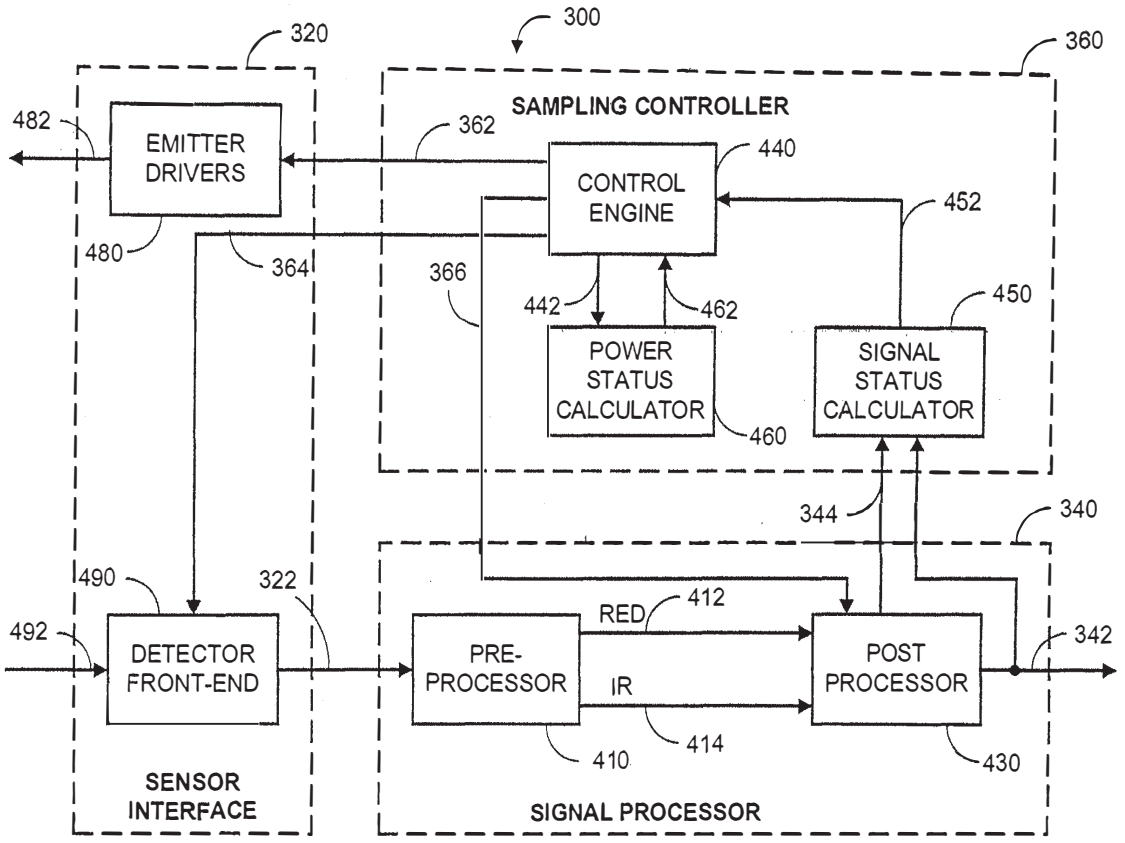
300
320
360
SAMPLING CONTROLLER
482
EMITTER DRIVERS
362
440
CONTROL ENGINE
452
480
364
366
442
462
450
POWER STATUS CALCULATOR
460
SIGNAL STATUS CALCULATOR
344
340
490
322
492
DETECTOR FRONT-END
RED
412
PRE-PROCESSOR
IR
414
410
POST PROCESSOR
342
430
SENSOR INTERFACE
SIGNAL PROCESSOR

FIG. 4

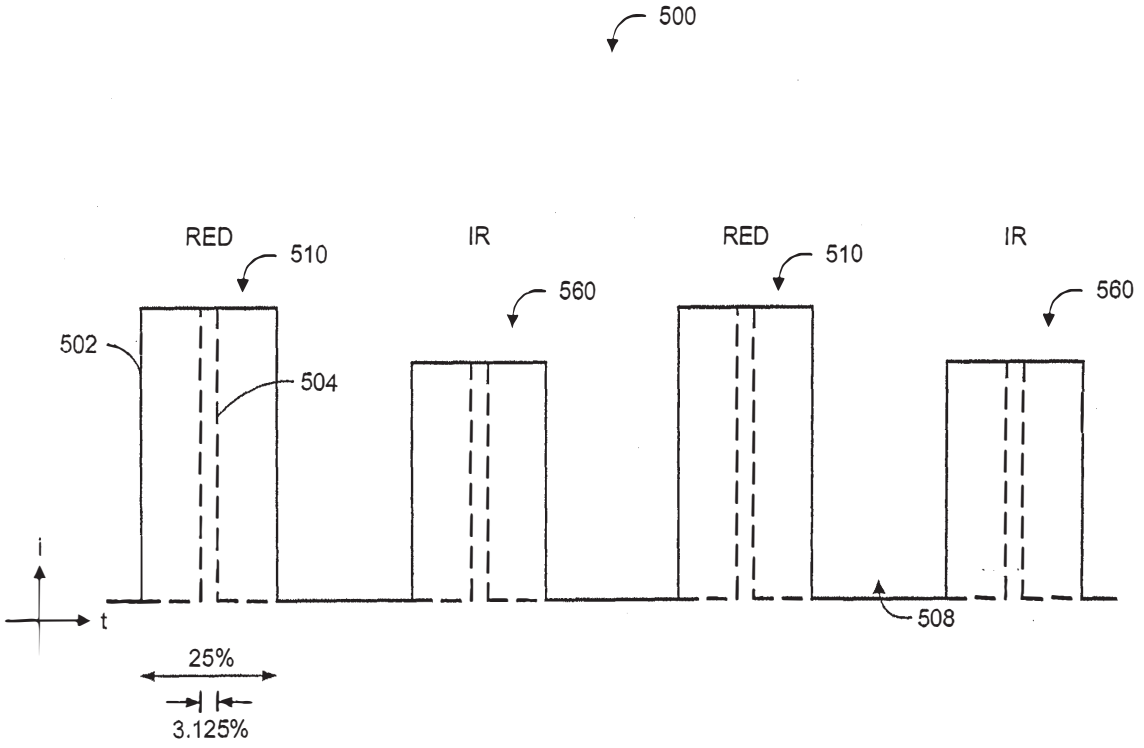

FIG. 5

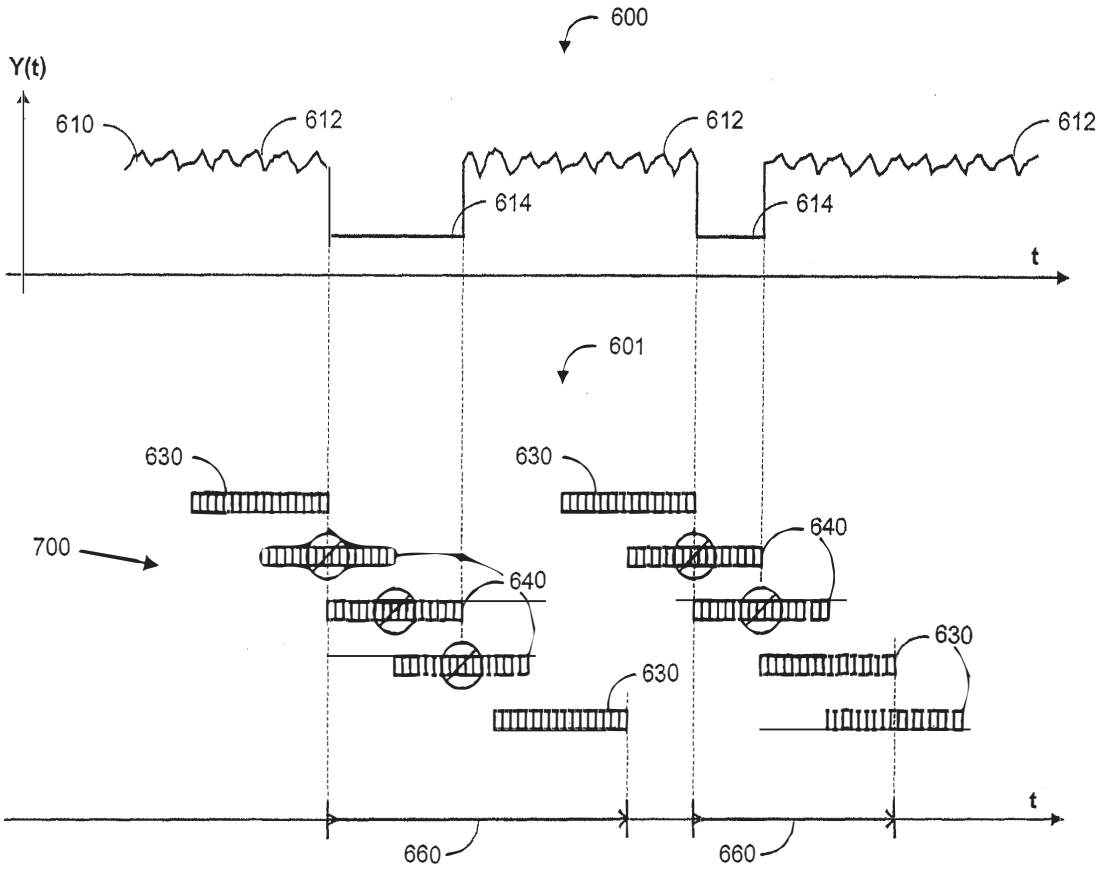
600
Y(t)
610
612
612
612
614
614
t
601
630
630
700
640
640
630
630
t
660
660

FIG. 6

6/11

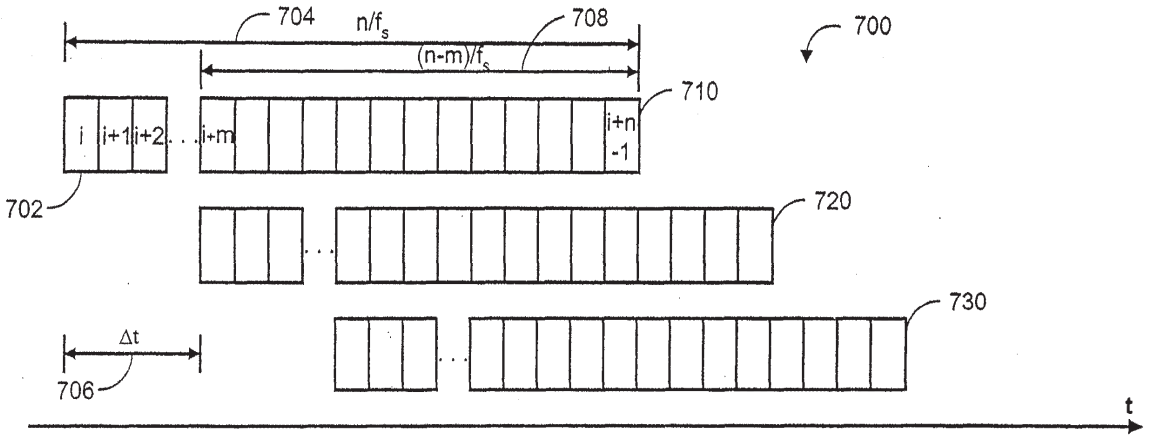
704
n/f_s
708
$(n-m)/f_s$
700
710
i
i+1
i+2
i+m
i+n -1
702
720
730
Δt
706
t

FIG. 7A

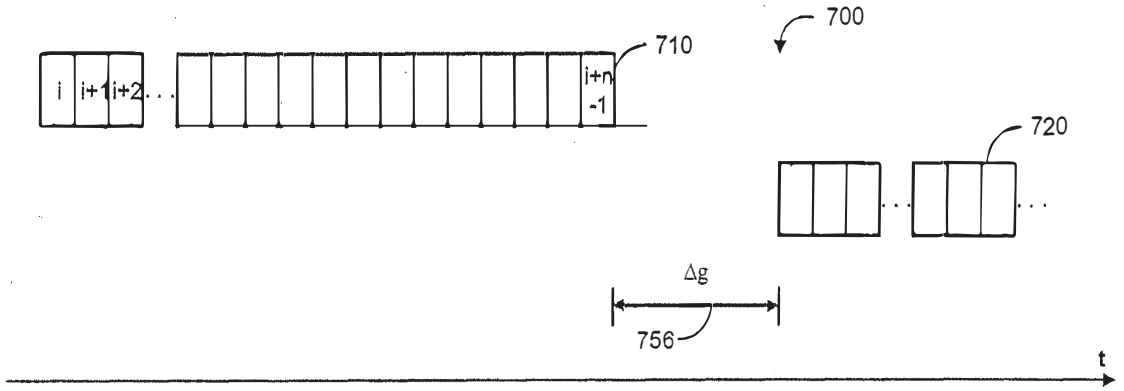
700
710
i
i+1
i+2
i+n -1
720
Δg
756
t

FIG. 7B

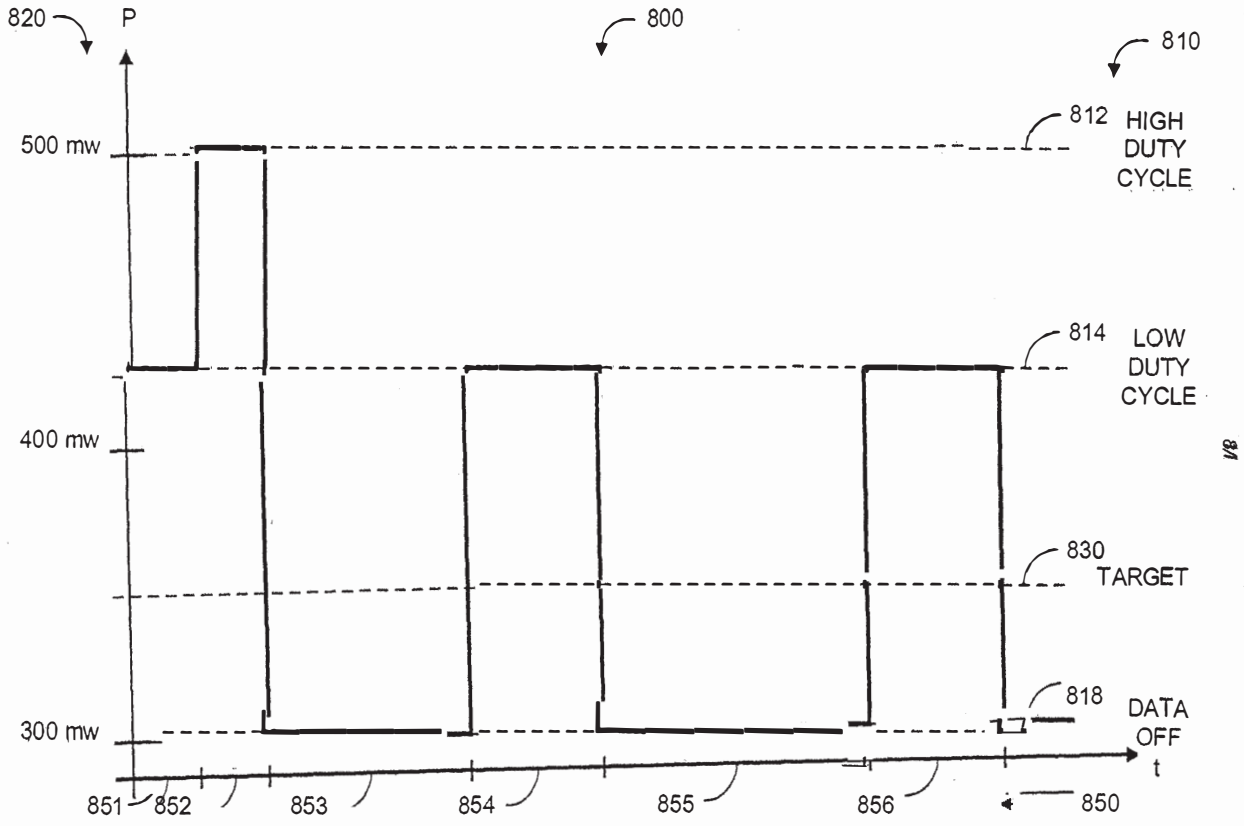
820
P
800
810
500 mw
812
HIGH
DUTY
CYCLE
814
LOW
DUTY
CYCLE
400 mw
830
TARGET
818
DATA
OFF
300 mw
t
851
852
853
854
855
856
850

FIG. 8

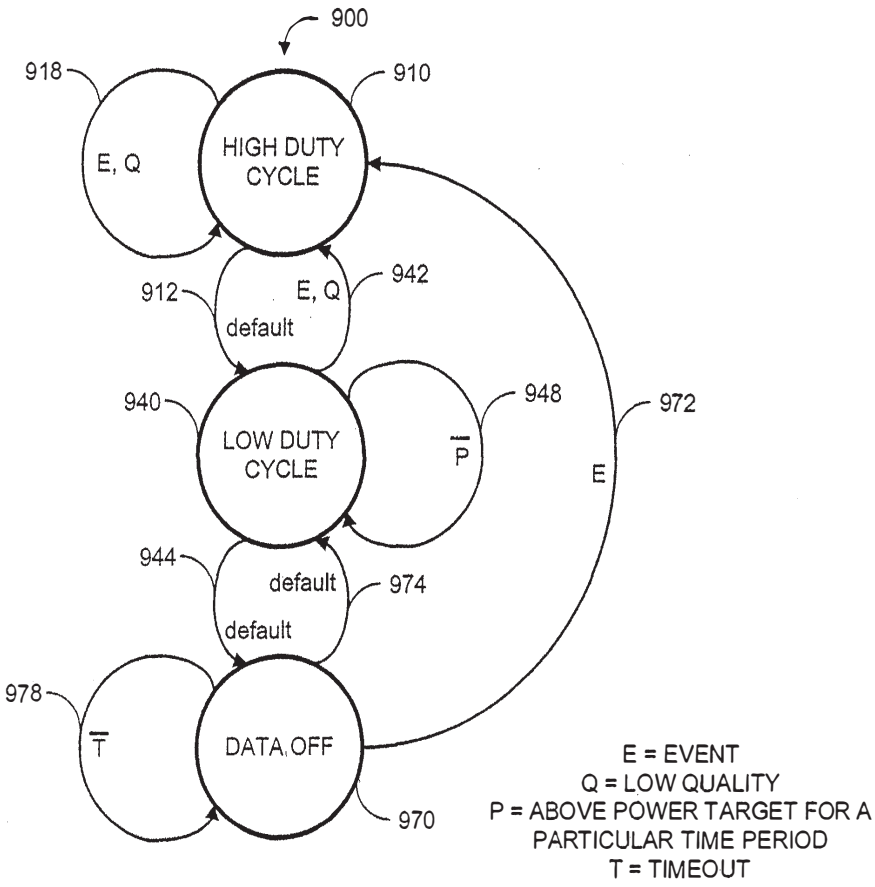
900
918
910
E, Q
HIGH DUTY CYCLE
912
E, Q
942
default
940
LOW DUTY CYCLE
948
P
E
972
944
default
974
default
978
T
DATA OFF
970
E = EVENT
Q = LOW QUALITY
P = ABOVE POWER TARGET FOR A PARTICULAR TIME PERIOD
T = TIMEOUT

FIG. 9

9/11

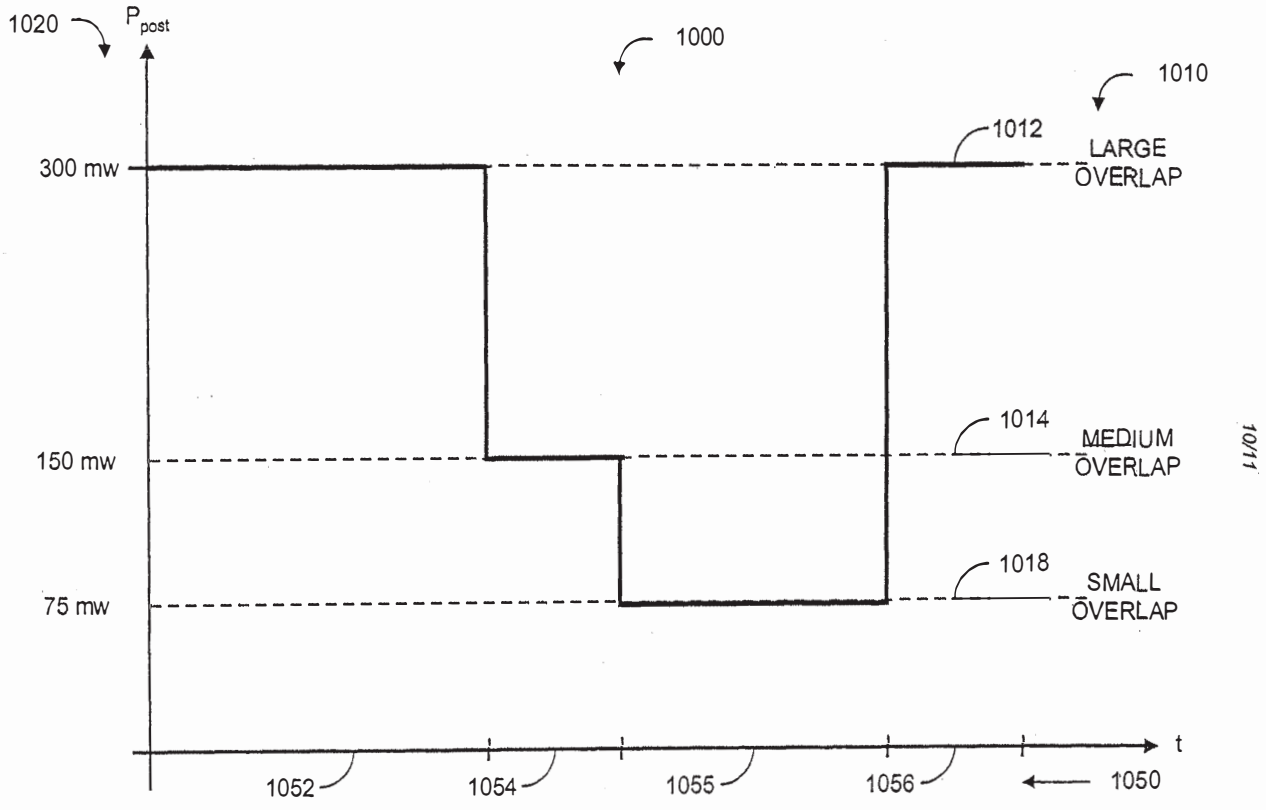
1020
P_{post}
1000
1010
1012
LARGE OVERLAP
300 mw
1014
MEDIUM OVERLAP
150 mw
1018
SMALL OVERLAP
75 mw
t
1052
1054
1055
1056
1050
1011

FIG. 10

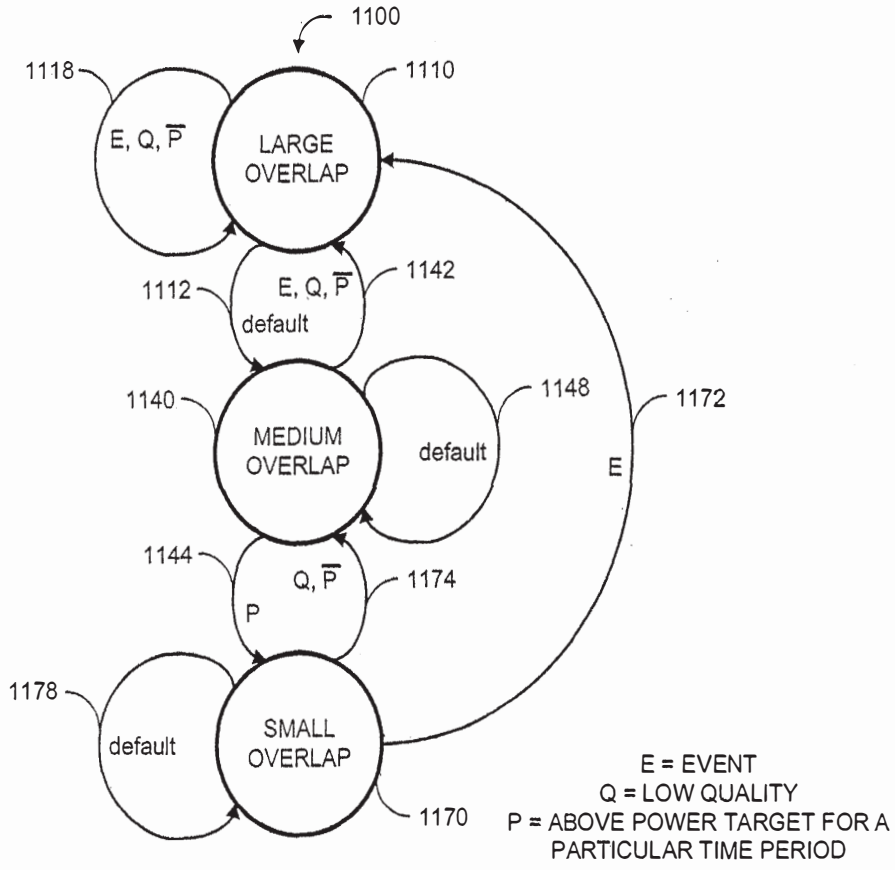
1100
1118
1110
E, Q, $\overline{P}$
LARGE OVERLAP
1112
E, Q, $\overline{P}$
default
1142
1140
MEDIUM OVERLAP
default
1148
1172
E
1144
Q, $\overline{P}$
P
1174
1178
default
SMALL OVERLAP
1170
E = EVENT
Q = LOW QUALITY
P = ABOVE POWER TARGET FOR A PARTICULAR TIME PERIOD

FIG. 11

DECLARATION - USA PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled LOW POWER PULSE OXIMETER; the specification of which was filed on **June 26, 2002** as Application Serial No. **10/184,028**.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above;

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, § 1.56;

I hereby claim the benefit under Title 35, United States Codes § 119(e) of any United States provisional application(s) listed below.

Application No.: 60/302,564 Filing Date: July 2, 2001

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful, false statements may jeopardize the validity of the application or any patent issued thereon.

Full name of sole inventor: **Ammar Al-Ali**

Inventor's signature _____

Date 9/26/2002

Residence: **10880 Phillips Street, Tustin, CA 92782**

Citizenship: **United States of America**

Post Office Address: **same as above**

Send Correspondence To:
KNOBBE, MARTENS, OLSON & BEAR, LLP
Customer No. 20,995

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Ammar Al-Ali
App. No.	:	10/184,028
Filed	:	June 26, 2002
For	:	LOW POWER PULSE OXIMETER
Examiner	:	Unknown

ESTABLISHMENT OF RIGHT OF ASSIGNEE TO TAKE ACTION
AND
REVOCATION AND POWER OF ATTORNEY

United States Patent and Trademark Office
P.O. Box 2327
Arlington, VA 22202

Dear Sir:

The undersigned is empowered to act on behalf of the assignee below (the "Assignee"). A true copy of the original Assignment of the above-captioned application from the Inventor to the Assignee is attached hereto. This Assignment represents the entire chain of title of this invention from the Inventor to the Assignee.

I declare that all statements made herein are true, and that all statements made upon information and belief are believed to be true, and further, that these statements were made with the knowledge that willful, false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that willful, false statements may jeopardize the validity of the application, or any patent issuing thereon.

The undersigned hereby revokes any previous powers of attorney in the subject application, and hereby appoints the registrants of Knobbe, Martens, Olson & Bear, LLP, 2040 Main Street, Fourteenth Floor, Irvine, California 92614, Telephone (949) 760-0404, **Customer No. 20,995**, as its attorneys with full power of substitution and revocation to prosecute this application and to transact all business in the U.S.

App. No. : 10/184,032
Filed : June 26, 2002

Patent and Trademark Office connected herewith. This appointment is to be to the exclusion of the inventor and his attorney(s) in accordance with the provisions of 37 C.F.R. § 3.71.

Please use **Customer No. 20,995** for all communications.

Masimo Corporation

Dated: 9/26/02

By: Mass. E
Massi E. Kiani

Title: Chairman ~~President~~ and CEO

Address: 2852 Kelvin Avenue
Irvine, CA 92614

H:\DOCS\JMG\JMG-3774.DOC
092602

Not for Recordation

Application No.: 10/164,028
Filing Date: June 26, 2002

PATENT
Client Code: MASIMO.285A
Page 1

ASSIGNMENT

WHEREAS, I, Ammar Al-Ali, a citizen of the United States of America, residing at 10880 Phillips Street, Tustin, CA 92782, have invented certain new and useful improvements in a LOW POWER PULSE OXIMETER for which I have filed an application for Letters Patent in the United States, U.S. Application No. 10/164,028, filed on June 26, 2002;

AND WHEREAS, Masimo Corporation (hereinafter "ASSIGNEE"), a Delaware Corporation, with its principal place of business at 2852 Kelvin Avenue, Irvine, CA 92614, desires to acquire the entire right, title, and interest in and to the said Improvements and the said Application:

NOW, THEREFORE, in consideration of the sum of One Dollar ($1.00) to me in hand paid, and other good and valuable consideration, the receipt of which is hereby acknowledged, I, the said inventor, do hereby acknowledge that I have sold, assigned, transferred and set over, and by these presents do hereby sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, legal representatives and assigns, the entire right, title, and interest throughout the world in, to and under the said improvements, and the said application and all provisional applications relating thereto, and all divisions, renewals and continuations thereof, and all Letters Patent of the United States which may be granted thereon and all reissues and extensions thereof, and all rights of priority under International Conventions and applications for Letters Patent which may hereafter be filed for said improvements in any country or countries foreign to the United States, and all Letters Patent which may be granted for said improvements in any country or countries foreign to the United States and all extensions, renewals and reissues thereof; and I hereby authorize and request the Commissioner of Patents of the United States, and any Official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to the said ASSIGNEE, its successors, legal representatives and assigns, in accordance with the terms of this instrument.

AND I HEREBY covenant and agree that I will communicate to the said ASSIGNEE, its successors, legal representatives and assigns, any facts known to me respecting said improvements, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuing and reissue applications, make all rightful oaths and generally do everything possible to aid the said ASSIGNEE, its successors, legal representatives and assigns, to obtain and enforce proper patent protection for said improvements in all countries.

IN TESTIMONY WHEREOF, I hereunto set my hand and seal this 26th day of September, 2002.

[signature]
Ammar Al-Ali

STATE OF California
COUNTY OF Orange } ss.

On Sept 26, 2002, before me, Valerie L. Bignoche, personally appeared Ammar Al-Ali personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to the within instrument, and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

[SEAL]

[signature]
Notary Signature

H:\DOCS\JMG\JMG-3729.DOC
091802

Notary Public – California
Orange County

Not for Recordation

PTO/SB/06 (12-04)

11/13/07

Approved for use through 7/31/2006. OMB 0651-0032

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PATENT APPLICATION FEE DETERMINATION RECORD
Substitute for Form PTO-875

Application or Docket Number: **11/939,519**

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	310
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	510
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	210
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*	X 25=		OR	X 50=	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	X 105=			X 210=	
APPLICATION SIZE FEE (37 CFR 1.16(s))							
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))			N/A			N/A	
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	1030

APPLICATION AS AMENDED – PART II

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDI-TIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDI-TIONAL FEE ($)
AMENDMENT A	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDI-TIONAL FEE ($)	OR	RATE ($)	ADDI-TIONAL FEE ($)
AMENDMENT B	Total (37 CFR 1.16(i))	*	Minus	**	=	x =		OR	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =		OR	x =	
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))					N/A		OR	N/A	
						TOTAL ADD'T FEE		OR	TOTAL ADD'T FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 11/939,519	Filing Date 11/13/2007	☐ To be Mailed

APPLICATION AS FILED – PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY ☐ RATE ($)	SMALL ENTITY ☐ FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	16 minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/PEGGY s. YARBOROUGH/

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2

CONFIRMATION NO. 6131

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA92614

Date Mailed. 12/10/2007

NOTICE OF NEW OR REVISED PROJECTED PUBLICATION DATE

The above-identified application has a new or revised projected publication date. The current projected publication date for this application is 03/13/2008. If this is a new projected publication date (there was no previous projected publication date), the application has been cleared by Licensing & Review or a secrecy order has been rescinded and the application is now in the publication queue.

If this is a revised projected publication date (one that is different from a previously communicated projected publication date), the publication date has been revised due to processing delays in the USPTO or the abandonment and subsequent revival of an application. The application is anticipated to be published on a date that is more than six weeks different from the originally-projected publication date.

More detailed publication information is available through the private side of Patent Application Information Retrieval (PAIR) System. The direct link to access PAIR is currently http://pair.uspto.gov. Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Questions relating to this Notice should be directed to the Office of Patent Publication at 1-888-786-0101.

PART 1 - ATTORNEY/APPLICANT COPY

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
11/939,519	11/13/2007	3768	1030	MASIMO.285C2	16	1

CONFIRMATION NO. 6131

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

FILING RECEIPT

OC000000027149875

Date Mailed: 12/10/2007

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Ammar Al-Ali, Tustin, CA;

Power of Attorney: The patent practitioners associated with Customer Number 20995

Domestic Priority data as claimed by applicant

This application is a CON of 10/785,573 02/24/2004 PAT 7,295,866
which is a CON of 10/184,028 06/26/2002 PAT 6,697,658
which claims benefit of 60/302,564 07/02/2001

Foreign Applications

If Required, Foreign Filing License Granted: 12/06/2007

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 11/939,519**

Projected Publication Date: 03/13/2008

Non-Publication Request: No

Early Publication Request: No

Title

LOW POWER PULSE OXIMETER

Preliminary Class

600

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at http://www.uspto.gov/web/offices/pac/doc/general/index.html.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, http://www.stopfakes.gov. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

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This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

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NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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www.uspto.gov

APPLICATION NUMBER	FILING OR 371(c) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2

CONFIRMATION NO. 6131

20995
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA92614

Title: LOW POWER PULSE OXIMETER

Publication No. US-2008-0064936-A1
Publication Date: 03/13/2008

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently http://www.uspto.gov/patft/.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Office of Public Records. The Office of Public Records can be reached by telephone at (703) 308-9726 or (800) 972-6382, by facsimile at (703) 305-8759, by mail addressed to the United States Patent and Trademark Office, Office of Public Records, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently http://pair.uspto.gov/. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

Further assistance in electronically accessing the publication, or about PAIR, is available by calling the Patent Electronic Business Center at 1-866-217-9197.

Pre-Grant Publication Division, 703-605-4283

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www.uspto.gov

APPLICATION NUMBER	PATENT NUMBER	GROUP ART UNIT	FILE WRAPPER LOCATION
11/939,519		3777	

Correspondence Address/Fee Address Change

The following fields have been set to Customer Number 64735 on 08/02/2011

- **Correspondence Address**
- **Maintenance Fee Address**

The address of record for Customer Number 64735 is:

64735
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 11/939,519	Filing Date 11/13/2007	☒ To be Mailed

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X $ =		OR	X $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X $ =			X $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT **01/09/2012**

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	SMALL ENTITY ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	OTHER THAN SMALL ENTITY ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	* 24	Minus	** 27	= 0	X $ =		OR	X $60=	0
Independent (37 CFR 1.16(h))	* 6	Minus	***3	= 3	X $ =		OR	X $250=	750
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**750**

AMENDMENT

	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
Total (37 CFR 1.16(i))	*	Minus	**	=	X $ =		OR	X $ =	
Independent (37 CFR 1.16(h))	*	Minus	***	=	X $ =		OR	X $ =	
☐ Application Size Fee (37 CFR 1.16(s))									
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
					TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/LISA THOMAS/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2	6131

64735 7590 08/30/2012

KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER	
LIU, CHU CHUAN	

ART UNIT	PAPER NUMBER
3777	

NOTIFICATION DATE	DELIVERY MODE
08/30/2012	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jayna.cartee@knobbe.com
efiling@knobbe.com

Office Action Summary	Application No.	Applicant(s)	
	11/939,519	AL-ALI, AMMAR	
	Examiner	Art Unit	
	CHU CHUAN (JJ) LIU	3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *13 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-16* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-16* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *13 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/13/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. ____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 10-12 are objected to because of the following informalities: In regard to claims 10-12, “comprises” should be set forth “comprise”. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 8-12, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Swedlow et al. (USPN 5,924,979 – applicant cited). In regard to claim 1, Swedlow discloses a method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor (abstract and Col 2 line 66 - Col 4 line 8) the method comprising: continuously operating a patient monitor at a lower power consumption level (sleep mode, Col 2 line 66 - Col 3 line 15; and Col 4 lines 60-64) to determine measurement values for one or more physiological parameters of a patient (pulse, heart rate, and oxygen saturation, Fig. 2 and Col 3 lines 16-57; pulse is detected during sleep mode, Col 7 lines 25-35); comparing processing characteristics to a predetermined threshold (predetermined period of time, Col 7 lines 25-35; manual or remotely, Col 7 line 49 – Col 8 line 21; RAM is nearly full, Col 9 lines

19-36; sensor is attached, Fig. 2); and when said processing characteristics pass said threshold (Col 7 lines 25-35), transitioning to continuously operating said patient monitor at a higher power consumption level (pulse search and then oxygen saturation detection; Col 7 lines 25-35).

In regard to claim 8, Swedlow discloses during said operating at said higher power consumption level, monitoring when said processing characteristics recedes from said threshold (detected pulse and oxygen saturation are stable, Col 5 line 58 – Col 6 line 29; Fig. 2); and when receded, transitioning to continuously operating said patient monitor at said lower power consumption level (Col 3 lines 1-57; Fig. 2; and Col 6 lines 19-29).

In regard to claim 9, Swedlow discloses said processing characteristics comprise signal characteristics from one or more light sensitive detectors (pulse oximeter, Fig. 1 and Col 3 lines 1-15; Col 4 lines 27-43).

In regard to claim 10, Swedlow discloses said signal characteristics comprise signal strength (Col 3 lines 49-55; Col 5 lines 41-57; and Col 7 lines 25-35. It is known that pulse detection is corresponding to the signal strength).

In regard to claim 11, Swedlow discloses said signal characteristics comprise a presence of noise (Col 7 lines 36-47).

In regard to claim 12, Swedlow discloses said signal characteristics comprise a presence of motion induced noise (Col 7 lines 36-47).

In regard to claim 14, Swedlow discloses said processing characteristics include an override condition (Col 5 line 58 – Col 6 line 29; Col 7 lines 49-65).

In regard to claim 15, Swedlow discloses said override condition comprises measurements during a critical care environment (heart rate and oxygen saturation varying rate; and different limit, Col 5 line 58 – Col 6 line 29. The method can be performed in different care environments).

In regard to claim 16, Swedlow discloses said override condition comprises one or more monitored parameters exhibiting predefined behavior (Col 5 line 58 – Col 6 line 29; Col 7 lines 49-65).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swedlow as applied to claim 1 above, and further in view of Sarussi, (WO 99/63883 – applicant cited). In regard to claims 2 and 3, Swedlow discloses the power levels of the drive circuit can be controlled (Col 4 lines 44-54) but not specifically discloses said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor and said reducing activation comprises reducing a duty cycle of said sensor. Sarussi teaches an oximeter with energy conservation that is achieved by reducing the operational duty cycle of the light source (page 32). It is known that reducing a duty cycle of light source can better conserve energy. Therefore,

it would have been obvious to one with ordinary skill in the art at the time of the invention was made to modify the monitor (Swedlow) to incorporate reducing a duty cycle of the sensor (Sarussi) in order to better conserve power of the monitor.

In regard to claim 4, Swedlow as modified by Sarussi discloses said attached sensor comprises an optical sensor configured to detect emitted light attenuated by body tissue of said patient (oximeter, Swedlow and Sarussi).

6. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Swedlow as applied to claim 1 above, and further in view of Minoz (USPN 6,115,622). In regard to claims 5-7, Swedlow discloses all the claimed limitation except said continuously operating at said lower power consumption level comprises reducing an amount of processing by a signal processor; said reducing comprises processing less data; and said processing less data comprises reducing an overlap in data blocks being processed. Minoz teaches a method of conserving battery charge in a battery-powered medical recorder comprising using different sampling rate at different signal channels (Figs. 3A-C and 4-7 and claim 1) which reduces an amount/ data of processing by a signal processor (different sample rates and associated data points, Fig. 3A) and an overlap in data blocks being processed (Fig. 3B). It is known that reducing the data to be processed by a signal processor can better preserve the power. Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention was made to modify the monitor (Swedlow) to incorporate the energy conservation method (Minoz) in order to better conserve the energy of the monitor.

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1 and 13-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 10 and of U.S. Patent No. 6,697,658. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 10 of '658 recites a pulse oximetry method for switching the pulse oximeter in a higher power level and a lower power level based on an override related to a measure of signal quality.

9. Claims 1 and 13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 10 and 17 of U.S. Patent No. 7,295,866. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 10 and 17 recite a pulse oximeter capable of varying its power consumption which can be selected between a first and a second power consumption modes based on at least an estimate of power consumption as compared to a target power consumption.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHU CHUAN (JJ) LIU whose telephone number is (571)270-5507. The examiner can normally be reached on M-TH 8:00am~4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tse Chen can be reached on (571)272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chu Chuan Liu/
Examiner, Art Unit 3777

/Eric F Winakur/
Primary Examiner, Art Unit 3777

Notice of References Cited	Application/Control No. 11/939,519	Applicant(s)/Patent Under Reexamination AL-ALI, AMMAR	
	Examiner CHU CHUAN (JJ) LIU	Art Unit 3777	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,115,622	09-2000	Minoz, Alain	600/309
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11939519	AL-ALI, AMMAR
	Examiner	Art Unit
	CHU CHUAN (JJ) LIU	3777

SEARCHED

Class	Subclass	Date	Examiner
600	309, 310, 322, 323, 324, 333, 473, 476	08/21/2012	CCL
356	41	08/21/2012	CCL

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Name Search (PALM and EAST)	08/20/2012	CCL
EAST Search (TEXT, USPGPUB, USPAT) See Search History	08/21/2012	CCL
Google NPL Search	08/21/2012	CCL

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner

/CHU CHUAN (JJ) LIU/ Examiner.Art Unit 3777	

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11939519	AL-ALI, AMMAR
	Examiner	**Art Unit**
	CHU CHUAN (JJ) LIU	3777

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

CLAIM		DATE								
Final	Original	08/21/2012								
	1	✓								
	2	✓								
	3	✓								
	4	✓								
	5	✓								
	6	✓								
	7	✓								
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	9	✓								
	10	✓								
	11	✓								
	12	✓								
	13	✓								
	14	✓								
	15	✓								
	16	✓								

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L3	864	estimate with power with (conservation consumption) and battery	US-PGPUB; USPAT	OR	ON	2012/08/21 09:09
L4	5	3 and 600/310-344.ccls.	US-PGPUB; USPAT	OR	ON	2012/08/21 09:09
L5	43	3 and "600".clas.	US-PGPUB; USPAT	OR	ON	2012/08/21 09:09
S1	1	(11/939519).APP.	US-PGPUB; USPAT	OR	OFF	2012/08/20 06:50
S2	205	(Al-Ali near2 Ammar).in. and "600".clas.	US-PGPUB; USPAT	OR	ON	2012/08/20 06:51
S3	2	(("7295866") or ("6697658")).PN.	US-PGPUB; USPAT	OR	OFF	2012/08/20 06:52
S5	2	S3 and (power high$2 low$2).clm.	US-PGPUB; USPAT	OR	ON	2012/08/20 08:18
S6	0	S5 and threshold.clm.	US-PGPUB; USPAT	OR	ON	2012/08/20 08:23
S7	1	S5 and average.clm.	US-PGPUB; USPAT	OR	ON	2012/08/20 08:24
S17	191	("20050234317" | "4960128" | "4964408" | "5041187" | "5069213" | "5163438" | "5337744" | "5341805" | "5377676" | "5431170" | "5452717" | "5456252" | "5482036" | "5490505" | "5494043" | "5533511" | "5561275" | "5562002" | "5590649" | "5602924" | "5632272" | "5638816" | "5638818" | "5645440" | "5685299" | "5743262" | "5758644" | "5760910" | "5769785" | "5782757" | "5785659" | "5791347" | "5810734" | "5823950" | "5830131" | "5833618" | "5860919" | "5890929" | "5904654" | "5919134" | "5924979" | "5934925" | "5940182" | "5995855" | "5997343" | "6002952" | "6011986" | "6027452" | "6036642" | "6045509" | "6067462" | "6081735" | "6088607" | "6110522" | "6124597" | "6144868" | "6151516" | "6152754" | "6157850" | "6165005" | "6184521" | "6206830" | "6229856" | "6236872" | "6241683" | "6256523" | "6263222" | "6278522" | "6280213"	US-PGPUB; USPAT	OR	ON	2012/08/20 09:14

		"6285896" | "6321100" | "6323609" | "6334065" | "6343224" | "6349228" | "6360114" | "6368283" | "6377921" | "6388240" | "6397091" | "6430525" | "6463311" | "6470199" | "6501975" | "6505059" | "6515273" | "6519487" | "6525386" | "6526300" | "6541756" | "6542764" | "6580086" | "6584336" | "6595316" | "6597932" | "6597933" | "6606511" | "6632181" | "6639668" | "6640116" | "6643530" | "6650917" | "6654624" | "6658276" | "6661161" | "6671531" | "6678543" | "6684090" | "6684091" | "6697656" | "6697657" | "6697658" | "6699194" | "6714804" | "6721582" | "6721585" | "6725075" | "6728560" | "6735459" | "6745060" | "6760607" | "6770028" | "6771994" | "6792300" | "6813511" | "6816741" | "6822564" | "6826419" | "6830711" | "6850787" | "6850788" | "6852083" | "6861639" | "6898452" | "6920345" | "6931268" | "6934570" | "6939305" | "6943348" | "6950687" | "6961598" | "6970792" | "6979812" | "6985764" | "6993371" | "6996427" | "6999904" | "7003338" | "7003339" | "7015451" | "7024233" | "7027849" | "7030749" | "7039449" | "7041060" | "7044918" | "7067893" | "7096052" | "7096054" | "7132641" | "7142901" | "7149561" | "7186966" | "7190261" | "7215984" | "7215986" | "7221971" | "7225006" | "7225007" | "7239905" | "7245953" | "7254431" | "7254433" | "7254434" | "7272425" | "7274955" | "7280858" | "7289835" | "7292883" | "7295866" | "D353195" | "D353196" | "D359546" | "D361840" | "D362063" | "D363120" | "D393830" | "D554263" | "RE38476" | "RE38492" | "RE39672").PN.				
S18	30	S17 and (high$2 low$2) with power	US-PGPUB; USPAT	OR	ON	2012/08/20 09:14
S19	16	S17 and (high$2 and low$2) with power	US-PGPUB; USPAT	OR	ON	2012/08/20 09:15
S21	110150	power with consumption and sensor	US-PGPUB; USPAT	OR	ON	2012/08/20 09:18
S22	34362	S21 and threshold and compar$4	US-PGPUB; USPAT	OR	ON	2012/08/20 09:27
S23	5402	S22 and higher and lower with consumption	US-PGPUB; USPAT	OR	ON	2012/08/20 09:27
S24	123	S23 and "600".clas.	US-PGPUB; USPAT	OR	ON	2012/08/20 09:27
S25	7	S24 and 600/310-344.ccls.	US-PGPUB; USPAT	OR	ON	2012/08/20 09:29

S26	22	winakur.xp. and medtronic.as. and memory	US-PGPUB; USPAT	OR	ON	2012/08/20 10:43
S27	1	("5924979").PN.	US-PGPUB; USPAT	OR	OFF	2012/08/20 10:50
S28	1	("6553242").PN.	US-PGPUB; USPAT	OR	OFF	2012/08/20 11:04
S29	1	("20080262326").PN.	US-PGPUB; USPAT	OR	OFF	2012/08/20 11:20

EAST Search History (Interference)

< This search history is empty>

8/21/2012 9:40:46 AM
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 1 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	1	7,295,866	11/2007	Al-Ali	
	2	7,292,883	11/2007	De Felice et al.	
	3	7,289,835	10/2007	Mansfield et al.	
	4	D554,263	10/2007	Al-Ali	
	5	7,280,858	10/2007	Al-Ali et al.	
	6	7,274,955	09/2007	Kiani et al.	
	7	7,272,425	09/2007	Al-Ali	
	8	7,254,434	08/2007	Schulz et al.	
	9	7,254,433	08/2007	Diab et al.	
	10	7,254,431	08/2007	Al-Ali	
	11	7,245,953	07/2007	Parker	
	12	7,239,905	07/2007	Kiani-Azarbayjany et al.	
	13	RE39,672	06/2007	Shehada et al.	
	14	7,225,007	05/2007	Al-Ali	
	15	7,225,006	05/2007	Al-Ali et al.	
	16	7,221,971	05/2007	Diab	
	17	7,215,986	05/2007	Diab	
	18	7,215,984	05/2007	Diab	
	19	7,190,261	03/2007	Al-Ali	
	20	7,186,966	03/2007	Al-Ali	
	21	7,149,561	12/2006	Diab	
	22	7,142,901	11/2006	Kiani et al.	
	23	7,132,641	11/2006	Schulz et al.	
	24	7,096,054	08/2006	Abdul-Hafiz et al.	
	25	7,096,052	08/2006	Mason et al.	
	26	7,067,893	06/2006	Mills et al.	
	27	7,044,918	05/2006	Diab	
	28	7,041,060	05/2006	Flaherty et al	
	29	7,039,449	05/2006	Al-Ali	

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /CCL/

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 2 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	30	7,030,749	04/2006	Al-Ali	
	31	7,027,849	04/2006	Al-Ali	
	32	7,024,233	04/2006	Ali et al.	
	33	7,015,451	02/2006	Dalke et al.	
	34	7,003,339	02/2006	Diab et al.	
	35	7,003,338	02/2006	Weber et al.	
	36	6,999,904	02/2006	Weber et al.	
	37	6,996,427	02/2006	Ali et al.	
	38	6,993,371	01/2006	Kiani et al.	
	39	6,985,764	01/2006	Mason et al.	
	40	6,979,812	12/2005	Al-Ali	
	41	6,970,792	11/2005	Diab	
	42	6,961,598	11/2005	Diab	
	43	2005-0234317 A1	10/2005	Kiani	
	44	6,950,687	09/2005	Al-Ali	
	45	6,943,348	09/2005	Coffin IV	
	46	6,939,305	09/2005	Flaherty et al.	
	47	6,934,570	08/2005	Kiani et al.	
	48	6,931,268	08/2005	Kiani-Azarbayjany et al.	
	49	6,920,345	07/2005	Al-Ali et al.	
	50	6,898,452	05/2005	Al-Ali et al.	
	51	6,861,639	03/2005	Al-Ali	
	52	6,852,083	02/2005	Caro et al.	
	53	6,850,788	02/2005	Al-Ali	
	54	6,850,787	02/2005	Weber et al.	
	55	6,830,711	12/2004	Mills et al.	
	56	6,826,419	11/2004	Diab et al.	
	57	6,822,564	11/2004	Al-Ali	
	58	6,816,741	11/2004	Diab	

Examiner Signature	Date Considered

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 3 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	6,813,511	11/2004	Diab et al.	
	60	6,792,300	09/2004	Diab et al.	
	61	6,771,994	08/2004	Kiani et al.	
	62	6,770,028	08/2004	Ali et al.	
	63	6,760,607	07/2004	Al-Ali	
	64	6,745,060	06/2004	Diab et al.	
	65	6,735,459	05/2004	Parker	
	66	6,728,560	04/2004	Kollias, et al.	
	67	6,725,075	04/2004	Al-Ali	
	68	6,721,585	04/2004	Parker	
	69	6,721,582	04/2004	Trepagnier, et al.	
	70	RE38,492	04/2004	Diab et al.	
	71	6,714,804	03/2004	Al-Ali et al.	
	72	RE38,476	03/2004	Diab et al.	
	73	6,699,194	03/2004	Diab et al.	
	74	6,697,658	02/2004	Al-Ali	
	75	6,697,657	02/2004	Shehada, et al.	
	76	6,697,656	02/2004	Al-Ali	
	77	6,684,091	01/2004	Parker	
	78	6,684,090	01/2004	Ali et al.	
	79	6,678,543	01/2004	Diab et al.	
	80	6,671,531	12/2003	Al-Ali et al.	
	81	6,661,161	12/2003	Lanzo et al.	
	82	6,658,276	12/2003	Diab et al.	
	83	6,654,624	11/2003	Diab et al.	
	84	6,650,917	11/2003	Diab et al.	
	85	6,643,530	11/2003	Diab et al.	
	86	6,640,116	10/2003	Diab	
	87	6,639,668	10/2003	Trepagnier, Pierre	

Examiner Signature	Date Considered
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 4 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	88	6,632,181	10/2003	Flaherty et al.	
	89	6,606,511	08/2003	Ali et al.	
	90	6,597,933	07/2003	Kiani et al.	
	91	6,597,932	07/2003	Tian et al.	
	92	6,595,316	07/2003	Cybulski et al.	
	93	6,584,336	06/2003	Ali et al.	
	94	6,580,086	06/2003	Schulz et al.	
	95	6,542,764	04/2003	Al-Ali et al.	
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	98	6,525,386	02/2003	Mills et al.	
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	102	6,501,975	12/2002	Diab et al.	
	103	6,470,199	10/2002	Kopotic et al.	
	104	6,463,311	10/2002	Diab	
	105	6,430,525	08/2002	Weber et al.	
	106	6,397,091	05/2002	Diab et al.	
	107	6,388,240	05/2002	Schulz et al.	
	108	6,377,829	04/2002	Al-Ali	
	109	6,371,921	04/2002	Caro et al.	
	110	6,368,283	04/2002	Xu, et al.	
	111	6,360,114	03/2002	Diab et al.	
	112	6,349,228	02/2002	Kiani et al.	
	113	6,343,224	01/2002	Parker	
	114	6,334,065	12/2001	Al-Ali et al.	
	115	6,321,100	11/2001	Parker	
	116	6,285,896	09/2001	Tobler et al.	

Examiner Signature	Date Considered

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 5 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	117	6,280,213	08/2001	Tobler et al.	
	118	6,278,522	08/2001	Lepper, Jr. et al.	
	119	6,263,222	07/2001	Diab et al.	
	120	6,256,523	07/2001	Diab et al.	
	121	6,241,683	06/2001	Macklem, et al.	
	122	6,236,872	05/2001	Diab et al.	
	123	6,232,609	05/2001	Snyder, et al.	
	124	6,229,856	05/2001	Diab et al.	
	125	6,206,830	03/2001	Diab et al.	
	126	6,184,521	02/2001	Coffin, IV et al.	
	127	6,165,005	12/2000	Mills et al.	
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	129	6,152,754	11/2000	Gerhardt et al.	
	130	6,151,516	11/2000	Kiani-Azarbayjany et al.	
	131	6,144,868	11/2000	Parker	
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	133	6,110,522	08/2000	Lepper, Jr. et al.	
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	137	6,045,509	04/2000	Caro et al.	
	138	6,036,642	03/2000	Diab et al.	
	139	6,027,452	02/2000	Flaherty et al.	
	140	6,011,986	01/2000	Diab et al.	
	141	6,002,952	12/1999	Diab et al.	
	142	5,997,343	12/1999	Mills et al.	
	143	5,995,855	11/1999	Kiani et al.	
	144	5,940,182	08/1999	Lepper, Jr. et al.	
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Examiner Signature	Date Considered
***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 6 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	146	5,924,979	07/1999	Swedlow et al.	
	147	5,919,134	07/1999	Diab	
	148	5,904,654	05/1999	Wohltmann et al.	
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	151	5,833,618	11/1998	Caro et al.	
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	153	5,823,950	10/1998	Diab et al.	
	154	5,810,734	09/1998	Caro et al.	
	155	5,791,347	08/1998	Flaherty et al.	
	156	5,785,659	07/1998	Caro et al.	
	157	5,782,757	07/1998	Diab et al.	
	158	5,769,785	06/1998	Diab et al.	
	159	5,760,910	06/1998	Lepper, Jr. et al.	
	160	5,758,644	06/1998	Diab et al.	
	161	5,743,262	04/1998	Lepper, Jr. et al.	
	162	Des. 393,830	04/1998	Tobler et al.	
	163	5,685,299	11/1997	Diab et al.	
	164	5,645,440	07/1997	Tobler et al.	
	165	5,638,818	06/1997	Diab et al.	
	166	5,638,816	06/1997	Kiani-Azarbayjany et al.	
	167	5,632,272	05/1997	Diab et al.	
	168	5,602,924	02/1997	Durand et al.	
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	170	5,562,002	10/1986	Lalin	
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	172	5,533,511	07/1996	Kaspari et al.	
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Examiner Signature	Date Considered
***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.*	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 7 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	175	5,482,036	01/1996	Diab et al.	
	176	D363,120	10/1995	Savage et al.	
	177	5,456,252	10/1995	Vari, et al.	
	178	5,452,717	09/1995	Branigan et al.	
	179	D362,063	09/1995	Savage et al.	
	180	D361,840	08/1995	Savage et al.	
	181	D359,546	06/1995	Savage, et al.	
	182	5,431,170	07/1995	Mathews	
	183	D353,196	12/1994	Savage et al.	
	184	D353,195	12/1994	Savage et al.	
	185	5,377,676	01/1995	Vari, et al.	
	186	5,341,805	08/1994	Stavridi, et al.	
	187	5,337,744	08/1994	Branigan	
	188	5,163,438	11/1992	Gordon et al.	
	189	5,069,213	12/1991	Polczynski	
	190	5,041,187	08/1991	Hink et al.	
	191	4,964,408	10/1990	Hink et al.	
	192	4,960,128	10/1990	Gordon et al.	

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No.	Foreign Patent Document *Country Code-Number-Kind Code* Example: JP 1234567 A1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear	T[1]
	193	EP 0 872 210 A1	10/1998	European		
	194	WO 99/63883	12/1999	PCT		

Examiner Signature	Date Considered
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PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 8 OF 8	Attorney Docket No.	MASIMO.285C2

NON PATENT LITERATURE DOCUMENTS			
Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T[1]
	195	PCT International Search Report, App. No. PCT/US02/20675, App. Date: 06/28/2002, 4 pages.	

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Examiner Signature	/Chu Chuan Liu/	Date Considered	08/21/2012

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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MASIMO.285C2 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Ammar Al-Ali
App. No.	:	11/939,519
Filed	:	November 13, 2007
For	:	LOW POWER PULSE OXIMETER
Examiner	:	Chu Chuan Liu
Art Unit	:	3777
Conf No.	:	6131

CERTIFICATE OF EFS WEB TRANSMISSION

I hereby certify that this correspondence, and any other attachment noted on the automated Acknowledgement Receipt, is being transmitted from within the Pacific Time zone to the Commissioner for Patents via the EFS Web server on:

November 30, 2012
(Date)

/John M. Grover/
John M. Grover, Reg. No. 42,610

AMENDMENT AND RESPONSE TO OFFICE ACTION DATED AUGUST 30, 2012

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the pending Office Action, the Applicant respectfully requests the above-identified application be amended as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 5 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions thereof. Changes are shown below in highlighted form, where insertions appear as underlined text (e.g., insertions) while deletions appear as strikethrough text (e.g., ~~deletions~~) or double brackets (e.g., [[~~deletions~~]]).

1. (Original) A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:

continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;

comparing processing characteristics to a predetermined threshold; and

when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level.

2. (Original) The method of Claim 1, wherein said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor.

3. (Original) The method of Claim 2, wherein said reducing activation comprises reducing a duty cycle of said sensor.

4. (Original) The method of Claim 2, wherein said attached sensor comprises an optical sensor configured to detect emitted light attenuated by body tissue of said patient.

5. (Original) The method of Claim 1, wherein said continuously operating at said lower power consumption level comprises reducing an amount of processing by a signal processor.

6. (Original) The method of Claim 5, wherein said reducing comprises processing less data.

7. (Original) The method of Claim 6, wherein said processing less data comprises reducing an overlap in data blocks being processed.

8. (Original) The method of Claim 1, wherein during said operating at said higher power consumption level, monitoring when said processing characteristics recedes from said threshold; and when receded, transitioning to continuously operating said patient monitor at said lower power consumption level.

9. (Original) The method of Claim 1, wherein said processing characteristics comprise signal characteristics from one or more light sensitive detectors.

10. (Currently Amended) The method of Claim 9, wherein said signal characteristics comprise[[s]] signal strength.

11. (Currently Amended) The method of Claim 9, wherein said signal characteristics comprise[[s]] a presence of noise.

12. (Currently Amended) The method of Claim 9, wherein said signal characteristics comprise[[s]] a presence of motion induced noise.

13. (Original) The method of Claim 1, wherein said processing characteristics include determining an estimate of current power consumption and comparing said estimate with a target power consumption.

14. (Original) The method of Claim 1, wherein said processing characteristics include an override condition.

15. (Original) The method of Claim 14, wherein said override condition comprises measurements during a critical care environment.

16. (Original) The method of Claim 14, wherein said override condition comprises one or more monitored parameters exhibiting predefined behavior.

17. (New) A patient monitor configured to manage power consumption during continuous patient monitoring by adjusting its behavior, the monitor comprising:

an input configured to receive at least one signal responsive to light detected after attenuation by body tissue of a patient by a noninvasive sensor; and

one or more processors continuously operating at a lower power consumption level to determine measurement values for one or more

physiological parameters of said patient, said processors comparing processing characteristics to a predetermined threshold, and when said processing characteristics pass said threshold, said processors transitioning to continuously operating at a higher power consumption level.

18. (New) The monitor of Claim 17, wherein processors reduce activation of an attached sensor.

19. (New) The monitor of Claim 18, wherein said processors reduce a duty cycle of said sensor.

20. (New) The monitor of Claim 17, wherein said processors reduce an amount of processing by a signal processor.

21. (New) The monitor of Claim 20, wherein said processors reduce an overlap in data blocks being processed.

22. (New) The monitor of Claim 17, wherein during said operating at said higher power consumption level, said processors monitors when said processing characteristics recedes from said threshold; and when receded, said processors transition to continuously operating at said lower power consumption level.

23. (New) The monitor of Claim 17, wherein said processing characteristics comprise signal characteristics from one or more light sensitive detectors.

24. (New) The monitor of Claim 17, wherein said processing characteristics include determining an estimate of current power consumption and comparing said estimate with a target power consumption.

25. (New) The monitor of Claim 17, wherein said processing characteristics include an override condition.

26. (New) The monitor of Claim 25, wherein said override condition comprises measurements during a critical care environment.

27. (New) The monitor of Claim 25, wherein said override condition comprises one or more monitored parameters exhibiting predefined behavior.

REMARKS

The Applicants thank the Examiner for his careful and thoughtful examination of the present application. By way of summary, Claims 1-16 were pending in this application. In the present amendment, the Applicants added new claims 17-27. Accordingly, Claims 1-27 remain pending.

Claim Objections

The Office Action objected to Claims 10-12, specifically suggesting that the Applicants amend "comprises" to "comprise." The Applicants adopt the suggestion herein and submit that such amendments do not substantively change the scope of any of the claims.

Rejection Of Claims Under 35 U.S.C. § 102 (b)

The Office Action rejected Claims 1, 8-12 and 14-16[1] under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Pat. No. 5924979 issued to Swedlow et al. The Applicants respectfully traverses these rejections, the characterizations of the pending claims and the cited references and each and every implicit and/or explicit potential for reliance on Official Notice because Swedlow fails to identically teach every element of the claim. See M.P.E.P. § 2131 (stating that in order to anticipate a claim, a prior art reference must identically teach every element of the claim).

For example, Claim 1 recites, among other things:

> 1. (Original) A method of managing power consumption during continuous patient monitoring …, the method comprising:
> continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;
> comparing processing characteristics to a predetermined threshold; and

[1] In the listing of claims at the start of Para. 3 of the Office Action, the list ends with Claim 15. However, Claims 16 is included in the analysis on Page 4 and Claim 16 is not discussed elsewhere. Thus, the Applicants treat Claim 16 as belonging to the § 102 rejections.

> when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level.

In contrast, Swedlow discloses a "sleep mode" for a pulse oximeter. Such "sleep mode" technologies were directly addressed in the present application's development of the prior art. For example, paragraph 6 states:

> **[0006]** There are a number of disadvantages to applying consumer electronic sleep mode techniques to pulse oximetry. By definition, the pulse oximeter is not functioning during sleep mode. Unlike consumer electronics, pulse oximetry cannot afford to miss events, such as patient oxygen desaturation. Further, there is a trade-off between shorter but more frequent sleep periods to avoid a missed event and the increased processing overhead to power-up after each sleep period. Also, sleep mode techniques rely only on the output parameters to determine whether the pulse oximeter should be active or in sleep mode. Finally, the caregiver is given no indication of when the pulse oximeter outputs were last updated.

Thus, sleep mode technologies, including Swedlow, do not teach or suggest continuous determination of measurement values. Rather, sleep mode disclosures, including Swedlow, simply turn off various portions/electronics for predetermined periods of time. As stated, such technologies suffer from the trade-off of on one side, longer sleep periods that save power but potentially miss monitoring events, and on the other side, shorter sleep times designed to capture monitoring events but don't save much power.

The Office Action misreads Swedlow to teach continuous determination of measurement values during sleep mode. For example, the Office Action states:

> 3. Claims 1, 8-12, and 14-15 are rejected under 35 U.S.C. 1 02(b) as being anticipated by Swedlow et al. (USPN 5,924,979 - applicant cited). In regard to claim 1, Swedlow discloses a method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor (abstract and Col 2 line 66 - Col 4 line 8) the method comprising: continuously operating a patient monitor at a lower power consumption level (sleep mode, Col 2 line 66 - Col 3 line 15; and Col 4 lines 60-64) to determine measurement values for one or more physiological

> parameters of a patient (pulse, heart rate, and oxygen saturation, Fig. 2 and Col 3 lines 16-57; pulse is detected during sleep mode, Col 7 lines 25-35); \

However, Swedlow does not teach continuous monitoring. Rather, Swedlow teaches that the system may wake up, take a measurement, and then determine whether to fully return to monitoring (Fig. 2; col. 3:1-15), or continuous acquisition of raw data during sleep mode, without continuous determination of measurement values, then upon wakeup, accessing present values of the continuously stored raw data (col. 9:20-36). Clearly, the former is not continuous. The latter is additionally not continuous determination of measurement values because if problematic values are measured during sleep mode, they are stored in memory but not recognized as problematic by the monitor unless, *by mere coincidence*, the monitor does its periodic check using that particular data.

Looking specifically at the section of col. 7 cited by the Office Action, as reproduced below, pulse is not continuously monitored. Rather, lines 26-29 are discussing alarms used in normal oximeter operation (i.e., not in sleep mode), and lines 30-35 discuss shorting the sleep mode period to try to account for the non-sleep mode operation. It is noteworthy that the penultimate point or the paragraph is that an alarm will be generated if "no pulse is detected for 5 seconds after awakening … ." Thus, col. 7: 25-35 does not teach continuous determination of measurement values.

> In addition, other aspects of the pulse oximeter operation may be modified during a sleep mode. In particular, a pulse oximeter includes alarm limits, such as an alarm which may be generated if no pulse is detected for a predetermined period of time (such as 10 seconds). It may be desirable to impose a shorter limit upon awakening from a sleep mode since the condition may have been continuing undetected some time prior to the awakening. In one embodiment, the "no pulse" alarm will be generated if no pulse is detected for 5 seconds after awakening, as opposed to the normal 10 seconds.

Based on at least the foregoing, Swedlow fails to identically teach or suggest the independent claim limitations. Therefore, the Applicants respectfully request withdrawal of the rejection of the independent claims under 35 U.S.C. § 102.

Additionally, Swedlow fails to identically teach or suggest all the claim limitations for dependent Claims 8-12 and 14-16, based on their dependency and on the individual elements recited therein. For example, at least because Swedlow fails to teach continuous measurements, Swedlow fails to use of specific parameters in the determination of continuous measurements.

Rejection Of Claims Under 35 U.S.C. § 103

The Office Action rejected Claims 2-7 under 35 U.S.C. § 103 as being unpatentable over Swedlow, mentioned above, in view of W.O. Pub. No. 99/63883 to Sarussi, or in view of U.S. Pat. No. 6115622, issued to Minoz. The Applicants respectfully traverse these rejections, the characterizations of the pending claims and the cited references and each and every implicit and/or explicit potential for reliance on Official Notice because the Swedlow, alone or in combination with either Sarussi or Minoz fails to teach or suggest the elements of the claims. See M.P.E.P. § 2143 (stating that in order to establish a *prima facie* case of obviousness for a claim, the prior art references must teach or suggest all the claim limitations).

As stated in the foregoing, Swedlow fails to teach or suggest continuous determination of measurement values. Sarussi and Minoz are relied up for other teachings. Based on at least the foregoing, Swedlow, alone or in combination with either Sarussi or Minoz fails to teach or suggest all the independent claim limitations. Therefore, the Applicants respectfully request withdrawal of the rejection of the independent claims under 35 U.S.C. § 103.

Additionally, the Swedlow, alone or in combination with either Sarussi or Minoz fails to teach or suggest all the claim limitations for dependent Claims 2-7, based on their dependency and on the individual elements recited therein.

Rejection Of Claims Under Obviousness-Type Double Patenting

The Office Action rejected Claims 1 and 13-14 under the non-statutory, obviousness-type double patenting over Claim 10 of U.S. Pat. No. 6697658. The Applicants respectfully traverse these rejections, because Claim 10 of the '658 patent does not render obvious Claim 1 or dependent Claims 13-14.

Claim 10 of the '658 patent recites:

> 10. A low power pulse oximetry method comprising the steps of:
> detecting an override related to a measure of signal quality or a physiological measurement event;
> increasing said pulse oximeter to a higher power level when said override exists;
> reducing said pulse oximeter to a lower power level if said override does not exist;
> predetermining a target power level for a pulse oximeter; and
> cycling between said lower power lever and said higher power level so that an average power consumption is consistent with said target power level.

Thus, Claim 10 of the '658 patent does not render obvious claims to continuous determination of measurement values. Moreover, presently pending Claims 13-14 depend from Claim 1, and therefore, Claim 10 of the '658 patent does not render obvious these claims based on their dependency and upon the features recited therein.

The Office Action also rejected Claims 10 and 13 under the non-statutory, obviousness-type double patenting over Claims 10 and 17 of U.S. Pat. No. 7295866. The Applicants respectfully traverse these rejections, because Claims 10 and 17 of the '866 patent do not render obvious Claim 1 or dependent Claim 13.

Claims 10 and 17 of the '866 patent recite:

> 10. A pulse oximeter capable of varying its power consumption, comprising:
> an emitter driver which outputs a drive signal capable of driving at least one emitter of a sensor that detects energy attenuated by tissue of a measurement site of a patient; and
> a controller which selects between at least a first duty cycle of the drive signal corresponding to a first power consumption and a second duty cycle of the drive signal corresponding to a second power consumption different than the first power consumption.

> 17. The pulse oximeter of claim 10, wherein the controller selects based on at least an estimate of power consumption as compared to a target power consumption.

Thus, Claims 10 and 17 of the '866 patent do not render obvious claims to continuous determination of measurement values. Moreover, presently pending Claim 17 depends from Claim 1, and therefore, Claims 10 and 17 of the '866 patent do not render obvious these claims based on their dependency and upon the features recited therein.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 30, 2012

By: /John M. Grover/
John M. Grover
Registration No. 42,610
Attorney of Record
Customer No. 64735
(949) 760-0404

13928838

Electronic Patent Application Fee Transmittal

Application Number:	11939519
Filing Date:	13-Nov-2007
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Filer:	John M. Grover/Linh Do
Attorney Docket Number:	MASIMO.285C2

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Claims in excess of 20	1202	7	62	434
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
			Total in USD ($)	**434**

Electronic Acknowledgement Receipt	
EFS ID:	14358327
Application Number:	11939519
International Application Number:	
Confirmation Number:	6131
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Customer Number:	64735
Filer:	John M. Grover/Adriana Perez
Filer Authorized By:	John M. Grover
Attorney Docket Number:	MASIMO.285C2
Receipt Date:	30-NOV-2012
Filing Date:	13-NOV-2007
Time Stamp:	18:32:47
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$434
RAM confirmation Number	7763
Deposit Account	
Authorized User	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)

1		Amendment_MASIMO.pdf	447602 b3011a5c0688d465c36ad610025c91284f91820f12	yes	11

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	11

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30259 a45622eadacf3c4c4727476c2e74f253b2701715f	no	2

Warnings:

Information:

Total Files Size (in bytes):	477861

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If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/06 (07-06)
Approved for use through 1/31/2007. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number	Filing Date	☐ To be Mailed
11/939,519	11/13/2007	

APPLICATION AS FILED – PART I

	(Column 1)	(Column 2)	SMALL ENTITY ☐		OR	OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE ($)	FEE ($)		RATE ($)	FEE ($)
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	x $ =		OR	x $ =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	x $ =			x $ =	
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).						
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL			TOTAL	

APPLICATION AS AMENDED – PART II

AMENDMENT	11/30/2012	(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)	OR	OTHER THAN SMALL ENTITY RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 27	Minus	** 20	= 7	x $ =		OR	x $62=	434
	Independent (37 CFR 1.16(h))	* 2	Minus	***3	= 0	x $ =		OR	x $250=	0
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	**434**

AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT		(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE ($)	ADDITIONAL FEE ($)		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x $ =		OR	x $ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x $ =		OR	x $ =	
	☐ Application Size Fee (37 CFR 1.16(s))									
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	

* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.

** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".

*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".

The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.

Legal Instrument Examiner:
/HENRIETT K. DENDY/

MASIMO.285C2 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor	:	Ammar Al-Ali
App. No.	:	11/939,519
Filed	:	November 13, 2007
For	:	LOW POWER PULSE OXIMETER
Examiner	:	Chu Chuan Liu
Art Unit	:	3777
Conf No.	:	6131

CERTIFICATE OF EFS WEB TRANSMISSION

I hereby certify that this correspondence, and any other attachment noted on the automated Acknowledgement Receipt, is being transmitted from within the Pacific Time zone to the Commissioner for Patents via the EFS Web server on:

January 9, 2013
(Date)

John M. Grover, Reg. No. 42,610

SUPPLEMENTAL AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The Applicant requests that the Examiner consider the present Supplemental Amendment filed in addition to consideration of Applicant's "*Response to Office Action*" filed November 30, 2012. The present Supplemental Amendment includes the following remarks and amendments.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Summary of Interview begins on page 7 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions thereof. Changes are shown below in highlighted form, where insertions appear as underlined text (e.g., insertions) while deletions appear as strikethrough text (e.g., ~~deletions~~) or double brackets (e.g., [[~~deletions~~]]

1. (Canceled).

2. (Currently Amended) A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:

driving one or more light sources configured to emit light into tissue of a monitored patient;

receiving one or more signals from one or more detectors configured to detect said light after attenuation by said tissue;

continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;

comparing processing characteristics to a predetermined threshold; and

when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level~~The method of Claim 1~~, wherein said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor, said sensor positioning said light sources and said detectors proximate said tissue.

3. (Original) The method of Claim 2, wherein said reducing activation comprises reducing a duty cycle of said sensor.

4. (Canceled).

5. (Currently Amended) A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:

driving one or more light sources configured to emit light into tissue of a monitored patient;

receiving one or more signals from one or more detectors configured to detect said light after attenuation by said tissue;

continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;

comparing processing characteristics to a predetermined threshold; and

when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level~~The method of Claim 1~~, wherein said continuously operating at said lower power consumption level comprises reducing an amount of processing by a signal processor.

6. (Original) The method of Claim 5, wherein said reducing comprises processing less data.

7. (Original) The method of Claim 6, wherein said processing less data comprises reducing an overlap in data blocks being processed.

8. (Currently Amended) The method of Claim ~~1~~2, wherein during said operating at said higher power consumption level, monitoring when said processing characteristics recedes from said threshold; and when receded, transitioning to continuously operating said patient monitor at said lower power consumption level.

9. (Currently Amended) The method of Claim ~~1~~2, wherein said processing characteristics comprise signal characteristics from one or more light sensitive detectors.

10. (Previously Presented) The method of Claim 9, wherein said signal characteristics comprise signal strength.

11. (Previously Presented) The method of Claim 9, wherein said signal characteristics comprise a presence of noise.

12. (Previously Presented) The method of Claim 9, wherein said signal characteristics comprise a presence of motion induced noise.

13. (Currently Amended) The method of Claim ~~1~~2, wherein said processing characteristics include determining an estimate of current power consumption and comparing said estimate with a target power consumption.

14. (Currently Amended) A method of managing power consumption during continuous patient monitoring by adjusting behavior of a patient monitor, the method comprising:

driving one or more light sources configured to emit light into tissue of a monitored patient;

receiving one or more signals from one or more detectors configured to detect said light after attenuation by said tissue;

continuously operating a patient monitor at a lower power consumption level to determine measurement values for one or more physiological parameters of a patient;

comparing processing characteristics to a predetermined threshold; and

when said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level~~The method of Claim 1~~, wherein said processing characteristics include an override condition.

15. (Previously Presented) The method of Claim 14, wherein said override condition comprises measurements during a critical care environment.

16. (Previously Presented) The method of Claim 14, wherein said override condition comprises one or more monitored parameters exhibiting predefined behavior.

17. (Canceled).

18. (Currently Amended) A patient monitor configured to manage power consumption during continuous patient monitoring by adjusting its behavior, the monitor comprising:

an input configured to receive at least one signal responsive to light detected after attenuation by body tissue of a patient by a noninvasive sensor; and

one or more processors continuously operating at a lower power consumption level to determine measurement values for one or more physiological parameters of said patient, said processors comparing processing characteristics to a predetermined threshold, and when said processing characteristics pass said threshold, said processors transitioning to continuously

operating at a higher power consumption level~~The monitor of Claim 17~~, wherein processors reduce activation of an attached sensor.

19. (Previously Presented) The monitor of Claim 18, wherein said processors reduce a duty cycle of said sensor.

20. (Currently Amended) A patient monitor configured to manage power consumption during continuous patient monitoring by adjusting its behavior, the monitor comprising:

an input configured to receive at least one signal responsive to light detected after attenuation by body tissue of a patient by a noninvasive sensor; and

one or more processors continuously operating at a lower power consumption level to determine measurement values for one or more physiological parameters of said patient, said processors comparing processing characteristics to a predetermined threshold, and when said processing characteristics pass said threshold, said processors transitioning to continuously operating at a higher power consumption level~~The monitor of Claim 17~~, wherein said processors reduce an amount of processing by a signal processor.

21. (Previously Presented) The monitor of Claim 20, wherein said processors reduce an overlap in data blocks being processed.

22. (Currently Amended) The monitor of Claim ~~17~~18, wherein during said operating at said higher power consumption level, said processors monitors when said processing characteristics recedes from said threshold; and when receded, said processors transition to continuously operating at said lower power consumption level.

23. (Currently Amended) The monitor of Claim ~~17~~18, wherein said processing characteristics comprise signal characteristics from one or more light sensitive detectors.

24. (Currently Amended) The monitor of Claim ~~17~~18, wherein said processing characteristics include determining an estimate of current power consumption and comparing said estimate with a target power consumption.

25. (Currently Amended) A patient monitor configured to manage power consumption during continuous patient monitoring by adjusting its behavior, the monitor comprising:

an input configured to receive at least one signal responsive to light detected after attenuation by body tissue of a patient by a noninvasive sensor; and

one or more processors continuously operating at a lower power consumption level to determine measurement values for one or more physiological parameters of said patient, said processors comparing processing characteristics to a predetermined threshold, and when said processing characteristics pass said threshold, said processors transitioning to continuously operating at a higher power consumption level~~The monitor of Claim 17~~, wherein said processing characteristics include an override condition.

26. (Previously Presented) The monitor of Claim 25, wherein said override condition comprises measurements during a critical care environment.

27. (Previously Presented) The monitor of Claim 25, wherein said override condition comprises one or more monitored parameters exhibiting predefined behavior.

SUMMARY OF INTERVIEW

The Applicant thanks Examiner Chu Chuan Liu for the telephonic interviews extended to the Applicant's counsel of record, John M. Grover, culminating on January 8, 2013, with an agreement as to the claim language reflected herein. Over the course of the interviews, the participants discussed U.S. Pat. No. 5,827,969 to Lee et al. and 6,402,690 to Rhee et al. and the Applicants asserted why the presently pending claims were allowable over the same.

REMARKS

By way of summary, Claims 1-27 were pending for consideration. In the present amendment, the Applicant canceled claims without prejudice or disclaimer and amended the claims without prejudice or disclaimer to previously pending versions thereof. Accordingly, Claims 2-3, 5-16, and 18-27 remain pending for consideration.

During the interviews summarized in the foregoing, an agreement was reached relating to claim language. Accordingly, the Applicant has amended the claims along the lines discussed in the interview. Therefore, the Applicant respectfully requests consideration of the pending amended claims.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11 1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: January 9, 2013

By: _____
John M. Grover
Registration No. 42,610
Attorney of Record
Customer No. 64735
(949) 760-0404

14632518

Electronic Acknowledgement Receipt

EFS ID:	14659034
Application Number:	11939519
International Application Number:	
Confirmation Number:	6131
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Customer Number:	64735
Filer:	John M. Grover/Tony Do
Filer Authorized By:	John M. Grover
Attorney Docket Number:	MASIMO.285C2
Receipt Date:	09-JAN-2013
Filing Date:	13-NOV-2007
Time Stamp:	20:01:54
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		Supplemental_Amendment_MASIMO285C2.pdf	329578 c4fca615ef33dfc27215b599689890f724e88a2c	yes	8

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Supplemental Response or Supplemental Amendment	1	1
	Claims	2	6
	Applicant summary of interview with examiner	7	7
	Applicant Arguments/Remarks Made in an Amendment	8	8
Warnings:			
Information:			
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<u>New Applications Under 35 U.S.C. 111</u>
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

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<u>New International Application Filed with the USPTO as a Receiving Office</u>
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

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IRVINE, CA 92614

EXAMINER
LIU, CHU CHUAN

ART UNIT	PAPER NUMBER
3777	

DATE MAILED: 02/01/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2	6131

TITLE OF INVENTION: LOW POWER PULSE OXIMETER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	05/01/2013

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

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If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

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III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
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64735 7590 02/01/2013
KNOBBE, MARTENS, OLSON & BEAR, LLP
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Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2	6131

TITLE OF INVENTION: LOW POWER PULSE OXIMETER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1770	$300	$0	$2070	05/01/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIU, CHU CHUAN	3777	600-323000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
- ❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.
1 _____
2 _____
3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ❑ Individual ❑ Corporation or other private group entity ❑ Government

4a. The following fee(s) are submitted:
- ❑ Issue Fee
- ❑ Publication Fee (No small entity discount permitted)
- ❑ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ❑ A check is enclosed.
- ❑ Payment by credit card. Form PTO-2038 is attached.
- ❑ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ❑ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ❑ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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IRVINE, CA 92614

EXAMINER	
LIU, CHU CHUAN	

ART UNIT	PAPER NUMBER
3777	

DATE MAILED: 02/01/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 1325 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 1325 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No.	Applicant(s)	
	11/939,519	AL-ALI, AMMAR	
	Examiner	Art Unit	
	CHU CHUAN (JJ) LIU	3777	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *supplemental amendment filed on 01/09/2013 .*

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are *2-3, 5-16, 18-27.* As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov .

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
5. ☒ Examiner's Amendment/Comment
6. ☒ Examiner's Statement of Reasons for Allowance
7. ☐ Other ____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John Grover on 01/09/2013. Amendments were made to resolve potential 35 USC 112 issues.

The application has been amended as follows:

Claim 18, line 2, "by adjusting its behavior" was deleted.

Claim 20, line 2, "by adjusting its behavior" was deleted.

Claim 25, line 2, "by adjusting its behavior" was deleted.

2. The following is an examiner's statement of reasons for allowance: Lee et al. (USPN 5,827,969) teaches an ultrasound fetal heart rate probe which continuously output measurements during selected power settings, wherein the probe first operates at lower power setting and when noise detected over a threshold, it can be switched to high power mode to increase SNR. Rhee et al. (USPN 6,402,690) teaches a ring

oximeter continuously determining oxygen saturation and adjusts the LED level/ intensity according to a comparison of the detected SNR to a specific range of predetermined SNR. '969 and '690 does not specifically teach the reducing activation/ duty cycle/ on-off stages of the energy source(s) during operating the sensor. The prior art does not teach or suggest "said continuously operating at said lower power consumption level comprises reducing activation of an attached sensor", "said continuously operating at said lower power consumption level comprises reducing an amount of processing by a signal processor", or "said processing characteristics pass said threshold, transitioning to continuously operating said patient monitor at a higher power consumption level, wherein said processing characteristics include an override condition", in combination with the other claimed elements/ steps.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHU CHUAN (JJ) LIU whose telephone number is (571)270-5507. The examiner can normally be reached on M-TH 7:00am~3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tse Chen can be reached on (571)272-3672. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chu Chuan Liu/
Examiner, Art Unit 3777

/Eric F Winakur/
Primary Examiner, Art Unit 3777

Notice of References Cited	Application/Control No. 11/939,519	Applicant(s)/Patent Under Reexamination AL-ALI, AMMAR	
	Examiner CHU CHUAN (JJ) LIU	Art Unit 3777	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-5,827,969	10-1998	Lee et al.	600/455
*	B	US-6,402,690	06-2002	Rhee et al.	600/323
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	11939519	AL-ALI, AMMAR
	Examiner	Art Unit
	CHU CHUAN (JJ) LIU	3777

SEARCHED

Class	Subclass	Date	Examiner
600	309, 310, 322, 323, 324, 333, 473, 476	08/21/2012	CCL
356	41	08/21/2012	CCL
600	310, 322, 323, 324, 333, 473, 476	01/10/2013	CCL

SEARCH NOTES

Search Notes	Date	Examiner
Inventor Name Search (PALM and EAST)	08/20/2012	CCL
EAST Search (TEXT, USPGPUB, USPAT) See Search History	08/21/2012	CCL
Google NPL Search	08/21/2012	CCL
Updated EAST Search (TEXT, USPGPUB, USPAT) See Search History	01/10/2013	CCL
Google NPL Search	01/10/2013	CCL
Allowance consultation with Eric Winakur (Primary Examiner)	01/09/2013	CCL

INTERFERENCE SEARCH

Class	Subclass	Date	Examiner
600	310, 322, 323, 324, 333, 473, 476	01/10/2013	CCL

/CHU CHUAN (JJ) LIU/ Examiner.Art Unit 3777	

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L10	37	9 and duty with cycle	US-PGPUB; USPAT	OR	ON	2013/01/10 12:12
L9	325	8 and consumption	US-PGPUB; USPAT	OR	ON	2013/01/10 12:12
L8	1539	7 and 600/310-344.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:12
L7	18485	(adjust$3 switch$3 increas$3) with (intensity power) and "600".clas.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:11
S47	1	("7295866").PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 12:31
S46	1	("5827969").PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 11:41
S45	249	low and high with power adj consumption and "600".clas.	US-PGPUB	OR	ON	2012/12/11 11:33
S44	490	S43 and power adj consumption	US-PGPUB	OR	ON	2012/12/11 11:11
S43	537	S42 and physiological with parameter	US-PGPUB	OR	ON	2012/12/11 11:05
S42	2418	power with consumption and "600".clas.	US-PGPUB	OR	ON	2012/12/11 11:05
S41	75	("6005658").URPN.	USPAT	OR	ON	2012/12/11 11:00
S40	3	(("4700708") or ("4759369") or ("5590652")).PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 10:50
S39	68	S38 and (cycle duty adj cycle power)	US-PGPUB; USPAT; USOCR	OR	ON	2012/12/11 10:44
S38	77	("5595176" | "5673694").PN. OR ("6005658").URPN.	US-PGPUB; USPAT; USOCR	OR	ON	2012/12/11 10:43
S37	1	("6005658").PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 10:43
S36	1	("20050234317").PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 10:24
S35	1	("20030218386").PN.	US-PGPUB; USPAT	OR	OFF	2012/12/11 10:24
S34	143	duty adj cycle and 600/310-344.ccls.	US-PGPUB	OR	ON	2012/12/11 10:22
S33	15	"872210"	EPO; DERWENT	OR	ON	2012/12/11 10:19

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp

L11	10	6 and duty adj cycle and consumption	US-PGPUB; USPAT	OR	ON	2013/01/10 12:13
L6	392	5 and 600/323.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:11
L5	1539	4 and 600/310-344.ccls.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:10
L4	18485	(adjust$3 switch$3 increas$3) with (intensity power) and "600".clas.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:10
L3	502	1 and low and high with power adj consumption	US-PGPUB; USPAT	OR	ON	2013/01/10 12:08
L1	4393	power with consumption and "600".clas.	US-PGPUB; USPAT	OR	ON	2013/01/10 12:07

1/10/2013 12:14:05 PM
C:\Users\cliu\Documents\EAST\Workspaces\11939519.wsp

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CONFIRMATION NO. 6131

SERIAL NUMBER	FILING or 371(c) DATE RULE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/939,519	11/13/2007	600	3777	MASIMO.285C2

APPLICANTS
Ammar Al-Ali, Tustin, CA;

**** CONTINUING DATA **************************
This application is a CON of 10/785,573 02/24/2004 PAT 7,295,866
which is a CON of 10/184,028 06/26/2002 PAT 6,697,658
which claims benefit of 60/302,564 07/02/2001

**** FOREIGN APPLICATIONS **************************

**** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ****
12/06/2007

Foreign Priority claimed	35 USC 119(a-d) conditions met	Verified and Acknowledged	Met after Allowance	STATE OR COUNTRY	SHEETS DRAWINGS	TOTAL CLAIMS	INDEPENDENT CLAIMS
❑ Yes ☑ No	❑ Yes ☑ No	/CHU CHUAN LIU/ Examiner's Signature	❑ Initials	CA	11	16	1

ADDRESS
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614
UNITED STATES

TITLE
LOW POWER PULSE OXIMETER

FILING FEE RECEIVED		
1464	FEES: Authority has been given in Paper No._____ to charge/credit DEPOSIT ACCOUNT No._____ for following:	❑ All Fees ❑ 1.16 Fees (Filing) ❑ 1.17 Fees (Processing Ext. of time) ❑ 1.18 Fees (Issue) ❑ Other _____ ❑ Credit

Issue Classification

Application/Control No.	Applicant(s)/Patent Under Reexamination
11939519	AL-ALI, AMMAR
Examiner	**Art Unit**
CHU CHUAN (JJ) LIU	3777

ORIGINAL		INTERNATIONAL CLASSIFICATION										
CLASS	SUBCLASS	CLAIMED					NON-CLAIMED					
600	323	A	6	1	B	5 / 1455 (2006.01.01)						

CROSS REFERENCE(S)					
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)				
600	310	322			

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		17												
1	2	15	18												
2	3	16	19												
	4	20	20												
9	5	21	21												
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7	12														
8	13														
12	14														
13	15														
14	16														

/CHU CHUAN (JJ) LIU/ Examiner.Art Unit 3777 (Assistant Examiner)	01/10/2013 (Date)	**Total Claims Allowed:** 24	
/ERIC WINAKUR/ Primary Examiner.Art Unit 3777 (Primary Examiner)	01/14/2013 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 4

PART B - FEE(S) TRANSMITTAL

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64735 7590 02/01/2013
KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/939,519	11/13/2007	Ammar Al-Ali	MASIMO.285C2	6131

TITLE OF INVENTION: LOW POWER PULSE OXIMETER

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1780	$300	$0	$2080	05/01/2013

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIU, CHIU CHUAN	3777	600-323000

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- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
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2. For printing on the patent front page, list
(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Knobbe, Martens,
2 Olson & Bear LLP
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE: Masimo Corporation

(B) RESIDENCE: (CITY and STATE OR COUNTRY): Irvine, CA

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:
- ☒ Issue Fee
- ☒ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): **(Please first reapply any previously paid issue fee shown above)**
- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☒ The Director is hereby authorized to charge [redacted] any deficiency, or credit any overpayment, to Deposit Account Number 11-1410 (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)
- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.
- ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature  Date May 1, 2013

Typed or printed name John M. Grover Registration No. 42,610

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal

Application Number:	11939519
Filing Date:	13-Nov-2007
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Filer:	John M. Grover/Lisa Sierra
Attorney Docket Number:	MASIMO.285C2

Filed as Large Entity

Utility under 35 USC 111(a) Filing Fees

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	1501	1	1780	1780
Publ. Fee- Early, Voluntary, or Normal	1504	1	300	300

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**2080**

Electronic Acknowledgement Receipt	
EFS ID:	15668050
Application Number:	11939519
International Application Number:	
Confirmation Number:	6131
Title of Invention:	LOW POWER PULSE OXIMETER
First Named Inventor/Applicant Name:	Ammar Al-Ali
Customer Number:	64735
Filer:	John M. Grover/Gustavo Lopez
Filer Authorized By:	John M. Grover
Attorney Docket Number:	MASIMO.285C2
Receipt Date:	01-MAY-2013
Filing Date:	13-NOV-2007
Time Stamp:	18:28:43
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	$2080
RAM confirmation Number	5460
Deposit Account	111410
Authorized User	KNOBBE MARTENS OLSON AND BEAR
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	Issue_Fee_MASIMO285C2.pdf	87826 c0f39559077475fb566eca14787270191284f5ee	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	31899 5e5f605bc2697661383191b7a0425915f3024a2e	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	119725		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111
If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371
If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office
If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

PTO/SB/08 Equivalent

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		
	Application No.	Unknown
	Filing Date	Herewith
	First Named Inventor	Ammar Al-Ali
	Art Unit	Unknown
(Multiple sheets used when necessary)	Examiner	Unknown
SHEET 3 OF 8	Attorney Docket No.	MASIMO.285C2

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No.	Document Number *Number - Kind Code (if known)* Example: 1,234,567 B1	Publication Date MM-DD-YYYY	Name of Patentee or Applicant	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
	59	6,813,511	11/2004	Diab et al.	
	60	6,792,300	09/2004	Diab et al.	
	61	6,771,994	08/2004	Kiani et al.	
	62	6,770,028	08/2004	Ali et al.	
	63	6,760,607	07/2004	Al-Ali	
	64	6,745,060	06/2004	Diab et al.	
	65	6,735,459	05/2004	Parker	
	66	6,728,560	04/2004	Kollias, et al.	
	67	6,725,075	04/2004	Al-Ali	
	68	6,721,585	04/2004	Parker	
	69	6,721,582	04/2004	Trepagnier, et al.	
	70	RE38,492	04/2004	Diab et al.	
	71	6,714,804	03/2004	Al-Ali et al.	
	72	RE38,476	03/2004	Diab et al.	
	73	6,699,194	03/2004	Diab et al.	
	74	6,697,658	02/2004	Al-Ali	
	75	6,697,657	02/2004	Shehada, et al.	
	76	6,697,656	02/2004	Al-Ali	
	77	6,684,091	01/2004	Parker	
	78	6,684,090	01/2004	Ali et al.	
	79	6,678,543	01/2004	Diab et al.	
	80	6,671,531	12/2003	Al-Ali et al.	
	81	6,661,161	12/2003	Lanzo et al.	
	82	6,658,276	12/2003	~~Diab et al.~~ Kianl et al.	
	83	6,654,624	11/2003	Diab et al.	
	84	6,650,917	11/2003	Diab et al.	
	85	6,643,530	11/2003	Diab et al.	
	86	6,640,116	10/2003	Diab	
	87	6,639,668	10/2003	Trepagnier, Pierre	

Change(s) applied to document.
/V.A/
3/7/2013

Examiner Signature	Date Considered

***Examiner:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

T[1] - Place a check mark in this area when an English language Translation is attached.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /CCL/

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United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/939,519	06/04/2013	8457703	MASIMO.285C2	6131

64735 7590 05/15/2013

KNOBBE, MARTENS, OLSON & BEAR, LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment is 1603 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site http://pair.uspto.gov for additional applicants):

Ammar Al-Ali, Tustin, CA;

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2834402

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
MASIMO CORPORATION	04/23/2014
MASIMO AMERICAS, INC.	04/23/2014

RECEIVING PARTY DATA

Name:	JPMORGAN CHASE BANK, NATIONAL ASSOCIATION
Street Address:	2828
City:	CHICAGO
State/Country:	ILLINOIS
Postal Code:	55356

PROPERTY NUMBERS Total: 411

Property Type	Number
Patent Number:	RE43169
Patent Number:	RE41317
Patent Number:	RE43860
Patent Number:	RE41912
Patent Number:	8175672
Patent Number:	7245953
Patent Number:	6684091
Patent Number:	6321100
Patent Number:	6519487
Patent Number:	6343224
Patent Number:	6144868
Patent Number:	6301493
Patent Number:	6128521
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Patent Number:	6430437
Patent Number:	8430817
Patent Number:	8523781
Patent Number:	8641631
Patent Number:	6661161
Patent Number:	6368283

Property Type	Number
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Patent Number:	D692145
Patent Number:	8463349
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Patent Number:	D361840
Patent Number:	D363120

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Application Number:	13777936
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Application Number:	12188154
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Application Number:	13180429
Application Number:	13595912
Application Number:	13224266

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Application Number:	13627855
Application Number:	13437800
Application Number:	11963640
Application Number:	13471340
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Application Number:	12147299
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Application Number:	12559815
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Application Number:	12824087
Application Number:	12849808
Application Number:	12717081
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Application Number:	13280046
Application Number:	11070081
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Application Number:	13914276
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Application Number:	13733782
Application Number:	13875219
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Application Number:	12960325
Application Number:	13355404
Application Number:	12905036
Application Number:	13650775
Application Number:	13911939
Application Number:	13465952
Application Number:	12955814

Property Type	Number
Application Number:	12845607

CORRESPONDENCE DATA

Fax Number:

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

Phone:	312-701-8944
Email:	ptierney@mayerbrown.com, ipdocket@mayerbrown.com
Correspondent Name:	PATRICK TIERNEY
Address Line 1:	PO BOX 2828
Address Line 4:	CHICAGO, ILLINOIS 60690-2828

ATTORNEY DOCKET NUMBER:	14445478
NAME OF SUBMITTER:	PATRICK TIERNEY
SIGNATURE:	/PT/
DATE SIGNED:	04/29/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 18

source=Patent Security Agreement (compiled)#page1.tif
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source=Patent Security Agreement (compiled)#page18.tif

PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT, dated as of April 23, 2014 (this "Agreement"), is made by MASIMO CORPORATION, a Delaware corporation, and MASIMO AMERICAS, INC., a Delaware corporation (each, a "Grantor" and collectively, the "Grantors"), in favor of JPMORGAN CHASE BANK, NATIONAL ASSOCIATION, as the administrative agent (together with its successor(s) thereto in such capacity, the "Administrative Agent") for each of the Secured Parties.

W I T N E S S E T H :

WHEREAS, pursuant to a Credit Agreement, dated as of April 23, 2014 (as amended, supplemented, amended and restated or otherwise modified from time to time, the "Credit Agreement"), among the Grantors, as the Borrower, the Lenders from time to time party thereto and the Administrative Agent, the Lenders have extended Commitments to make Loans to the Borrower;

WHEREAS, in connection with the Credit Agreement, each Grantor has executed and delivered separate security agreements, each dated as of April 23, 2014 (each, as amended, supplemented, amended and restated or otherwise modified from time to time, a "Security Agreement" and collectively, the "Security Agreements");

WHEREAS, pursuant to the Credit Agreement and pursuant to Section 2 of each Security Agreement, the Grantors are required to execute and deliver this Agreement and to grant to the Administrative Agent a continuing security interest in all of the Patent Collateral (as defined below) to secure all Secured Obligations; and

WHEREAS, the Grantors have duly authorized the execution, delivery and performance of this Agreement; and

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Grantors agree, for the benefit of each Secured Party, as follows:

SECTION 1. Definitions. Unless otherwise defined herein or the context otherwise requires, terms used in this Agreement, including its preamble and recitals, have the meanings provided in the applicable Security Agreement.

SECTION 2. Grant of Security Interest. Each Grantor hereby grants to the Administrative Agent, for its benefit and the ratable benefit of each other Secured Party, a continuing security interest in all of such Grantor's right, title and interest within the United States, whether now or hereafter existing or acquired by such Grantor, in and to the following (other than Excluded Assets) ("Patent Collateral"):

(a) all letters patent and applications for letters patent in the United States Patent and Trademark Office, including all patent applications in preparation for filing, including all reissues, divisionals, continuations, continuations-in-part, extensions,

renewals and reexaminations of any of the foregoing ("Patents"), including each Patent and published Patent application identified in Item A of Schedule I;

(b) all Patent licenses, and other agreements for the grant by or to such Grantor of any right to use any items of the type referred to in clause (a) above (each a "Patent License");

(c) the right to sue third parties for past, present and future infringements of any Patent or Patent application, and for breach or enforcement of any Patent License; and

(d) all proceeds of, and rights associated with, the foregoing (including Proceeds, licenses, royalties, income, payments, claims, damages and proceeds of infringement suits).

SECTION 3. Security Agreement. This Agreement has been executed and delivered by the Grantors for the purpose of registering the security interest of the Administrative Agent in the Patent Collateral with the United States Patent and Trademark Office. The security interest granted hereby has been granted as a supplement to, and not in limitation of, the security interest granted to the Administrative Agent for its benefit and the ratable benefit of each other Secured Party under each Security Agreement. Each Security Agreement (and all rights and remedies of the Administrative Agent and each Secured Party thereunder) shall remain in full force and effect in accordance with its terms.

SECTION 4. Waiver, etc. The Grantors hereby waive promptness, diligence, notice of acceptance and any other notice with respect to any of the Liabilities, this Agreement and the Security Agreements and any requirement that any Secured Party protect, secure, perfect or insure any Lien, or any property subject thereto, or exhaust any right or take any action against each Grantor or any other Person (including any other Grantor) or entity or any Collateral securing the Secured Obligations, as the case may be. As provided below, this Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

SECTION 5. Acknowledgment. The Grantors do hereby further acknowledge and affirm that the rights and remedies of the Administrative Agent with respect to the security interest in the Patent Collateral granted hereby are more fully set forth in the applicable Security Agreement, the terms and provisions of which (including the remedies provided for therein) are incorporated by reference herein as if fully set forth herein.

SECTION 6. Loan Document. This Agreement is a Loan Document executed pursuant to the Credit Agreement and shall (unless otherwise expressly indicated herein) be construed, administered and applied in accordance with the terms and provisions thereof.

SECTION 7. Governing Law, Entire Agreement, etc. THIS SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

SECTION 8. Counterparts. This Agreement may be executed by the parties hereto in several counterparts, each of which shall be deemed to be an original and all of which shall

constitute together but one and the same agreement. Delivery of an executed counterpart of a signature page to this Agreement by facsimile or via other electronic means shall be effective as delivery of a manually executed counterpart of this Agreement.

* * * * *

IN WITNESS WHEREOF, this Agreement has been duly executed as of the day and year first above written.

MASIMO CORPORATION,
as Grantor

By: _____
Name: Mark P. de Raad
Title: Chief Financial Officer

MASIMO AMERICAS, INC.
as Grantor

By: _____
Name: Mark P. de Raad
Title: Treasurer

JPMORGAN CHASE BANK, NATIONAL ASSOCIATION,
as Administrative Agent

By: _____
Name:
Title:

IN WITNESS WHEREOF, this Agreement has been duly executed as of the day and year first above written.

MASIMO CORPORATION,
as Grantor

By: _____
Name:
Title:

MASIMO AMERICAS, INC.
as Grantor

By: _____
Name:
Title:

JPMORGAN CHASE BANK, NATIONAL ASSOCIATION,
as Administrative Agent

By: _____
Name: LING LI
Title: Vice President

SCHEDULE I
to Patent Security Agreement

Item A. Patents

Issued Patents

Patent No.	Issue Date	Inventor(s)	Title
See Schedule A			

Pending Patent Applications

Serial No.	Filing Date	Inventor(s)	Title
See Schedule B			

Patent No.	Title of Invention	Country	Application No.	Filing Date	Date Issued	Publication	Pub Date
RE43169	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	12/573851	10/5/2009	2/7/2012		
RE41317	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	11/404123	4/13/2006	5/4/2010		
RE43860	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	12/917433	11/1/2010	12/11/2012		
RE41912	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	11/432798	5/11/2006	11/2/2010		
8175672	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATII	US	11/774446	7/6/2007	5/8/2012	2008/0009691 A1	1/10/2008
7245953	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATII	US	10/287795	11/5/2002	7/17/2007		
6684091	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	US	09/758038	1/11/2001	1/27/2004	2001/0029325 A1	10/11/2001
6321100	REUSABLE PULSE OXIMETER PROBE WITH DISPOSABLE LINER	US	09/352144	7/13/1999	11/20/2001		
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	GB	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	FR	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	EP	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	DE	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
4614537	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	JP	2000-575417	10/15/1999	10/29/2010		
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	GB	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	FR	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	ES	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	EP	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	DE	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
2346639	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	CA	2346639	10/15/1999	8/12/2008		4/20/2000
745306	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BADANGE APPARATUS	AU	200010929	10/15/1999	7/4/2002		6/22/2000
3981271	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	JP	2002-001134	1/8/2002	7/6/2007		9/26/2007
1222894	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE	EP	1310925.1	12/28/2001	1/26/2011	1222894	7/17/2002
2366493	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	CA	2366493	1/3/2002	1/3/2012		
784021	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	AU	200210079	1/7/2002	5/4/2006		7/18/2002
6519487	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/679828	10/5/2000	2/11/2003		
6343224	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/417898	10/14/1999	1/29/2002		
6144868	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/289647	4/12/1999	11/7/2000		
6301493	RESERVOIR ELECTRODES FOR ELECTROENCEPHALOGRAPH HEADGEAR APPLIANCE	US	09/431966	11/1/1999	10/9/2001		
6128521	SELF ADJUSTING HEADGEAR APPLIANCE USING RESERVOIR ELECTRODES	US	09/113946	7/10/1998	10/3/2000		
1250886	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	EP	1109804.3	4/21/2001	4/21/2010	EP1250886	10/23/2002
2343706	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	CA	2343706	4/10/2001	12/6/2011		
6317627	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	US	09/431632	11/2/1999	11/13/2001		
1229830	MODULE FOR ACQUIRING ELECTROENCEPHALOGRAPH SIGNALS FROM A PATIENT	EP	973975.6	10/27/2000	5/24/2006	EP1229830	8/14/2002
6430437	MODULE FOR ACQUIRING ELECTROENCEPHALOGRAPH SIGNALS FROM A PATIENT	US	09/699123	10/27/2000	8/6/2002		
8430817	SYSTEM FOR DETERMINING CONFIDENCE IN RESPIRATORY RATE MEASUREMENTS	US	12/905530	10/15/2010	4/30/2013		
8523781	BIDIRECTIONAL PHYSIOLOGICAL INFORMATION DISPLAY	US	12/904836	10/14/2010	9/3/2013	2011/0224567 A1	9/15/2011
5090155	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	JP	2007-506626	4/8/2005	9/21/2012		12/5/2012
1740095	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	EP	5732095.4	4/8/2005	1/23/2013	1740095	1/10/2007
8641631	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	US	11/547570	6/19/2007	2/4/2014	2007/0282212 A1	12/6/2007
4308758	PIEZOELECTRIC BIOLOGICAL SOUND MONITOR WITH PRINTED CIRCUIT BOARD	JP	2004-516364	4/8/2003	5/15/2009		8/5/2009
6661161	PIEZOELECTRIC BIOLOGICAL SOUND MONITOR WITH PRINTED CIRCUIT BOARD	US	10/180518	6/27/2002	12/9/2003		
3455223	HEADSET FOR ELECTRONIC STETHOSCOPE	JP	7/527898	4/21/1995	7/25/2003		
2188794	HEADSET FOR ELECTRONIC STETHOSCOPE	CA	2188794	4/21/1995	10/3/2000		
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	GB	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	EP	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	DE	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
6368283	METHOD AND APPARATUS FOR ESTIMATING SYSTOLIC AND MEAN PULMONARY ARTERY PRESSURES OF A PATIENT	US	09/658631	9/8/2000	4/9/2002		
2262236	PHONOSPIROMETRY FOR NON-INVASIVE MONITORING OF RESPIRATION	CA	2262236	2/22/1999	4/29/2008		8/20/1999
6241683	PHONOSPIROMETRY FOR NON-INVASIVE MONITORING OF RESPIRATION	US	09/255003	2/22/1999	6/5/2001		
D692145	MEDICAL PROXIMITY DETECTION TOKEN	US	29/432824	9/20/2012	10/22/2013		
8463349	SIGNAL PROCESSING APPARATUS	US	13/463746	5/3/2012	6/11/2013	2012/0220843 A1	8/30/2012
8359080	SIGNAL PROCESSING APPARATUS	US	13/397564	2/15/2012	1/22/2013	2012/0165624 A1	6/28/2012
8128572	SIGNAL PROCESSING APPARATUS	US	12/277221	11/24/2008	3/6/2012	2009/0076400 A1	3/19/2009
7530955	SIGNAL PROCESSING APPARATUS	US	10/838814	5/4/2004	5/12/2009	2004/0210146 A1	10/21/2004
7328053	SIGNAL PROCESSING APPARATUS	US	09/195791	11/17/1998	2/5/2008		
7376453	SIGNAL PROCESSING APPARATUS	US	09/144897	9/1/1998	5/20/2008		
8560034	SIGNAL PROCESSING APPARATUS	US	09/110542	7/6/1998	10/15/2013		
8126528	SIGNAL PROCESSING APPARATUS	US	12/410422	3/24/2009	2/28/2012	2009/0182211 A1	7/16/2009
7509154	SIGNAL PROCESSING APPARATUS	US	11/842117	8/20/2007	3/24/2009	2008/0045823 A1	2/21/2008
8019400	SIGNAL PROCESSING APPARATUS	US	11/894716	8/20/2007	9/13/2011	2008/0033266 A1	2/7/2008
8046041	SIGNAL PROCESSING APPARATUS	US	11/766714	6/21/2007	10/25/2011	2008/0004514 A1	1/3/2008
8036728	SIGNAL PROCESSING APPARATUS	US	11/766719	6/21/2007	10/11/2011	2007/0291832 A1	12/20/2007

Patent No.	Title of Invention	Country	Application No.	Filing Date	Date Issued	Publication No.	Pub. Date
8046042	SIGNAL PROCESSING APPARATUS	US	11/766700	6/21/2007	10/25/2011	2007/0249918 A1	10/25/2007
7215986	SIGNAL PROCESSING APPARATUS	US	11/154093	6/15/2005	5/8/2007	2005/0256385 A1	11/17/2005
7254433	SIGNAL PROCESSING APPARATUS	US	10/676534	9/30/2003	8/7/2007	2004/0064020 A1	4/1/2004
7496393	SIGNAL PROCESSING APPARATUS	US	10/677050	9/30/2003	2/24/2009	2004/0068164 A1	4/8/2004
8588880	EAR SENSOR	US	12/658872	2/16/2010	11/19/2013	2010/0217103 A1	8/26/2010
8584345	REPROCESSING OF A PHYSIOLOGICAL SENSOR	US	13/041803	3/7/2011	11/19/2013	2011/0214280 A1	9/8/2011
8571619	HEMOGLOBIN DISPLAY AND PATIENT TREATMENT	US	12/783436	5/19/2010	10/29/2013	2010/0298675 A1	11/25/2010
8418524	NON-INVASIVE SENSOR CALIBRATION DEVICE	US	12/813782	6/11/2010	4/16/2013	2011/0023575 A1	2/3/2011
8346330	REFLECTION-DETECTOR SENSOR POSITION INDICATOR	US	12/577670	10/12/2009	1/1/2013	2010/0094107 A1	4/15/2010
8401602	SECONDARY-EMITTER SENSOR POSITION INDICATOR	US	12/577667	10/12/2009	3/19/2013	2010/0094106 A1	4/15/2010
8547209	ALARM SUSPEND SYSTEM	US	13/476725	5/21/2012	10/1/2013	2012/0232366 A1	9/13/2012
8203438	ALARM SUSPEND SYSTEM	US	12/510982	7/28/2009	6/19/2012	2010/0026510 A1	2/4/2010
8355766	CERAMIC EMITTER SUBSTRATE	US	12/248841	10/9/2008	1/15/2013	2009/0156913 A1	6/18/2009
8048040	FLUID TITRATION SYSTEM	US	12/208998	9/11/2008	11/1/2011	2009/0076462 A1	3/19/2009
D135938	CONNECTOR	TW	97304976	8/28/2008	7/21/2010		
30-0544369	CONNECTOR	KR	30-2008-0037404	8/29/2008	10/29/2009		
1363919	CONNECTOR	JP	2008-022157	8/28/2008	5/29/2009		
218211	CONNECTOR	IN	218211	8/28/2008	4/27/2009		
000995071-0001	CONNECTORS	EU	000995071-0001	8/28/2008	8/28/2008		
ZL200830148345.7	CONNECTOR	CN	2.0083E+11	8/29/2008	1/6/2010		
D614305	CONNECTOR ASSEMBLY	US	29/304439	2/29/2008	4/20/2010		
D587657	CONNECTOR ASSEMBLY	US	29/296067	10/12/2007	3/3/2009		
001018360-001-004	CONNECTOR ASSEMBLY	EU	001018360-001-004	10/8/2008	10/8/2008		
D609193	CONNECTOR ASSEMBLY	US	29/296064	10/12/2007	2/2/2010		
5296793	CONNECTOR ASSEMBLY	JP	2010-529060	10/9/2008	6/21/2013		
8529301	SHIELDED CONNECTOR ASSEMBLY	US	13/399762	2/17/2012	9/10/2013	2012/0276786 A1	11/1/2012
8118620	CONNECTOR ASSEMBLY WITH REDUCED UNSHIELDED AREA	US	12/248856	10/9/2008	2/21/2012	2009/0099423 A1	4/16/2009
8310336	SYSTEMS AND METHODS FOR STORING, ANALYZING, RETRIEVING AND DISPLAYING STREAMING MEDICAL DATA	US	12/904925	10/14/2010	11/13/2012	2011/0169644 A1	7/14/2011
8274360	SYSTEMS AND METHODS FOR STORING, ANALYZING, AND RETRIEVING MEDICAL DATA	US	12/249806	10/10/2008	9/25/2012	2009/0119330 A1	5/7/2009
8229533	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	13/358461	1/25/2012	7/24/2012	2012/0123278 A1	5/17/2012
7919713	LOW NOISE OXIMETRY CABLE INCLUDING CONDUCTIVE CORDS	US	12/104350	4/16/2008	4/5/2011	2008/0255435 A1	10/16/2008
8652060	PERFUSION TREND INDICATOR	US	12/011011	1/22/2008	2/18/2014	2008/0221464 A1	9/11/2008
5441707	PLETHYSMOGRAPH VARIABILITY PROCESSOR	JP	2009-540509	12/7/2007	12/27/2013		
8414499	PLETHYSMOGRAPH VARIABILITY PROCESSOR	US	11/952940	12/7/2007	4/9/2013	2008/0188760 A1	8/7/2008
8315683	DUO CONNECTOR PATIENT CABLE	US	11/858818	9/20/2007	11/20/2012	2008/0071153 A1	3/20/2008
8457707	CONGENITAL HEART DISEASE MONITOR	US	11/858053	9/19/2007	6/4/2013	2008/0071155 A1	3/20/2008
8180420	SIGNAL PROCESSING APPARATUS AND METHOD	US	11/842128	8/20/2007	5/15/2012	2008/0036752 A1	2/14/2008
8190227	SIGNAL PROCESSING APPARATUS AND METHOD	US	12/368222	2/9/2009	5/29/2012	2009/0209835 A1	8/20/2009
7489958	SIGNAL PROCESSING APPARATUS AND METHOD	US	11/417858	5/3/2006	2/10/2009	2006/0200016 A1	9/7/2006
7499741	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/839276	5/4/2004	3/3/2009	2004/0204637 A1	10/14/2004
7471971	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/791683	3/2/2004	12/30/2008	2005/0096517 A1	5/5/2005
8185180	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/842106	8/20/2007	5/22/2012	2008/0033265 A1	2/7/2008
8150487	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/750930	5/18/2007	4/3/2012	2007/0225582 A1	9/27/2007
7003339	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	10/700324	11/3/2003	2/21/2006		
6643530	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/735960	12/13/2000	11/4/2003	0002206A1	5/31/2001
7221971	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/311213	12/19/2005	5/22/2007	2006/0161056 A1	7/20/2006
8280473	PERFUSION INDEX SMOOTHER	US	11/871620	10/12/2007	10/2/2012	2008/0091093 A1	4/17/2008
2007313903	SYSTEM AND METHOD FOR MONITORING THE LIFE OF A PHYSIOLOGICAL SENSOR	AU	2007313903	10/11/2007	9/19/2013		
7880626	SYSTEM AND METHOD FOR MONITORING THE LIFE OF A PHYSIOLOGICAL SENSOR	US	11/580214	10/12/2006	2/1/2011	2008/0088467 A1	4/17/2008
8182443	DRUG ADMINISTRATION CONTROLLER	US	11/654904	1/17/2007	5/22/2012		
7990382	VIRTUAL DISPLAY	US	11/648972	1/3/2007	8/2/2011	2007/0188495 A1	8/16/2007
7530942	REMOTE SENSING INFANT WARMER	US	11/583355	10/18/2006	5/12/2009		
7962188 C1	ROBUST ALARM SYSTEM	US	90/012534	9/13/2012	6/26/2013		
7962188	ROBUST ALARM SYSTEM	US	11/546927	10/12/2006	6/14/2011	2007/0109115 A1	5/17/2007
8028701	RESPIRATORY MONITORING	US	11/756501	5/31/2007	10/4/2011	2007/0277823 A1	12/6/2007
8255026	PATIENT MONITOR CAPABLE OF MONITORING THE QUALITY OF ATTACHED PROBES AND ACCESSORIES	US	11/871817	10/12/2007	8/28/2012		
7976472	NONINVASIVE HYPOVOLEMIA MONITOR	US	11/221411	9/6/2005	7/12/2011	2006/0058691 A1	3/16/2006
7937128	CYANOTIC INFANT SENSOR	US	11/171632	6/30/2005	5/3/2011	2006/0020185 A1	1/26/2006
7292883	PHYSIOLOGICAL ASSESSMENT SYSTEM	US	11/094813	3/30/2005	11/6/2007	2006/0009687 A1	1/12/2006
7280858	PULSE OXIMETRY SENSOR	US	11/029009	1/4/2005	10/9/2007	2005/0197550 A1	9/8/2005
DES566282	STAND FOR A PORTABLE PATIENT MONITOR	US	29/223769	2/18/2005	4/8/2008		
DES554263	PORTABLE PATIENT MONITOR	US	29/223771	2/18/2005	10/30/2007		
8353842	PORTABLE PATIENT MONITOR	US	12/343345	12/23/2008	1/15/2013	2009/0306488 A1	12/10/2009
7937129	VARIABLE APERTURE SENSOR	US	11/386076	3/21/2006	5/3/2011	2006/0258922 A1	11/16/2006
1722676	PHYSIOLOGICAL PARAMETER SYSTEM	EP	5724991.4	3/8/2005	12/19/2012	1722676	11/22/2006
7415297	PHYSIOLOGICALPARAMETER SYSTEM	US	11/075389	3/8/2005	8/19/2008	US-2005-0203352 A1	9/15/2005

Patent No.	Patent Title	Country	Application No.	Filing Date	Issue Date	Publication No.	Pub. Date
7438683 C1	APPLICATION IDENTIFICATION SENSOR	US	90/012546	10/25/2012	11/6/2013		
8337403	PATIENT MONITOR HAVING CONTEX-BASED SENSITIVITY ADJUSTMENTS	US	12/254748	10/20/2008	12/25/2012	2009/0048495 A1	2/19/2009
7438683	APPLICATION IDENTIFICATION SENSOR	US	11/071875	3/3/2005	10/21/2008	2005/0283052 A1	12/22/2005
7371981	CONNECTOR SWITCH	US	11/062169	2/18/2005	5/13/2008	2005/0187440 A1	8/25/2005
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7254434	VARIABLE PRESSURE REUSABLE SENSOR	US	10/965394	10/13/2004	8/7/2007	2005/0085704 A1	4/21/2005
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7254431	PHYSIOLOGICAL PARAMETER TRACKING SYSTEM	US	10/930048	8/30/2004	8/7/2007	2005/0090724 A1	4/28/2005
5100119	MULTIPURPOSE SENSOR PORT	JP	2006-521950	7/26/2004	10/5/2012		
1651104	MULTIPURPOSE SENSOR PORT	EP	4779096.9	7/26/2004	8/22/2012	1651104	5/3/2006
7500950	MULTIPURPOSE SENSOR PORT	US	10/898680	7/23/2004	3/10/2009	2005/0075548 A1	4/7/2005
7341559	PULSE OXIMETRY EAR SENSOR	US	10/631882	7/31/2003	3/11/2008	2004/0054291 A1	3/18/2004
7142901	PARAMETER COMPENSATED PHYSIOLOGICAL MONITOR	US	10/714526	11/14/2003	11/28/2006	2004/0242980 A1	12/2/2004
7274955	PARAMETER COMPENSATED PULSE OXIMETER	US	10/671179	9/25/2003	9/25/2007	2004/0122301 A1	6/24/2004
7096052	OPTICAL PROBE INCLUDING PREDETERMINED EMISSION WAVELENGTH BASED ON PATIENT TYPE	US	10/679963	10/6/2003	8/22/2006	US-2004-0122302-A1	6/24/2004
7096054	LOW NOISE OPTICAL HOUSING	US	10/632012	7/31/2003	8/22/2006	2004/0039272 A1	2/26/2004
7509494	INTERFACE CABLE	US	10/377996	2/28/2003	3/24/2009	2003/0167391 A1	9/4/2003
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6850788	PHYSIOLOGICAL MEASUREMENT COMMUNICATIONS ADAPTER	US	10/377933	2/28/2003	2/1/2005	03/0181798	9/25/2003
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8570167	PHYSIOLOGICAL TREND MONITOR	US	13/557107	7/24/2012	10/29/2013	2012/0289797 A1	11/15/2012
8228181	PHYSIOLOGICAL TREND MONITOR	US	13/018334	1/31/2011	7/24/2012	2011/0124990 A1	5/26/2011
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7355512	PARALLEL ALARM PROCESSOR	US	11/717591	3/13/2007	4/8/2008		
7190261	ARRHYTHMIA ALARM PROCESSOR	US	11/405815	4/18/2006	3/13/2007	2006/0192667	8/31/2006
7030749	PARALLEL MEASUREMENT ALARM PROCESSOR	US	10/975860	10/28/2004	4/18/2006	US-2005-0083193-A1	4/21/2005
6822564	PARALLEL MEASUREMENT ALARM PROCESSOR	US	10/351735	1/24/2003	11/23/2004	03/0137423	7/24/2003
6934570	PHYSIOLOGICAL SENSOR COMBINATION	US	10/325699	12/19/2002	8/23/2005	03/0225323	12/4/2003
7340287	FLEX CIRCUIT SHIELDED OPTICAL SENSOR	US	11/293583	12/2/2005	3/4/2008	2006/0084852 A1	4/20/2006
6985764	FLEX CIRCUIT SHIELDED OPTICAL SENSOR	US	10/137942	5/2/2002	1/10/2006	02/0165440	11/7/2002
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1399058	SIGNAL COMPONENT COMPRESSOR	GB	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
1399058	SIGNAL COMPONENT COMPRESSOR	EP	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
60207717.6-08	SIGNAL COMPONENT COMPRESSOR	DE	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
8498684	SINE SATURATION TRANSFORM	US	13/043421	3/8/2011	7/30/2013	2011/0160552 A1	6/30/2011
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6850787	SIGNAL COMPONENT PROCESSOR	US	10/184032	6/26/2002	2/1/2005	03/0055325	3/20/2003
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6697658	LOW POWER PULSE OXIMETER	US	10/184028	6/26/2002	2/24/2004	03/0028085	2/6/2003
6658276	PULSE OXIMETER USER INTERFACE	US	10/076860	2/12/2002	12/2/2003	02/0161291	10/31/2002
7225006	ATTACHMENT AND OPTICAL PROBE	US	10/350550	1/23/2003	5/29/2007	2004/0147821 A1	7/29/2004
6760607	RIBBON CABLE SUBSTRATE PULSE OXIMETRY SENSOR	US	10/032339	12/20/2001	7/6/2004	02/0095074	7/18/2002
6697656	PULSE OXIMETRY SENSOR COMPATIBLE WITH MULTIPLE PULSE OXIMETRY SYSTEMS	US	09/604340	6/27/2000	2/24/2004		
6470199	ELASTIC SOCK FOR POSITIONING AN OPTICAL PROBE	US	09/598930	6/21/2000	10/22/2002		
1286619	VARIABLE MODE AVERAGER	EP	1946090.6	6/5/2001	4/20/2011	1286619	3/5/2003
7499835 C1	VARIABLE INDICATION ESTIMATOR	US	90/012532	9/13/2012	12/19/2013		
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7499835	VARIABLE INDICATION ESTIMATOR	US	11/375662	3/14/2006	3/3/2009	2006/0161389 A1	7/20/2006
6999904	VARIABLE INDICATION ESTIMATOR	US	10/213270	8/5/2002	2/14/2006	2003/0101027	5/29/2003
8489364	VARIABLE INDICATION ESTIMATOR	US	13/601930	8/31/2012	7/16/2013	2012/0330562 A1	12/27/2012
8260577	VARIABLE INDICATION ESTIMATOR	US	13/007109	1/14/2011	9/4/2012	2011/0112799 A1	5/12/2011
6430525	VARIABLE MODE AVERAGER	US	09/586845	6/5/2000	8/6/2002		
6542764	PULSE OXIMETER MONITOR FOR EXPRESSING THE URGENCY OF THE PATIENT'S CONDITION	US	09/727944	12/1/2000	4/1/2003		
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	GB	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	FR	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	EP	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	DE	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
7734320	SENSOR ISOLATION	US	11/842088	8/20/2007	6/8/2010	2008/0033267 A1	2/7/2008
7272425	PULSE OXIMETRY SENSOR INCLUDING STORED SENSOR DATA	US	11/235617	9/26/2005	9/18/2007	2006/0020180 A1	1/26/2006
6950687	ISOLATION AND COMMUNICATION ELEMENT FOR A RESPOSABLE PULSE OXIMETRY SENSOR	US	10/351643	1/24/2003	9/27/2005	03/0135099	7/17/2003
6671531	SENSOR WRAP INCLUDING FOLDABLE APPLICATOR	US	10/020664	12/11/2001	12/30/2003	02/0045807	4/18/2002
8000761	RESPOSABLE PULSE OXIMETRY SENSOR	US	11/415600	5/2/2006	8/16/2011	2006/0200018 A1	9/7/2006
7039449	RESPOSABLE PULSE OXIMETRY SENSOR	US	10/741777	12/19/2003	5/2/2006	US-2004-0133088-A1	7/8/2004
6725075	RESPOSABLE PULSE OXIMETRY SENSOR	US	10/128721	4/23/2002	4/20/2004	02/0115919	8/22/2002
6377829	RESPOSABLE PULSE OXIMETRY SENSOR	US	09/456666	12/9/1999	4/23/2002		

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1674034	SENSOR LIFE MONITOR METHOD	EP	6006843.4	2/9/2001	8/25/2010	1674034	6/28/2006
500827	SENSOR LIFE MONITOR SYSTEM	JP	2001-557463	2/9/2001	5/25/2012		
1257190	SENSOR LIFE MONITOR SYSTEM	GB	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
1257190	SENSOR LIFE MONITOR SYSTEM	EP	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
60118891.8-08	SENSOR LIFE MONITOR SYSTEM	DE	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
8399822	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	13/069261	3/22/2011	3/19/2013	2011/0172942 A1	7/14/2011
6388240	SHIELDED OPTICAL PROBE AND METHOD HAVING A LONGEVITY INDICATION	US	09/798764	3/2/2001	5/14/2002	0009265A1	7/26/2001
7910875	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	11/714303	3/6/2007	3/22/2011	2007/0156034 A1	7/5/2007
7186966	AMOUNT OF USE TRACKING DEVICE AND METHOD FOR MEDICAL PRODUCT	US	11/311212	12/19/2005	3/6/2007	2006/0097135 A1	5/11/2006
6979812	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	11/065994	2/24/2005	12/27/2005	US-2005-0143631-A1	6/30/2005
6861639	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	10/357531	2/3/2003	3/1/2005	03/0111592	6/19/2003
6515273	SYSTEM FOR INDICATING THE EXPIRATION OF THE USEFUL OPERATING LIFE OF A PULSE OXIMETRY SENSOR	US	09/502032	2/10/2000	2/4/2003	45509	11/29/2001
6580086	SHIELDED OPTICAL PROBE AND METHOD	US	09/420544	10/19/1999	6/17/2003		
1719449	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	EP	6012571.3	3/24/2000	12/22/2010	1719449	11/8/2006
1420692	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES, COMPRISING A PASSIVE RESPIRATORY GAS HUMIDIFYER, WHERE RAYS OF LIGHT ARE TRANSMITTED THROUGH A DEHUMIFIED GAS FLOW	EP	2763147.2	8/26/2002	7/26/2006	1420692	5/26/2004
519766	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES, COMPRISING A PASSIVE RESPIRATORY GAS HUMIDIFYER, WHERE RAYS OF LIGHT ARE TRANSMITTED THROUGH A DEHUMIFIED GAS FLOW	SE	0102860-4	8/28/2001	4/8/2003	519766	3/1/2003
1420842	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	EP	2760976.7	8/26/2002	11/8/2006	1420842	5/26/2004
523461	DEVICE AT QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	SE	0102861-2	8/28/2001	4/20/2004	523461	3/1/2003
1420691	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	EP	2759046.2	8/26/2002	7/26/2006	1420691	5/26/2004
519779	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	SE	0102862-0	8/28/2001	4/8/2003	519779	3/1/2003
524086	MEASURING HEAD FOR A GAS ANALYSER	SE	0103599-7	10/30/2001	6/22/2004	524086	5/1/2003
4644373	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	JP	2000-606119	3/24/2000	12/10/2010		
1617760	AN AIR GAS ANALYZER WINDOW AND A METHOD FOR PRODUCING SUCH A WINDOW	EP	4728997	4/22/2004	1/21/2009	1617760	1/25/2006
525095	AN AIR GAS ANALYZER WINDOW AND A METHOD FOR PRODUCING SUCH A WINDOW	SE	0301218-4	4/25/2003	11/30/2004	525095	10/26/2004
1171025	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	GB	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
532941	GAS SAMPLING LINE FOR RESPIRATORY GASES	SE	0801967-1	9/15/2008	5/18/2010	532941	3/16/2010
2065697	GAS MEASUREMENT SYSTEM	EP	8167482.2	10/24/2008	2/22/2012	2065697	6/3/2009
1171025	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	EP	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
60028953.2-08	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	DE	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
5436499	HIGH PERFORMANCE GAAS DEVICES AND METHOD	US	08/212115	3/11/1994	7/25/1995		
6010937	REDUCTION OF DISLOCATIONS IN A HETEROEPITAXIAL SEMICONDUCTOR STRUCTURE	US	08/523694	9/5/1995	1/4/2000		
8532728	PULSE OXIMETER PROBE-OFF DETECTOR	US	12/345537	12/29/2008	9/10/2013	2009/0112073 A1	4/30/2009
5671914	MULTI-BAND SPECTROSCOPIC PHOTODETECTOR ARRAY	US	08/553972	11/6/1995	9/30/1997		
6066204	HIGH PRESSURE MOCVD REACTOR SYSTEM	US	08/780724	1/8/1997	5/23/2000		
6255708	SEMICONDUCTOR P-I-N DETECTOR	US	08/949015	10/10/1997	7/3/2001		
6635559	FORMATION OF INSULATING ALUMINUM OXIDE IN SEMICONDUCTOR SUBSTRATES	US	09/949030	9/6/2001	10/21/2003	2003/00042501 A1	3/6/2003
7514725	NANOPHOTOVOLTAIC DEVICES	US	11/002850	11/30/2004	4/7/2009	2006/0113557 A1	6/1/2006
7955965	NANOPHOTOVOLTAIC DEVICES	US	12/851893	8/6/2010	6/7/2011	2010/0297803 A1	11/25/2010
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8242009	NANOPHOTOVOLTAIC DEVICES	US	13/152977	6/3/2011	8/14/2012	2011/0237015 A1	9/29/2011
7471969	PULSE OXIMETER PROBE-OFF DETECTOR	US	10/721607	11/25/2003	12/30/2008	2004/0158134 A1	8/12/2004
6654624	PULSE OXIMETER PROBE-OFF DETECTOR	US	10/027574	12/19/2001	11/25/2003	02/0072660	6/13/2002
8455290	METHOD OF FABRICATING EPITAXIAL STRUCTURES	US	12/807399	9/4/2010	6/4/2013	2012/0058591 A1	3/8/2012
6360114	PULSE OXIMETER PROBE-OFF DETECTOR	US	09/531820	3/21/2000	3/19/2002		
6771994	PULSE OXIMETER PROBE-OFF DETECTION SYSTEM	US	10/374303	2/24/2003	8/3/2004	03/0139656	7/24/2003
6526300	PULSE OXIMETER PROBE-OFF DETECTION SYSTEM	US	09/595081	6/16/2000	2/25/2003		
6152754	CIRCUIT BOARD BASED CABLE CONNECTOR	US	09/470401	12/21/1999	11/28/2000		
4987057	UNIVERSAL/UPGRADING PULSE OXIMETER	JP	2009-242957	1/25/2000	5/11/2012		
2684695	UNIVERSAL/UPGRADING PULSE OXIMETER	CA	2684695	1/25/2000	11/6/2012		
4986324	UNIVERSAL/UPGRADING PULSE OXIMETER	JP	2000-594379	1/25/2000	5/11/2012		
5590649	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATIONJ TO DETERMINE BLOOD PRESSURE	US	08/228213	4/15/1994	1/7/1997		
1148809	UNIVERSAL/UPGRADING PULSE OXIMETER	GB	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
1148809	UNIVERSAL/UPGRADING PULSE OXIMETER	FR	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
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60037106.9-08	UNIVERSAL/UPGRADING PULSE OXIMETER	DE	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
2358454	UNIVERSAL/UPGRADING PULSE OXIMETER	CA	2358454	1/25/2000	3/23/2010		
1309270	DUAL-MODE PULSE OXIMETER	SE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
2064989	DUAL-MODE PULSE OXIMETER	EP	9002646.9	8/14/2001	3/21/2012	2064989	6/3/2009
1309270	DUAL-MODE PULSE OXIMETER	NL	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
5833618	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	US	08/561923	11/22/1995	11/10/1998		
5810734	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	US	08/556547	11/22/1995	9/22/1998		
5830131	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	US	08/561928	11/22/1995	11/3/1998		

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1309270	DUAL-MODE PULSE OXIMETER	MC	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	LU	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	IE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	GB	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	FR	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	FI	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	EP	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	DK	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	DE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	CH	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
8532727	DUAL-MODE PULSE OXIMETER	US	11/894722	8/20/2007	9/10/2013	2008/0039701 A1	2/14/2008
7530949	DUAL-MODE PULSE OXIMETER	US	10/911391	8/3/2004	5/12/2009	2005/0065417 A1	3/24/2005
3908783	AUTOMATICLLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	JP	513247/1996	9/28/1995	1/26/2007		4/25/2007
6770028	DUAL-MODE PULSE OXIMETER	US	09/641542	8/18/2000	8/3/2004		
8405608	SYSTEM AND METHOD FOR ALTERING A DISPLAY MODE	US	12/039704	2/28/2008	3/26/2013	2008/0177160 A1	7/24/2008
7991446	SYSTEMS AND METHODS FOR ACQUIRING CALIBRATION DATA USABLE IN A PULSE OXIMETER	US	11/431151	5/8/2006	8/2/2011	2006/0258926 A1	11/16/2006
7428432	SYSTEMS AND METHODS FOR ACQUIRING CALIBRATION DATA USABLE IN A PULSE OXIMETER	US	10/420994	4/22/2003	9/23/2008	2003/0197679	10/23/2003
6584336	UNIVERSAL/UPGRADING PULSE OXIMETER	US	09/516110	3/1/2000	6/24/2003		
6463311 C1	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	90/012562	9/14/2012	4/25/2013		
1632172	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	5025367.3	12/28/1999	3/2/2011	1632172	3/8/2006
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	GB	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
2305103	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	10182439.9	12/28/1999	9/25/2013	2305103	4/6/2011
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
69928569.0-08	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	DE	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	AT	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
7988637	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	11/418328	5/3/2006	8/2/2011	2006/0206021 A1	9/14/2006
7044918	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	10/974095	10/27/2004	5/16/2006	US-2005-0085702-A1	4/21/2005
6816741	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	10/267446	10/8/2002	11/9/2004	03/0032873	2/13/2003
5904654	EXCITER-DETECTOR UNIT FOR MEASURING PHYSIOLOGICAL PARAMETERS	US	08/606563	2/26/1996	5/18/1999		
5791347	MOTION INSENSITIVE PULSE DETECTOR	US	08/700647	8/14/1996	8/11/1998		
6463311	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	09/471510	12/23/1999	10/8/2002		
1139858	OXIMETRY PULSE INDICATOR	GB	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
1139858	OXIMETRY PULSE INDICATOR	EP	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
60034426.6-08	OXIMETRY PULSE INDICATOR	DE	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
4300032	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	JP	2002-588840	5/13/2002	4/24/2009		
7024233 C1	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	90/012553	9/13/2012	9/3/2013		
6684090 C1	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	90/012567	9/14/2012	12/12/2013		
6027452	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	08/672218	6/26/1996	2/22/2000		
6632181	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	09/412295	10/5/1999	10/14/2003	2002/0099296 A1	7/25/2002
6939305	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	10/685068	10/14/2003	9/6/2005	04/0077956	4/22/2004
7041060	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	11/220035	9/6/2005	5/9/2006	2006/0004293 A1	1/5/2006
7618375	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	11/413718	4/28/2006	11/17/2009	2006/0206030 A1	9/14/2006
7951086	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	12/617648	11/12/2009	5/31/2011	2010/0056930 A1	3/4/2010
8046040	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	11/397372	4/4/2006	10/25/2011	2006/0195025 A1	8/31/2006
7024233	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	10/942672	9/16/2004	4/4/2006	2005/0033128 A1	2/10/2005
6996427	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	10/739794	12/18/2003	2/7/2006	US-2004-0133087-A1	7/8/2004
6684090	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	09/858114	5/15/2001	1/27/2004	02/0035315	3/21/2002
6606511	PULSE OXIMETRY PULSE INDICATOR	US	09/478230	1/6/2000	8/12/2003		
6285896	FETAL PULSE OXIMETRY SENSOR	US	09/348767	7/7/1999	9/4/2001		
7899507 C1	PHYSIOLOGICAL MONITOR	US	90/012541	9/14/2012	12/26/2012		
1082050	STEREO PULSE OXIMETER	EP	99925958.3	5/27/1999	8/24/2011	1082050	3/14/2001
6852083	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	US	10/052977	1/17/2002	2/8/2005	02/0095090	7/18/2002
7894868	PHYSIOLOGICAL MONITOR	US	11/429473	5/5/2006	2/22/2011	2006/0258925 A1	11/16/2006
8255028	PHYSIOLOGICAL MONITOR	US	11/429471	5/5/2006	8/28/2012	2006/0258924 A1	11/16/2006
5785659	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	US	08/651201	5/17/1996	7/28/1998		
7891355	PHYSIOLOGICAL MONITOR	US	11/417661	5/3/2006	2/22/2011	2006/0281983 A1	12/14/2006
8364223	PHYSIOLOGICAL MONITOR	US	11/417931	5/3/2006	1/29/2013	2006/0258923 A1	11/16/2006
7899507	PHYSIOLOGICAL MONITOR	US	11/417545	5/3/2006	3/1/2011	2006/0270920 A1	11/30/2006
7761128	PHYSIOLOGICAL MONITOR	US	11/104720	4/13/2005	7/20/2010	2005/0197551 A1	9/8/2005
6898452	STEREO PULSE OXIMETER	US	10/668487	9/22/2003	5/24/2005	04/0059209	3/25/2004
6714804	STEREO PULSE OXIMETER	US	10/026013	12/21/2001	3/30/2004	02/0082488	6/27/2002
6334065	STEREO PULSE OXIMETER	US	09/323176	5/27/1999	12/25/2001		
6165005	PATIENT CABLE SENSOR SWITCH	US	09/456232	12/7/1999	12/26/2000		
5997343	PATIENT CABLE SENSOR SWITCH	US	09/044705	3/19/1998	12/7/1999		
7844313	PULSE OXIMETRY SENSOR ADAPTER	US	11/341999	1/27/2006	11/30/2010	2006/0189859 A1	8/24/2006
6325761	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	US	09/151910	9/11/1998	10/10/2000		
771503	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	US	09/514917	2/28/2000	12/4/2001		
2343092	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	AU	60347/99	9/10/1999	7/8/2004		
1112023	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	CA	2343092	9/10/1999	11/4/2008		5/25/2000
1112023	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	EP	99969003.5	9/10/1999	1/10/2007	1112023	7/4/2001
6993371	PULSE OXIMETRY SENSOR ADAPTER	GB	99969003.5	9/10/1999	1/10/2007	1112023	7/4/2001
		US	10/624446	7/22/2003	1/31/2006	US-2004-0147823-A1	7/29/2004

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6597933	PULSE OXIMETRY SENSOR ADAPTER	US	09/982453	10/17/2001	7/22/2003	02/0026107	2/28/2002
6349228	PULSE OXIMETRY SENSOR ADAPTER	US	09/404060	9/23/1999	2/19/2002		
5995855	PULSE OXIMETRY SENSOR ADAPTER	US	09/021957	2/11/1998	11/30/1999		
6830711	MOLD TOOL FOR AN OPTOELECTRONIC ELEMENT	US	10/336953	1/3/2003	12/14/2004	03/0143297	7/31/2003
7332784	METHOD OF PROVIDING AN OPTOELECTRONIC ELEMENT WITH A NON-PROTRUDING LENS	US	11/475725	6/27/2006	2/19/2008	2007/0007612 A1	1/11/2007
7067893	OPTOELECTRONIC ELEMENT WITH A NON-PROTRUDING LENS	US	10/337058	1/3/2003	6/27/2006	03/0132495	7/17/2003
6525386	NON-PROTRUDING OPTOELECTRONIC LENS	US	09/038494	3/10/1998	2/25/2003		
6184521	PHOTODIODE DETECTOR WITH INTEGRATED NOISE SHIELDING	US	09/003224	1/6/1998	2/6/2001		
5890929	SHIELDED MEDICAL CONNECTOR	US	08/868164	6/3/1997	4/6/1999		
8180420 C1	SIGNAL PROCESSING APPARATUS AND METHOD	US	90/012542	9/13/2012	11/19/2013		
6067462	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/081539	5/19/1998	5/23/2000		
6699194	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/547588	4/11/2000	3/2/2004		
6002952	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/834194	4/14/1997	12/14/1999		
4454854	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	JP	2000-543037	4/9/1999	2/12/2010		
1067861	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	GB	99916568.1	4/9/1999	7/12/2006	1067861	1/17/2001
1067861	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	EP	99916568.1	4/9/1999	7/12/2006	1067861	1/17/2001
6229856	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/058799	4/10/1998	5/8/2001		
5919134	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/005898	1/12/1998	7/6/1999		
1030181	PATIENT CABLE CONNECTOR	JP	10985/1996	4/16/1996	11/6/1998		1/20/1999
2055550	PATIENT CABLE CONNECTOR	GB	2055550	4/16/1996	9/23/1996		
M9603723.7	PATIENT CABLE CONNECTOR	DE	9603723.7	4/16/1996	10/22/1996		
6280213	PATIENT CABLE CONNECTOR	US	09/708251	11/7/2000	8/28/2001		
5934925	PATIENT CABLE CONNECTOR	US	08/838392	4/9/1997	8/10/1999		
5645440	PATIENT CABLE CONNECTOR	US	08/543297	10/16/1995	7/8/1997		
5758644	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	08/478493	6/7/1995	6/2/1998		
6011986	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	09/016924	2/2/1998	1/4/2000		
6397091	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	09/451151	11/30/1999	5/28/2002	20123	9/6/2001
6678543	OPTICAL PROBE AND POSITIONING WRAP	US	10/005711	11/8/2001	1/13/2004	02/0062071	5/23/2002
7496391	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	10/757279	1/13/2004	2/24/2009	2004/0147824 A1	7/29/2004
7526328	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	11/640077	12/15/2006	4/28/2009	2007/0112260 A1	5/17/2007
8145287	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	12/430049	4/24/2009	3/27/2012	2009/0270703 A1	10/29/2009
6263222 C1	SIGNAL PROCESSING APPARATUS	US	90/012403	7/23/2012	8/9/2013		
5823950	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	08/745474	11/12/1996	10/20/1998		
729132	MANUAL AND AUTOMATIC PROBE CALIBRATION	AU	41065/99	6/4/1996	11/15/2001		
7530955 C1	SIGNAL PROCESSING APPARATUS	US	90/012566	9/14/2012	1/30/2014		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	AT	96917089.3	6/4/1996	8/28/2002		
704383	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	AU	59771/96	6/4/1996	7/29/1999		12/30/1996
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	BE	96917089.3	6/4/1996	8/28/2002		
PI9706436-0	MANUAL AND AUTOMATIC PROBE CALIBRATION	BR	PI9706436-0	12/19/1997	5/6/2008		12/7/1999
2221446	OPTICAL SENSOR INCLUDING INFORMATION ELEMENT	CA	2221446	6/4/1996	9/30/2008		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	CH	96917089.3	6/4/1996	8/28/2002		
96195864.2	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	CN	96195864.2	6/4/1996	7/2/2003		9/2/1998
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	DE	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	DK	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	EP	96917089.3	6/4/1996	8/28/2002		4/1/1998
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	ES	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	FI	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	FR	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	GB	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	GR	96917089.3	6/4/1996	8/28/2002		
HK1009848	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	HK	98110565.7	6/4/1996	4/4/2003	1009848	6/11/1999
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	IE	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	IT	96917089.3	6/4/1996	8/28/2002		
1238627	MEDICAL SENSOR AND INFORMATION SYSTEM	EP	2012382.4	6/4/1996	8/12/2009	1238627	9/11/2002
HK1049779	MEDICAL SENSOR AND INFORMATION SYSTEM	HK	3101733.7	6/4/1996	12/11/2009	HK1049779	5/30/2003
3837161	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	JP	9-501166	6/4/1996	8/4/2006		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	NL	96917089.3	6/4/1996	8/28/2002		
2357059	SIGNAL PROCESSING APPARATUS	CA	2357059	10/10/1995	12/7/2010		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	PT	96917089.3	6/4/1996	8/28/2002		
725063	PHYSIOLOGICAL MONITOR AND METHOD OF MINIMIZING NOISE	AU	21258/99	10/10/1995	1/25/2001		
4021916	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	JP	2005-353967	6/4/1996	10/5/2007		12/12/2007
2199723	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	RU	98100085	6/4/1996	2/27/2003		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	SE	96917089.3	6/4/1996	8/28/2002		
196645	SIGNAL PROCESSING APPARATUS	MX	972434	10/10/1995	5/25/2000		
5638818	LOW NOISE OPTICAL PROBE	US	08/333132	11/1/1994	6/17/1997		
3705814	SIGNAL PROCESSING APPARATUS	JP	8-514054	10/10/1995	8/5/2005		10/12/2005
95196636.7	SIGNAL PROCESSING APPARATUS	CN	95196636.7	10/10/1995	2/12/2003		12/24/1997
2199016	SIGNAL PROCESSING APPARATUS	CA	2199016	10/10/1995	1/1/2002		
699762	SIGNAL PROCESSING APPARATUS	AU	39623/95	10/10/1995	4/1/1999		5/15/1996
760205	PHYSIOLOGICAL MONITOR AND METHOD OF MINIMIZING NOISE	AU	71730/00	10/10/1995	9/4/2003		
3576168	LOW NOISE OPTICAL PROBE	JP	8-514884	11/1/1995	7/16/2004		10/13/2004

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5632272	SIGNAL PROCESSING APPARATUS	US	08/320154	10/7/1994	5/27/1997		
4173429	LOW NOISE OPTICAL PROBE	JP	2003-390644	11/1/1995	8/22/2008		10/29/2008
7962190	SIGNAL PROCESSING APPARATUS	US	09/111604	7/7/1998	6/14/2011		
723417	FINGER-COT OXIMETRIC PROBE	GB	94922544.5	7/13/1994	4/2/2003		
723417	FINGER-COT OXIMETRIC PROBE	FR	94922544.5	7/13/1994	4/2/2003		
723417	FINGER-COT OXIMETRIC PROBE	EP	94922544.5	7/13/1994	4/2/2003	723417	7/31/1996
69432421.3	FINGER-COT OXIMETRIC PROBE	DE	94922544.5	7/13/1994	4/2/2003		
94194813.7	FINGER-COT OXIMETRIC PROBE	CN	94194813.7	7/13/1994	1/8/2003		1/29/1997
688352	SENSOR PROBE COMPRISING A FINGER COT AND A SOURCE AND DETECTOR OF ELECTROMAGNETIC ENERGY (AMENDED TITLE)	AU	73613/94	7/13/1994	7/2/1998		2/13/1995
6371921	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	US	09/430928	11/1/1999	4/16/2002		
6595316	TENSION-ADJUSTABLE MECHANISM FOR STETHOSCOPE EARPIECES	US	09/907796	7/18/2001	7/22/2003	2003/0015368 A1	1/23/2003
5561275	HEADSET FOR ELECTRONIC STETHOSCOPE	US	08/234254	4/28/1994	10/1/1996		
75753	THORACIC COUPLER	CA	1994-2101	10/21/1994	2/16/1995		
DES361840	STETHOSCOPE HEAD	US	29/021668	4/21/1994	8/29/1995		
76446	EAR TIP	CA	1994-2103	10/21/1994	5/25/1995		
DES363120	STETHOSCOPE EAR TIP	US	29/021665	4/21/1994	10/10/1995		
76445	STETHOSCOPE HEADSET	CA	1994-2102	10/21/1994	5/25/1995		
DES362063	STETHOSCOPE HEADSET	US	29/021646	4/21/1994	9/5/1995		
74948	STETHOSCOPE HEAD	CA	28-05-93-8	11/12/1993	10/13/1994		
DES353196	STETHOSCOPE HEAD	US	29/008786	5/28/1993	12/6/1994		
74277	ELECTRONIC STETHOSCOPE HOUSING	CA	28-05-93-9	11/12/1993	5/26/1994		
DES353195	ELECTRONIC STETHOSCOPE HOUSING	US	29/008785	5/28/1993	12/6/1994		
5602924	ELECTRONIC STETHOSCOPE	US	08/164382	12/9/1993	2/11/1997		
6236872	SIGNAL PROCESSING APPARATUS	US	09/199744	11/25/1998	5/22/2001		
7215984	SIGNAL PROCESSING APPARATUS	US	10/838593	5/4/2004	5/8/2007	2004/0204636 A1	10/14/2004
6650917	SIGNAL PROCESSING APPARATUS	US	10/005631	12/4/2001	11/18/2003	2003/0036689 A1	2/20/2003
6745060	SIGNAL PROCESSING APPARATUS	US	10/006427	12/3/2001	6/1/2004	02/0077536	6/20/2002
RE38476	SIGNAL PROCESSING APPARATUS	US	10/185804	6/27/2002	3/30/2004		
8364226	SIGNAL PROCESSING APPARATUS	US	13/370239	2/9/2012	1/29/2013	2012/0149997 A1	6/14/2012
7454240	SIGNAL PROCESSING APPARATUS	US	11/432278	5/11/2006	11/18/2008	2006/0217609 A1	9/28/2006
7383070	SIGNAL PROCESSING APPARATUS	US	11/003231	12/3/2004	6/3/2008	2006/0089549 A1	4/27/2006
6157850	SIGNAL PROCESSING APPARATUS	US	08/859837	5/16/1997	12/5/2000		
5534851	ALARM FOR PATIENT MONITOR AND LIFE SUPPORT EQUIPMENT	US	08/254393	6/6/1994	7/9/1996		
5319355	ALARM FOR PATIENT MONITOR AND LIFE SUPPORT EQUIPMENT SYSTEM	US	07/727308	7/10/1991	6/7/1994		
7483730	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	10/957843	10/4/2004	1/27/2009	2005/0043600 A1	2/24/2005
6813511	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	10/260049	9/27/2002	11/2/2004	03/0045785	3/6/2003
6792300	LOW-NOISE OPTICAL PROBES FOR REDUCING LIGHT PIPING	US	09/898990	7/3/2001	9/14/2004	02/0026109	2/28/2002
6256523	LOW-NOISE OPTICAL PROBES	US	09/094202	6/9/1998	7/3/2001		
6088607	LOW NOISE OPTICAL PROBE	US	08/790674	1/28/1997	7/11/2000		
5041187	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE AND METHOD OF FORMING THE SAME	US	07/591552	10/1/1990	8/20/1991		
5069213	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE AND ENCODER	US	07/452719	12/19/1989	12/3/1991		
4964408	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE	US	07/188217	4/29/1988	10/23/1990		
5431170	PULSE RESPONSIVE DEVICE	US	07/938179	5/28/1991	7/11/1995		
6826419	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/327234	12/20/2002	11/30/2004	03/0097049	5/22/2003
6501975	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/757444	1/9/2001	12/31/2002		
6206830	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/441736	11/17/1999	3/27/2001		
6036642	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/102131	6/22/1998	3/14/2000		
5769785	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/479918	6/7/1995	6/23/1998		
7132641	SHIELDED OPTICAL PROBE HAVING AN ELECTRICAL CONNECTOR	US	10/404961	3/31/2003	11/7/2006	2003/0162414 A1	8/28/2003
6541756	SHIELDED OPTICAL PROBE HAVING AN ELECTRICAL CONNECTOR	US	09/770757	1/25/2001	4/1/2003	45532	11/29/2001
DES.393830	PATIENT CABLE CONNECTOR	US	29/045258	10/16/1995	4/28/1998		
7937130	SIGNAL PROCESSING APPARATUS	US	12/340577	12/19/2008	5/3/2011	2009/0099430 A1	4/16/2009
7469157	SIGNAL PROCESSING APPARATUS	US	10/779033	2/13/2004	12/23/2008	2004/0236196 A1	11/25/2004
6263222	SIGNAL PROCESSING APPARATUS	US	08/943511	10/6/1997	7/17/2001		
5685299	SIGNAL PROCESSING APPARATUS	US	08/572488	12/14/1995	11/11/1997		
5490505	SIGNAL PROCESSING APPARATUS	US	08/132812	10/6/1993	2/13/1996		
5452717	FINGER-COT PROBE	US	08/253100	6/2/1994	9/26/1995		
5337744	LOW NOISE FINGER COT PROBE	US	08/091873	7/14/1993	8/16/1994		
2096985	LOW NOICE OPTICAL PROBE	RU	93058378	3/5/1992	11/27/1997		
3464215	LOW NOISE OPTICAL PROBE	JP	507871/1992	3/5/1992	8/22/2003		
576560	LOW NOISE OPTICAL PROBE	IT	92908666.8	3/5/1992	5/3/2000		
HK1010670	LOW NOISE OPTICAL PROBE	HK	98111719	3/5/1992	1/12/2001	1010670	6/25/1999
576560	LOW NOISE OPTICAL PROBE	GB	92908666.8	3/5/1992	5/3/2000		
576560	LOW NOISE OPTICAL PROBE	FR	92908666.8	3/5/1992	5/3/2000		
576560	LOW NOISE OPTICAL PROBE	EP	92908666.8	3/5/1992	5/3/2000		1/5/1994
576560	LOW NOISE OPTICAL PROBE	DE	92908666.8	3/5/1992	5/3/2000		
2105681	LOW NOISE OPTICAL PROBE	CA	2105681	3/5/1992	7/8/2003		10/1/1992
576560	LOW NOISE OPTICAL PROBE	BE	92908666.8	3/5/1992	5/3/2000		
664175	LOW NOISE OPTICAL PROBE	AU	15691/92	3/5/1992	3/5/1996		
5782757	LOW NOISE OPTICAL PROBES	US	08/543789	10/16/1995	7/21/1998		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	SE	92907861.6	3/5/1992	9/15/1999		
2144211	SIGNAL PROCESSING APPARATUS AND METHOD	RU	93058616	3/5/1992	1/10/2000		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	NL	92907861.6	3/5/1992	9/15/1999		
3363150	SIGNAL PROCESSING APPARATUS AND METHOD	JP	507451/1992	3/5/1992	10/25/2002		

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574509	SIGNAL PROCESSING APPARATUS AND METHOD	GB	92907861.6	3/5/1992	9/15/1999		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	FR	92907861.6	3/5/1992	9/15/1999		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	EP	92907861.6	3/5/1992	9/15/1999		12/22/1993
69229994.7	SIGNAL PROCESSING APPARATUS AND METHOD	DE	92907861.6	3/5/1992	9/15/1999		
2105682	SIGNAL PROCESSING APPARATUS AND METHOD	CA	2105682	3/5/1992	9/2/2003		9/17/1992
574509	SIGNAL PROCESSING APPARATUS AND METHOD	BE	92907861.6	3/5/1992	9/15/1999		
658177	SIGNAL PROCESSING APPARATUS AND METHOD	AU	15369/92	3/5/1992	7/24/1995		
RE38492	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/095586	3/11/2002	4/6/2004		
5482036	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/249690	5/26/1994	1/9/1996		
5494043	ARTERIAL SENSOR	US	08/059425	5/4/1993	2/27/1996		
5163438	METHOD AND APPARATUS FOR CONTINUOUSLY AND NONINVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	US	07/586794	9/24/1990	11/17/1992		
4960128	METHOD AND APPARATUS FOR CONTINUOUSLY AND NON-INVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	US	07/270224	11/14/1988	10/2/1990		
5533511	APPARATUS AND METHOD FOR NONINVASIVE BLOOD PRESSURE MEASUREMENT	US	08/177448	1/5/1994	7/9/1996		
5726440	WAVELENGTH SELECTIVE PHOTODETECTOR	US	08/553875	11/6/1995	3/10/1998		
69618654.3	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	DE	96934010.8	10/2/1996	1/2/2002		
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	EP	96934010.8	10/2/1996	1/2/2002	855874	8/5/1998
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	FR	96934010.8	10/2/1996	1/2/2002		
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	GB	96934010.8	10/2/1996	1/2/2002		
3703496	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	JP	9-514398	10/2/1996	7/29/2005		10/5/2005
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	DE	96934056.1	10/3/1996	6/29/2005	857034	8/12/1998
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	EP	96934056.1	10/3/1996	6/29/2005	857034	8/12/1998
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	GB	056	10/3/1996	6/29/2005	857034	8/12/1998
3712418	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	JP	9-515847	10/3/1996	8/26/2005		
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	DE	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	EP	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	FR	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	GB	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
2187638	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	CA	2187638	4/3/1995	2/29/2000		
69523150.2	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	DE	95915523.5	4/3/1995	10/10/2001		
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	EP	95915523.5	4/3/1995	10/10/2001		1/29/1997
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	FR	95915523.5	4/3/1995	10/10/2001		
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	GB	95915523.5	4/3/1995	10/10/2001		
2831471	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	JP	7-526991	4/3/1995	9/25/1998		
1334211	METHOD AND APPARATUS FOR CONTINUOUSLY AND NON-INVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	CA	614837	9/29/1989	1/31/1995		
955868	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	EP	97930025.8	6/12/1997	8/16/2006	955868	11/17/1999
955868	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	GB	97930025.8	6/12/1997	8/16/2006	955868	11/17/1999
3957758	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	JP	10-503199	6/12/1997	5/18/2007		8/15/2007
1227754	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	DE	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
1227754	METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	EP	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
1227754	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	GB	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
69518434T2	LOW NOISE OPTICAL PROBE	DE	95940704	11/1/1995	8/16/2000		
790800	LOW NOISE OPTICAL PROBE	EP	95940704	11/1/1995	8/16/2000		8/27/1997
790800	LOW NOISE OPTICAL PROBE	FR	95940704	11/1/1995	8/16/2000		
790800	LOW NOISE OPTICAL PROBE	GB	95940704	11/1/1995	8/16/2000		
4223001	SIGNAL PROCESSING APPARATUS	JP	2004-362173	10/10/1995	11/28/2008		2/12/2009
HK1055235	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	HK	3107612	8/29/2001	7/13/2007	1971541.6	1/2/2004
679473	ELECTRONIC STETHOSCOPE	AU	55587/94	12/7/1993	10/23/1997		
2140658	ELECTRONIC STETHOSCOPE	CA	2140658	12/7/1993	7/24/2001		6/23/1994
6081735	SIGNAL PROCESSING APPARATUS	US	08/887815	7/3/1997	6/27/2000		
671895	ELECTRONIC STETHOSCOPE	EP	94900696.9	12/7/1993	5/13/1998	671895	9/20/1995
758213	HEADSET FOR ELECTRONIC STETHOSCOPE	EP	95916525.9	4/21/1995	7/12/2000	758213	2/19/1997
DES359546	FILTER HOUSING FOR A DENTAL UNIT	US	29/017956	1/27/1994	6/20/1995		
75922	DESIGN FOR WASHING AND DISINFECTING WATER SUPPLY CONDUCTS	CA	1994-1438	7/22/1994	3/9/1995		

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5479934	EEG HEADPIECE WITH DISPOSABLE ELECTRODES AND APPARATUS AND SYSTEM AND METHOD FOR USE THEREWITH	US	08/126113	9/23/1993	1/2/1996		
6721585	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	09/931273	8/17/2001	4/13/2004		
6735459	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	10/237038	9/9/2002	5/11/2004	2003/0009092 A1	1/9/2003

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13/063648	GAS SAMPLING LINE	US	6/6/2011	2011/0237969 A1	9/29/2011
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11/899512	DEVICES AND METHODS FOR MEASURING PULSUS PARADOXUS	US	9/6/2007	2008/0064965 A1	3/13/2008
13/430451	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	3/26/2012	2012/0184832 A1	7/19/2012
10184916.4	SIGNAL PROCESSING APPARATUS	EP	10/10/1995	2341446	7/6/2011
7023060.2	SIGNAL PROCESSING METHOD	EP	10/10/1995	1905352	4/2/2008
13/706298	SIGNAL PROCESSING APPARATUS AND METHOD	US	12/5/2012	2013/0197328 A1	8/1/2013
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10182866.3	STEREO PULSE OXIMETER	EP	5/27/1999	2319398	5/11/2011
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PCT/US2011/049225	BLOOD PRESSURE MEASUREMENT SYSTEM	WO	8/25/2011	WO 2012/027613	3/1/2012
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13/762062	CABLE TETHER SYSTEM	US	2/7/2013	2013/0263409 A1	10/10/2013
13/589010	HEALTH CARE SANITATION MONITORING SYSTEM	US	8/17/2012	2013/0045685 A1	2/21/2013
13/371767	MEDICAL CHARACTERIZATION SYSTEM	US	2/13/2012	2012/0209082 A1	8/16/2012
12705584.6	MEDICAL CHARACTERIZATION SYSTEM	EP	2/13/2012	2673721	12/18/2013
PCT/US2012/024908	MEDICAL CHARACTERIZATION SYSTEM	WO	2/13/2012	WO 2012/109671	8/16/2012
13/762270	WIRELESS PATIENT MONITORING DEVICE	US	2/7/2013	2013/0253334 A1	9/26/2013
PCT/US2013/025384	WIRELESS PATIENT MONITORING DEVICE	WO	2/8/2013	WO 2013/119982	8/15/2013

Application No.	Title of Invention	Country	Filing Date	Pub Number	Pub Date
13/733782	AUTOMATED CCHD SCREENING AND DETECTION	US	1/3/2013	2013/0190581 A1	7/25/2013
PCT/US2013/020377	AUTOMATED CRITICAL CONGENITAL HEART DEFECT SCREENING AND DETECTION	WO	1/4/2013	WO 2013/103885	7/11/2013
13/875219	NONINVASIVE PHYSIOLOGICAL SENSOR COVER	US	5/1/2013	2013/0296672 A1	11/7/2013
13/865081	HYPERSATURATION INDEX	US	4/17/2013	2013/0274571 A1	10/17/2013
PCT/US2013/037019	HYPERSATURATION INDEX	WO	4/17/2013	WO 2013/158791	10/24/2013
13/923888	PHYSIOLOGICAL MONITORING OF MOVING VEHICLE OPERATORS	US	6/21/2013	2013/0345921 A1	12/26/2013
13/850000	PHYSIOLOGICAL MONITOR TOUCHSCREEN INTERFACE	US	3/25/2013	2013/0254717 A1	9/26/2013
PCT/US2013/033762	PHYSIOLOGICAL MONITOR TOUCHSCREEN INTERFACE	WO	3/25/2013	WO 2013/148605	10/3/2013
13/651167	MEDICAL MONITORING HUB	US	10/12/2012	2013/0262730 A1	10/3/2013
PCT/US2012/060109	MEDICAL MONITORING HUB	WO	10/12/2012	WO 2013/056160	4/18/2013
13/951313	AUTOMATED ASSEMBLY SENSOR CABLE	US	7/25/2013	2014/0034353 A1	2/6/2014
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12/643939	ACOUSTIC SENSOR ASSEMBLY	US	12/21/2009	2010/0274099 A1	10/28/2010
9801885.6	ACOUSTIC SENSOR ASSEMBLY	EP	12/22/2009	2391273	12/7/2011
PCT/US2009/069287	ACOUSTIC SENSOR ASSEMBLY	WO	12/22/2009	WO 2010/078168	7/8/2010
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12/904890	ACOUSTIC RESPIRATORY MONITORING SENSOR HAVING MULTIPLE SENSING ELEMENTS	US	10/14/2010	2011/0213271 A1	9/1/2011
12/904938	ACOUSTIC RESPIRATORY MONITORING SENSOR HAVING MULTIPLE SENSING ELEMENTS	US	10/14/2010	2011/0213274 A1	9/1/2011
12/904907	ACOUSTIC PATIENT SENSOR	US	10/14/2010	2011/0213272 A1	9/1/2011
10779086.7	ACOUSTIC RESPIRATORY MONITORING SENSOR HAVING MULTIPLE SENSING ELEMENTS	EP	10/14/2010	2488106	8/22/2012
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12/904789	ACOUSTIC RESPIRATORY MONITORING SYSTEMS AND METHODS	US	10/14/2010	2011/0125060 A1	5/26/2011
PCT/US2010/052760	ACOUSTIC RESPIRATORY MONITORING SYSTEMS AND METHODS	WO	10/14/2010	WO 2011/047213	4/21/2011
12/904775	PULSE OXIMETRY SYSTEM WITH LOW NOISE CABLE HUB	US	10/14/2010	2011/0209915 A1	9/1/2011
PCT/US2010/052758	PULSE OXIMETRY SYSTEM WITH LOW NOISE CABLE HUB	WO	10/14/2010	WO 2011/047211	4/21/2011
12/960325	CALIBRATION FOR MULTI-STAGE PHYSIOLOGICAL MONITORS	US	12/3/2010	2011/0196211 A1	8/11/2011
1209231.8	CALIBRATION FOR MULTI-STAGE PHYSIOLOGICAL MONITORS	GB	12/3/2010	GB2487882	8/8/2012
PCT/US2010/058981	CALIBRATION FOR MULTI-STAGE PHYSIOLOGICAL MONITORS	WO	12/3/2010	WO 2011/069122	6/9/2011
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12/905036	PHYSIOLOGICAL ACOUSTIC MONITORING SYSTEM	US	10/14/2010	2011/0172561 A1	7/14/2011
PCT/US2012/060084	PHYSIOLOGICAL ACOUSTIC MONITORING SYSTEM	WO	10/12/2012	WO 2013/056141	4/18/2013
13/650775	PHYSIOLOGICAL ACOUSTIC MONITORING SYSTEM	US	10/12/2012	2013/0090567 A1	4/11/2013
PCT/US2010/052763	PHYSIOLOGICAL ACOUSTIC MONITORING SYSTEM	WO	10/14/2010	WO 2011/047216	4/21/2011
13/911939	DEPTH OF CONSCIOUSNESS MONITOR	US	6/6/2013	2013/0331660 A1	12/12/2013
PCT/US2013/044598	DEPTH OF CONSCIOUSNESS MONITOR	WO	6/6/2013	WO 2013/184965	12/12/2013
13/465952	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATII	US	5/7/2012	2012/0220842 A1	8/30/2012
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12/845607	PATIENT MONITOR AMBIENT DISPLAY DEVICE	US	7/28/2010	2011/0028809 A1	2/3/2011
PCT/US2012/049395	OCCLUSIVE NON-INFLATABLE BLOOD PRESSURE DEVICE	WO	8/2/2012	WO 2013/019991	2/7/2013

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT2871582

SUBMISSION TYPE:	CORRECTIVE ASSIGNMENT
NATURE OF CONVEYANCE:	Corrective Assignment to correct the TO CORRECT THE NATURE OF CONVEYANCE TO SECURITY INTEREST AND TO CORRECT THE GRANTEE'S ADDRESS previously recorded on Reel 032784 Frame 0864. Assignor(s) hereby confirms the SECURITY AGREEMENT.

CONVEYING PARTY DATA

Name	Execution Date
MASIMO AMERICAS, INC.	04/23/2014
MASIMO CORPORATION	04/23/2014

RECEIVING PARTY DATA

Name:	JPMORGAN CHASE BANK, NATIONAL ASSOCIATION
Street Address:	10 S. DEARBORN ST.
Internal Address:	FLOOR 07, ATTN: AWRI MCKEE
City:	CHICAGO
State/Country:	ILLINOIS
Postal Code:	60603

PROPERTY NUMBERS Total: 411

Property Type	Number
Patent Number:	4964408
Patent Number:	4960128
Patent Number:	5069213
Patent Number:	5163438
Patent Number:	5041187
Patent Number:	5319355
Patent Number:	5431170
Patent Number:	5494043
Patent Number:	5337744
Patent Number:	5479934
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Patent Number:	5561275
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Property Type	Number
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Patent Number:	D554263

Property Type	Number
Patent Number:	D609193
Patent Number:	D587657
Patent Number:	D614305
Patent Number:	D692145

CORRESPONDENCE DATA

Fax Number:

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: 312-701-8944

Email: ptierney@mayerbrown.com, ipdocket@mayerbrown.com, msherlock@mayerbrown.com

Correspondent Name: PATRICK TIERNEY

Address Line 1: PO BOX 2828

Address Line 4: CHICAGO, ILLINOIS 60690-2828

ATTORNEY DOCKET NUMBER:	14445478
NAME OF SUBMITTER:	PATRICK TIERNEY
SIGNATURE:	/PT/
DATE SIGNED:	05/27/2014
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 49

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PATENT SECURITY AGREEMENT

This PATENT SECURITY AGREEMENT, dated as of April 23, 2014 (this "Agreement"), is made by MASIMO CORPORATION, a Delaware corporation, and MASIMO AMERICAS, INC., a Delaware corporation (each, a "Grantor" and collectively, the "Grantors"), in favor of JPMORGAN CHASE BANK, NATIONAL ASSOCIATION, as the administrative agent (together with its successor(s) thereto in such capacity, the "Administrative Agent") for each of the Secured Parties.

W I T N E S S E T H :

WHEREAS, pursuant to a Credit Agreement, dated as of April 23, 2014 (as amended, supplemented, amended and restated or otherwise modified from time to time, the "Credit Agreement"), among the Grantors, as the Borrower, the Lenders from time to time party thereto and the Administrative Agent, the Lenders have extended Commitments to make Loans to the Borrower;

WHEREAS, in connection with the Credit Agreement, each Grantor has executed and delivered separate security agreements, each dated as of April 23, 2014 (each, as amended, supplemented, amended and restated or otherwise modified from time to time, a "Security Agreement" and collectively, the "Security Agreements");

WHEREAS, pursuant to the Credit Agreement and pursuant to Section 2 of each Security Agreement, the Grantors are required to execute and deliver this Agreement and to grant to the Administrative Agent a continuing security interest in all of the Patent Collateral (as defined below) to secure all Secured Obligations; and

WHEREAS, the Grantors have duly authorized the execution, delivery and performance of this Agreement; and

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Grantors agree, for the benefit of each Secured Party, as follows:

SECTION 1. Definitions. Unless otherwise defined herein or the context otherwise requires, terms used in this Agreement, including its preamble and recitals, have the meanings provided in the applicable Security Agreement.

SECTION 2. Grant of Security Interest. Each Grantor hereby grants to the Administrative Agent, for its benefit and the ratable benefit of each other Secured Party, a continuing security interest in all of such Grantor's right, title and interest within the United States, whether now or hereafter existing or acquired by such Grantor, in and to the following (other than Excluded Assets) ("Patent Collateral"):

(a) all letters patent and applications for letters patent in the United States Patent and Trademark Office, including all patent applications in preparation for filing, including all reissues, divisionals, continuations, continuations-in-part, extensions,

renewals and reexaminations of any of the foregoing ("Patents"), including each Patent and published Patent application identified in Item A of Schedule I;

(b) all Patent licenses, and other agreements for the grant by or to such Grantor of any right to use any items of the type referred to in clause (a) above (each a "Patent License");

(c) the right to sue third parties for past, present and future infringements of any Patent or Patent application, and for breach or enforcement of any Patent License; and

(d) all proceeds of, and rights associated with, the foregoing (including Proceeds, licenses, royalties, income, payments, claims, damages and proceeds of infringement suits).

SECTION 3. Security Agreement. This Agreement has been executed and delivered by the Grantors for the purpose of registering the security interest of the Administrative Agent in the Patent Collateral with the United States Patent and Trademark Office. The security interest granted hereby has been granted as a supplement to, and not in limitation of, the security interest granted to the Administrative Agent for its benefit and the ratable benefit of each other Secured Party under each Security Agreement. Each Security Agreement (and all rights and remedies of the Administrative Agent and each Secured Party thereunder) shall remain in full force and effect in accordance with its terms.

SECTION 4. Waiver, etc. The Grantors hereby waive promptness, diligence, notice of acceptance and any other notice with respect to any of the Liabilities, this Agreement and the Security Agreements and any requirement that any Secured Party protect, secure, perfect or insure any Lien, or any property subject thereto, or exhaust any right or take any action against each Grantor or any other Person (including any other Grantor) or entity or any Collateral securing the Secured Obligations, as the case may be. As provided below, this Agreement shall be governed by, and construed in accordance with, the laws of the State of New York.

SECTION 5. Acknowledgment. The Grantors do hereby further acknowledge and affirm that the rights and remedies of the Administrative Agent with respect to the security interest in the Patent Collateral granted hereby are more fully set forth in the applicable Security Agreement, the terms and provisions of which (including the remedies provided for therein) are incorporated by reference herein as if fully set forth herein.

SECTION 6. Loan Document. This Agreement is a Loan Document executed pursuant to the Credit Agreement and shall (unless otherwise expressly indicated herein) be construed, administered and applied in accordance with the terms and provisions thereof.

SECTION 7. Governing Law, Entire Agreement, etc. THIS SECURITY AGREEMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

SECTION 8. Counterparts. This Agreement may be executed by the parties hereto in several counterparts, each of which shall be deemed to be an original and all of which shall

constitute together but one and the same agreement. Delivery of an executed counterpart of a signature page to this Agreement by facsimile or via other electronic means shall be effective as delivery of a manually executed counterpart of this Agreement.

* * * * *

IN WITNESS WHEREOF, this Agreement has been duly executed as of the day and year first above written.

MASIMO CORPORATION,
as Grantor

By: _____
Name: Mark P. de Raad
Title: Chief Financial Officer

MASIMO AMERICAS, INC.
as Grantor

By: _____
Name: Mark P. de Raad
Title: Treasurer

JPMORGAN CHASE BANK, NATIONAL ASSOCIATION,
as Administrative Agent

By: _____
Name:
Title:

IN WITNESS WHEREOF, this Agreement has been duly executed as of the day and year first above written.

MASIMO CORPORATION,
as Grantor

By: _____
Name:
Title:

MASIMO AMERICAS, INC.
as Grantor

By: _____
Name:
Title:

JPMORGAN CHASE BANK, NATIONAL ASSOCIATION,
as Administrative Agent

By: _____
Name: LING LI
Title: Vice President

SCHEDULE I
to Patent Security Agreement

Item A. Patents

Issued Patents

Patent No.	Issue Date	Inventor(s)	Title
See Schedule A			

Pending Patent Applications

Serial No.	Filing Date	Inventor(s)	Title
See Schedule B			

Patent No.	Title of Invention	Country	Application No.	Filing Date	Date Issued	Publication	Pub Date
RE43169	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	12/573851	10/5/2009	2/7/2012		
RE41317	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	11/404123	4/13/2006	5/4/2010		
RE43860	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	12/917433	11/1/2010	12/11/2012		
RE41912	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	11/432798	5/11/2006	11/2/2010		
8175672	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATII	US	11/774446	7/6/2007	5/8/2012	2008/0009691 A1	1/10/2008
7245953	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATII	US	10/287795	11/5/2002	7/17/2007		
6684091	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	US	09/758038	1/11/2001	1/27/2004	2001/0029325 A1	10/11/2001
6321100	REUSABLE PULSE OXIMETER PROBE WITH DISPOSABLE LINER	US	09/352144	7/13/1999	11/20/2001		
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	GB	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	FR	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	EP	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
1683478	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	DE	6009479.4	10/15/1999	11/28/2007	1683478	7/26/2006
4614537	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	JP	2000-575417	10/15/1999	10/29/2010		
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	GB	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	FR	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	ES	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	EP	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
1121049	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	DE	99954623.7	10/15/1999	5/17/2006	1121049	4/20/2000
2346639	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	CA	2346639	10/15/1999	8/12/2008		4/20/2000
745306	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BADANGE APPARATUS	AU	200010929	10/15/1999	7/4/2002		6/22/2000
3981271	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	JP	2002-001134	1/8/2002	7/6/2007		9/26/2007
1222894	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE	EP	1310925.1	12/28/2001	1/26/2011	1222894	7/17/2002
2366493	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	CA	2366493	1/3/2002	1/3/2012		
784021	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE METHOD	AU	200210079	1/7/2002	5/4/2006		7/18/2002
6519487	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/679828	10/5/2000	2/11/2003		
6343224	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/417898	10/14/1999	1/29/2002		
6144868	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	09/289647	4/12/1999	11/7/2000		
6301493	RESERVOIR ELECTRODES FOR ELECTROENCEPHALOGRAPH HEADGEAR APPLIANCE	US	09/431966	11/1/1999	10/9/2001		
6128521	SELF ADJUSTING HEADGEAR APPLIANCE USING RESERVOIR ELECTRODES	US	09/113946	7/10/1998	10/3/2000		
1250886	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	EP	1109804.3	4/21/2001	4/21/2010	EP1250886	10/23/2002
2343706	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	CA	2343706	4/10/2001	12/6/2011		
6317627	ANESTHESIA MONITORING SYSTEM BASED ON ELECTROENCEPHALOGRAPHIC SIGNALS	US	09/431632	11/2/1999	11/13/2001		
1229830	MODULE FOR ACQUIRING ELECTROENCEPHALOGRAPH SIGNALS FROM A PATIENT	EP	973975.6	10/27/2000	5/24/2006	EP1229830	8/14/2002
6430437	MODULE FOR ACQUIRING ELECTROENCEPHALOGRAPH SIGNALS FROM A PATIENT	US	09/699123	10/27/2000	8/6/2002		
8430817	SYSTEM FOR DETERMINING CONFIDENCE IN RESPIRATORY RATE MEASUREMENTS	US	12/905530	10/15/2010	4/30/2013		
8523781	BIDIRECTIONAL PHYSIOLOGICAL INFORMATION DISPLAY	US	12/904836	10/14/2010	9/3/2013	2011/0224567 A1	9/15/2011
5090155	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	JP	2007-506626	4/8/2005	9/21/2012		12/5/2012
1740095	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	EP	5732095.4	4/8/2005	1/23/2013	1740095	1/10/2007
8641631	NON-INVASIVE MONITORING OF RESPIRATORY RATE, HEART RATE AND APNEA	US	11/547570	6/19/2007	2/4/2014	2007/0282212 A1	12/6/2007
4308758	PIEZOELECTRIC BIOLOGICAL SOUND MONITOR WITH PRINTED CIRCUIT BOARD	JP	2004-516364	4/8/2003	5/15/2009		8/5/2009
6661161	PIEZOELECTRIC BIOLOGICAL SOUND MONITOR WITH PRINTED CIRCUIT BOARD	US	10/180518	6/27/2002	12/9/2003		
3455223	HEADSET FOR ELECTRONIC STETHOSCOPE	JP	7/527898	4/21/1995	7/25/2003		
2188794	HEADSET FOR ELECTRONIC STETHOSCOPE	CA	2188794	4/21/1995	10/3/2000		
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	GB	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	EP	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
1315452	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	DE	1971541.6	8/29/2001	3/28/2007	EP1315452	6/4/2003
6368283	METHOD AND APPARATUS FOR ESTIMATING SYSTOLIC AND MEAN PULMONARY ARTERY PRESSURES OF A PATIENT	US	09/658631	9/8/2000	4/9/2002		
2262236	PHONOSPIROMETRY FOR NON-INVASIVE MONITORING OF RESPIRATION	CA	2262236	2/22/1999	4/29/2008		8/20/1999
6241683	PHONOSPIROMETRY FOR NON-INVASIVE MONITORING OF RESPIRATION	US	09/255003	2/22/1999	6/5/2001		
D692145	MEDICAL PROXIMITY DETECTION TOKEN	US	29/432824	9/20/2012	10/22/2013		
8463349	SIGNAL PROCESSING APPARATUS	US	13/463746	5/3/2012	6/11/2013	2012/0220843 A1	8/30/2012
8359080	SIGNAL PROCESSING APPARATUS	US	13/397564	2/15/2012	1/22/2013	2012/0165624 A1	6/28/2012
8128572	SIGNAL PROCESSING APPARATUS	US	12/277221	11/24/2008	3/6/2012	2009/0076400 A1	3/19/2009
7530955	SIGNAL PROCESSING APPARATUS	US	10/838814	5/4/2004	5/12/2009	2004/0210146 A1	10/21/2004
7328053	SIGNAL PROCESSING APPARATUS	US	09/195791	11/17/1998	2/5/2008		
7376453	SIGNAL PROCESSING APPARATUS	US	09/144897	9/1/1998	5/20/2008		
8560034	SIGNAL PROCESSING APPARATUS	US	09/110542	7/6/1998	10/15/2013		
8126528	SIGNAL PROCESSING APPARATUS	US	12/410422	3/24/2009	2/28/2012	2009/0182211 A1	7/16/2009
7509154	SIGNAL PROCESSING APPARATUS	US	11/842117	8/20/2007	3/24/2009	2008/0045823 A1	2/21/2008
8019400	SIGNAL PROCESSING APPARATUS	US	11/894716	8/20/2007	9/13/2011	2008/0033266 A1	2/7/2008
8046041	SIGNAL PROCESSING APPARATUS	US	11/766714	6/21/2007	10/25/2011	2008/0004514 A1	1/3/2008
8036728	SIGNAL PROCESSING APPARATUS	US	11/766719	6/21/2007	10/11/2011	2007/0291832 A1	12/20/2007

Patent No.	Title of Invention	Country	Application No.	Filing Date	Date Issued	Publication No.	Pub. Date
8046042	SIGNAL PROCESSING APPARATUS	US	11/766700	6/21/2007	10/25/2011	2007/0249918 A1	10/25/2007
7215986	SIGNAL PROCESSING APPARATUS	US	11/154093	6/15/2005	5/8/2007	2005/0256385 A1	11/17/2005
7254433	SIGNAL PROCESSING APPARATUS	US	10/676534	9/30/2003	8/7/2007	2004/0064020 A1	4/1/2004
7496393	SIGNAL PROCESSING APPARATUS	US	10/677050	9/30/2003	2/24/2009	2004/0068164 A1	4/8/2004
8588880	EAR SENSOR	US	12/658872	2/16/2010	11/19/2013	2010/0217103 A1	8/26/2010
8584345	REPROCESSING OF A PHYSIOLOGICAL SENSOR	US	13/041803	3/7/2011	11/19/2013	2011/0214280 A1	9/8/2011
8571619	HEMOGLOBIN DISPLAY AND PATIENT TREATMENT	US	12/783436	5/19/2010	10/29/2013	2010/0298675 A1	11/25/2010
8418524	NON-INVASIVE SENSOR CALIBRATION DEVICE	US	12/813782	6/11/2010	4/16/2013	2011/0023575 A1	2/3/2011
8346330	REFLECTION-DETECTOR SENSOR POSITION INDICATOR	US	12/577670	10/12/2009	1/1/2013	2010/0094107 A1	4/15/2010
8401602	SECONDARY-EMITTER SENSOR POSITION INDICATOR	US	12/577667	10/12/2009	3/19/2013	2010/0094106 A1	4/15/2010
8547209	ALARM SUSPEND SYSTEM	US	13/476725	5/21/2012	10/1/2013	2012/0232366 A1	9/13/2012
8203438	ALARM SUSPEND SYSTEM	US	12/510982	7/28/2009	6/19/2012	2010/0026510 A1	2/4/2010
8355766	CERAMIC EMITTER SUBSTRATE	US	12/248841	10/9/2008	1/15/2013	2009/0156913 A1	6/18/2009
8048040	FLUID TITRATION SYSTEM	US	12/208998	9/11/2008	11/1/2011	2009/0076462 A1	3/19/2009
D135938	CONNECTOR	TW	97304976	8/28/2008	7/21/2010		
30-0544369	CONNECTOR	KR	30-2008-0037404	8/29/2008	10/29/2009		
1363919	CONNECTOR	JP	2008-022157	8/28/2008	5/29/2009		
218211	CONNECTOR	IN	218211	8/28/2008	4/27/2009		
000995071-0001	CONNECTORS	EU	000995071-0001	8/28/2008	8/28/2008		
ZL200830148345.7	CONNECTOR	CN	2.0083E+11	8/29/2008	1/6/2010		
D614305	CONNECTOR ASSEMBLY	US	29/304439	2/29/2008	4/20/2010		
D587657	CONNECTOR ASSEMBLY	US	29/296067	10/12/2007	3/3/2009		
001018360-001-004	CONNECTOR ASSEMBLY	EU	001018360-001-004	10/8/2008	10/8/2008		
D609193	CONNECTOR ASSEMBLY	US	29/296064	10/12/2007	2/2/2010		
5296793	CONNECTOR ASSEMBLY	JP	2010-529060	10/9/2008	6/21/2013		
8529301	SHIELDED CONNECTOR ASSEMBLY	US	13/399762	2/17/2012	9/10/2013	2012/0276786 A1	11/1/2012
8118620	CONNECTOR ASSEMBLY WITH REDUCED UNSHIELDED AREA	US	12/248856	10/9/2008	2/21/2012	2009/0099423 A1	4/16/2009
8310336	SYSTEMS AND METHODS FOR STORING, ANALYZING, RETRIEVING AND DISPLAYING STREAMING MEDICAL DATA	US	12/904925	10/14/2010	11/13/2012	2011/0169644 A1	7/14/2011
8274360	SYSTEMS AND METHODS FOR STORING, ANALYZING, AND RETRIEVING MEDICAL DATA	US	12/249806	10/10/2008	9/25/2012	2009/0119330 A1	5/7/2009
8229533	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	13/358461	1/25/2012	7/24/2012	2012/0123278 A1	5/17/2012
7919713	LOW NOISE OXIMETRY CABLE INCLUDING CONDUCTIVE CORDS	US	12/104350	4/16/2008	4/5/2011	2008/0255435 A1	10/16/2008
8652060	PERFUSION TREND INDICATOR	US	12/011011	1/22/2008	2/18/2014	2008/0221464 A1	9/11/2008
5441707	PLETHYSMOGRAPH VARIABILITY PROCESSOR	JP	2009-540509	12/7/2007	12/27/2013		
8414499	PLETHYSMOGRAPH VARIABILITY PROCESSOR	US	11/952940	12/7/2007	4/9/2013	2008/0188760 A1	8/7/2008
8315683	DUO CONNECTOR PATIENT CABLE	US	11/858818	9/20/2007	11/20/2012	2008/0071153 A1	3/20/2008
8457707	CONGENITAL HEART DISEASE MONITOR	US	11/858053	9/19/2007	6/4/2013	2008/0071155 A1	3/20/2008
8180420	SIGNAL PROCESSING APPARATUS AND METHOD	US	11/842128	8/20/2007	5/15/2012	2008/0036752 A1	2/14/2008
8190227	SIGNAL PROCESSING APPARATUS AND METHOD	US	12/368222	2/9/2009	5/29/2012	2009/0209835 A1	8/20/2009
7489958	SIGNAL PROCESSING APPARATUS AND METHOD	US	11/417858	5/3/2006	2/10/2009	2006/0200016 A1	9/7/2006
7499741	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/839276	5/4/2004	3/3/2009	2004/0204637 A1	10/14/2004
7471971	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/791683	3/2/2004	12/30/2008	2005/0096517 A1	5/5/2005
8185180	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/842106	8/20/2007	5/22/2012	2008/0033265 A1	2/7/2008
8150487	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/750930	5/18/2007	4/3/2012	2007/0225582 A1	9/27/2007
7003339	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	10/700324	11/3/2003	2/21/2006		
6643530	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/735960	12/13/2000	11/4/2003	0002206A1	5/31/2001
7221971	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	11/311213	12/19/2005	5/22/2007	2006/0161056 A1	7/20/2006
8280473	PERFUSION INDEX SMOOTHER	US	11/871620	10/12/2007	10/2/2012	2008/0091093 A1	4/17/2008
2007313903	SYSTEM AND METHOD FOR MONITORING THE LIFE OF A PHYSIOLOGICAL SENSOR	AU	2007313903	10/11/2007	9/19/2013		
7880626	SYSTEM AND METHOD FOR MONITORING THE LIFE OF A PHYSIOLOGICAL SENSOR	US	11/580214	10/12/2006	2/1/2011	2008/0088467 A1	4/17/2008
8182443	DRUG ADMINISTRATION CONTROLLER	US	11/654904	1/17/2007	5/22/2012		
7990382	VIRTUAL DISPLAY	US	11/648972	1/3/2007	8/2/2011	2007/0188495 A1	8/16/2007
7530942	REMOTE SENSING INFANT WARMER	US	11/583355	10/18/2006	5/12/2009		
7962188 C1	ROBUST ALARM SYSTEM	US	90/012534	9/13/2012	6/26/2013		
7962188	ROBUST ALARM SYSTEM	US	11/546927	10/12/2006	6/14/2011	2007/0109115 A1	5/17/2007
8028701	RESPIRATORY MONITORING	US	11/756501	5/31/2007	10/4/2011	2007/0277823 A1	12/6/2007
8255026	PATIENT MONITOR CAPABLE OF MONITORING THE QUALITY OF ATTACHED PROBES AND ACCESSORIES	US	11/871817	10/12/2007	8/28/2012		
7976472	NONINVASIVE HYPOVOLEMIA MONITOR	US	11/221411	9/6/2005	7/12/2011	2006/0058691 A1	3/16/2006
7937128	CYANOTIC INFANT SENSOR	US	11/171632	6/30/2005	5/3/2011	2006/0020185 A1	1/26/2006
7292883	PHYSIOLOGICAL ASSESSMENT SYSTEM	US	11/094813	3/30/2005	11/6/2007	2006/0009687 A1	1/12/2006
7280858	PULSE OXIMETRY SENSOR	US	11/029009	1/4/2005	10/9/2007	2005/0197550 A1	9/8/2005
DES566282	STAND FOR A PORTABLE PATIENT MONITOR	US	29/223769	2/18/2005	4/8/2008		
DES554263	PORTABLE PATIENT MONITOR	US	29/223771	2/18/2005	10/30/2007		
8353842	PORTABLE PATIENT MONITOR	US	12/343345	12/23/2008	1/15/2013	2009/0306488 A1	12/10/2009
7937129	VARIABLE APERTURE SENSOR	US	11/386076	3/21/2006	5/3/2011	2006/0258922 A1	11/16/2006
1722676	PHYSIOLOGICAL PARAMETER SYSTEM	EP	5724991.4	3/8/2005	12/19/2012	1722676	11/22/2006
7415297	PHYSIOLOGICALPARAMETER SYSTEM	US	11/075389	3/8/2005	8/19/2008	US-2005-0203352 A1	9/15/2005

Patent No.	Patent Title	Country	Application No.	Filing Date	Issue Date	Pub. No.	Pub. Date
7438683 C1	APPLICATION IDENTIFICATION SENSOR	US	90/012546	10/25/2012	11/6/2013		
8337403	PATIENT MONITOR HAVING CONTEX-BASED SENSITIVITY ADJUSTMENTS	US	12/254748	10/20/2008	12/25/2012	2009/0048495 A1	2/19/2009
7438683	APPLICATION IDENTIFICATION SENSOR	US	11/071875	3/3/2005	10/21/2008	2005/0283052 A1	12/22/2005
7371981	CONNECTOR SWITCH	US	11/062169	2/18/2005	5/13/2008	2005/0187440 A1	8/25/2005
7373193	PULSE OXIMETRY DATA CAPTURE SYSTEM	US	10/983048	11/5/2004	5/13/2008	2005/0101849 A1	5/12/2005
7483729	PULSE OXIMETER ACCESS APPARATUS AND METHOD	US	10/981186	11/4/2004	1/27/2009	2005/0101848 A1	5/12/2005
7254434	VARIABLE PRESSURE REUSABLE SENSOR	US	10/965394	10/13/2004	8/7/2007	2005/0085704 A1	4/21/2005
8385995	PHYSIOLOGICAL PARAMETER TRACKING SYSTEM	US	11/834602	8/6/2007	2/26/2013	2008/0027294 A1	1/31/2008
7254431	PHYSIOLOGICAL PARAMETER TRACKING SYSTEM	US	10/930048	8/30/2004	8/7/2007	2005/0090724 A1	4/28/2005
5100119	MULTIPURPOSE SENSOR PORT	JP	2006-521950	7/26/2004	10/5/2012		
1651104	MULTIPURPOSE SENSOR PORT	EP	4779096.9	7/26/2004	8/22/2012	1651104	5/3/2006
7500950	MULTIPURPOSE SENSOR PORT	US	10/898680	7/23/2004	3/10/2009	2005/0075548 A1	4/7/2005
7341559	PULSE OXIMETRY EAR SENSOR	US	10/631882	7/31/2003	3/11/2008	2004/0054291 A1	3/18/2004
7142901	PARAMETER COMPENSATED PHYSIOLOGICAL MONITOR	US	10/714526	11/14/2003	11/28/2006	2004/0242980 A1	12/2/2004
7274955	PARAMETER COMPENSATED PULSE OXIMETER	US	10/671179	9/25/2003	9/25/2007	2004/0122301 A1	6/24/2004
7096052	OPTICAL PROBE INCLUDING PREDETERMINED EMISSION WAVELENGTH BASED ON PATIENT TYPE	US	10/679963	10/6/2003	8/22/2006	US-2004-0122302-A1	6/24/2004
7096054	LOW NOISE OPTICAL HOUSING	US	10/632012	7/31/2003	8/22/2006	2004/0039272 A1	2/26/2004
7509494	INTERFACE CABLE	US	10/377996	2/28/2003	3/24/2009	2003/0167391 A1	9/4/2003
8548548	PHYSIOLOGICAL MEASUREMENT COMMUNICATIONS ADAPTER	US	12/955826	11/29/2010	10/1/2013	2011/0071370 A1	3/24/2011
7844315	PHYSIOLOGICAL MEASUREMENT COMMUNICATIONS ADAPTER	US	11/417006	5/3/2006	11/30/2010	2007/0173701 A1	7/26/2007
7844314	PHYSIOLOGICAL MEASUREMENT COMMUNICATIONS ADAPTER	US	11/048330	2/1/2005	11/30/2010	2005/0135288 A1	6/23/2005
6850788	PHYSIOLOGICAL MEASUREMENT COMMUNICATIONS ADAPTER	US	10/377933	2/28/2003	2/1/2005	03/0181798	9/25/2003
7015451	POWER SUPPLY RAIL CONTROLLER	US	10/351961	1/24/2003	3/21/2006	03/0218386	11/27/2003
7880606 C1	PHYSIOLOGICAL TREND MONITOR	US	90/012548	9/13/2012	2/24/2014		
8570167	PHYSIOLOGICAL TREND MONITOR	US	13/557107	7/24/2012	10/29/2013	2012/0289797 A1	11/15/2012
8228181	PHYSIOLOGICAL TREND MONITOR	US	13/018334	1/31/2011	7/24/2012	2011/0124990 A1	5/26/2011
7880606	PHYSIOLOGICAL TREND MONITOR	US	12/070061	2/12/2008	2/1/2011	2008/0228052 A1	9/18/2008
7355512	PARALLEL ALARM PROCESSOR	US	11/717591	3/13/2007	4/8/2008		
7190261	ARRHYTHMIA ALARM PROCESSOR	US	11/405815	4/18/2006	3/13/2007	2006/0192667	8/31/2006
7030749	PARALLEL MEASUREMENT ALARM PROCESSOR	US	10/975860	10/28/2004	4/18/2006	US-2005-0083193-A1	4/21/2005
6822564	PARALLEL MEASUREMENT ALARM PROCESSOR	US	10/351735	1/24/2003	11/23/2004	03/0137423	7/24/2003
6934570	PHYSIOLOGICAL SENSOR COMBINATION	US	10/325699	12/19/2002	8/23/2005	03/0225323	12/4/2003
7340287	FLEX CIRCUIT SHIELDED OPTICAL SENSOR	US	11/293583	12/2/2005	3/4/2008	2006/0084852 A1	4/20/2006
6985764	FLEX CIRCUIT SHIELDED OPTICAL SENSOR	US	10/137942	5/2/2002	1/10/2006	02/0165440	11/7/2002
737789 C1	SINE SATURATION TRANSFORM	US	90/012538	9/14/2012	4/12/2013		
1399058	SIGNAL COMPONENT COMPRESSOR	GB	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
1399058	SIGNAL COMPONENT COMPRESSOR	EP	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
60207717.6-08	SIGNAL COMPONENT COMPRESSOR	DE	2742353.2	6/28/2002	11/30/2005	1399058	3/24/2004
8498684	SINE SATURATION TRANSFORM	US	13/043421	3/8/2011	7/30/2013	2011/0160552 A1	6/30/2011
7904132	SINE SATURATION TRANSFORM	US	12/336419	12/16/2008	3/8/2011	2009/0099429 A1	4/16/2009
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7377899	SINE SATURATION TRANSFORM	US	11/417914	5/3/2006	5/27/2008	2006/0270921 A1	11/30/2006
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6850787	SIGNAL COMPONENT PROCESSOR	US	10/184032	6/26/2002	2/1/2005	03/0055325	3/20/2003
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7295866	LOW POWER PULSE OXIMETER	US	10/785573	2/24/2004	11/13/2007	2004/0181133 A1	9/16/2004
6697658	LOW POWER PULSE OXIMETER	US	10/184028	6/26/2002	2/24/2004	03/0028085	2/6/2003
6658276	PULSE OXIMETER USER INTERFACE	US	10/076860	2/12/2002	12/2/2003	02/0161291	10/31/2002
7225006	ATTACHMENT AND OPTICAL PROBE	US	10/350550	1/23/2003	5/29/2007	2004/0147821 A1	7/29/2004
6760607	RIBBON CABLE SUBSTRATE PULSE OXIMETRY SENSOR	US	10/032339	12/20/2001	7/6/2004	02/0095074	7/18/2002
6697656	PULSE OXIMETRY SENSOR COMPATIBLE WITH MULTIPLE PULSE OXIMETRY SYSTEMS	US	09/604340	6/27/2000	2/24/2004		
6470199	ELASTIC SOCK FOR POSITIONING AN OPTICAL PROBE	US	09/598930	6/21/2000	10/22/2002		
1286619	VARIABLE MODE AVERAGER	EP	1946090.6	6/5/2001	4/20/2011	1286619	3/5/2003
7499835 C1	VARIABLE INDICATION ESTIMATOR	US	90/012532	9/13/2012	12/19/2013		
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7499835	VARIABLE INDICATION ESTIMATOR	US	11/375662	3/14/2006	3/3/2009	2006/0161389 A1	7/20/2006
6999904	VARIABLE INDICATION ESTIMATOR	US	10/213270	8/5/2002	2/14/2006	2003/0101027	5/29/2003
8489364	VARIABLE INDICATION ESTIMATOR	US	13/601930	8/31/2012	7/16/2013	2012/0330562 A1	12/27/2012
8260577	VARIABLE INDICATION ESTIMATOR	US	13/007109	1/14/2011	9/4/2012	2011/0112799 A1	5/12/2011
6430525	VARIABLE MODE AVERAGER	US	09/586845	6/5/2000	8/6/2002		
6542764	PULSE OXIMETER MONITOR FOR EXPRESSING THE URGENCY OF THE PATIENT'S CONDITION	US	09/727944	12/1/2000	4/1/2003		
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	GB	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	FR	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	EP	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
1239766	RESPOSABLE PULSE OXIMETRY SENSOR	DE	992852.4	12/7/2000	10/5/2005	1239766	9/18/2002
7734320	SENSOR ISOLATION	US	11/842088	8/20/2007	6/8/2010	2008/0033267 A1	2/7/2008
7272425	PULSE OXIMETRY SENSOR INCLUDING STORED SENSOR DATA	US	11/235617	9/26/2005	9/18/2007	2006/0020180 A1	1/26/2006
6950687	ISOLATION AND COMMUNICATION ELEMENT FOR A RESPOSABLE PULSE OXIMETRY SENSOR	US	10/351643	1/24/2003	9/27/2005	03/0135099	7/17/2003
6671531	SENSOR WRAP INCLUDING FOLDABLE APPLICATOR	US	10/020664	12/11/2001	12/30/2003	02/0045807	4/18/2002
8000761	RESPOSABLE PULSE OXIMETRY SENSOR	US	11/415600	5/2/2006	8/16/2011	2006/0200018 A1	9/7/2006
7039449	RESPOSABLE PULSE OXIMETRY SENSOR	US	10/741777	12/19/2003	5/2/2006	US-2004-0133088-A1	7/8/2004
6725075	RESPOSABLE PULSE OXIMETRY SENSOR	US	10/128721	4/23/2002	4/20/2004	02/0115919	8/22/2002
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1674034	SENSOR LIFE MONITOR METHOD	EP	6006843.4	2/9/2001	8/25/2010	1674034	6/28/2006
500827	SENSOR LIFE MONITOR SYSTEM	JP	2001-557463	2/9/2001	5/25/2012		
1257190	SENSOR LIFE MONITOR SYSTEM	GB	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
1257190	SENSOR LIFE MONITOR SYSTEM	EP	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
60118891.8-08	SENSOR LIFE MONITOR SYSTEM	DE	1909052.1	2/9/2001	4/19/2006	1257190	11/20/2002
8399822	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	13/069261	3/22/2011	3/19/2013	2011/0172942 A1	7/14/2011
6388240	SHIELDED OPTICAL PROBE AND METHOD HAVING A LONGEVITY INDICATION	US	09/798764	3/2/2001	5/14/2002	0009265A1	7/26/2001
7910875	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	11/714303	3/6/2007	3/22/2011	2007/0156034 A1	7/5/2007
7186966	AMOUNT OF USE TRACKING DEVICE AND METHOD FOR MEDICAL PRODUCT	US	11/311212	12/19/2005	3/6/2007	2006/0097135 A1	5/11/2006
6979812	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	11/065994	2/24/2005	12/27/2005	US-2005-0143631-A1	6/30/2005
6861639	SYSTEMS AND METHODS FOR INDICATING AN AMOUNT OF USE OF A SENSOR	US	10/357531	2/3/2003	3/1/2005	03/0111592	6/19/2003
6515273	SYSTEM FOR INDICATING THE EXPIRATION OF THE USEFUL OPERATING LIFE OF A PULSE OXIMETRY SENSOR	US	09/502032	2/10/2000	2/4/2003	45509	11/29/2001
6580086	SHIELDED OPTICAL PROBE AND METHOD	US	09/420544	10/19/1999	6/17/2003		
1719449	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	EP	6012571.3	3/24/2000	12/22/2010	1719449	11/8/2006
1420692	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES, COMPRISING A PASSIVE RESPIRATORY GAS HUMIDIFYER, WHERE RAYS OF LIGHT ARE TRANSMITTED THROUGH A DEHUMIFIED GAS FLOW	EP	2763147.2	8/26/2002	7/26/2006	1420692	5/26/2004
519766	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES, COMPRISING A PASSIVE RESPIRATORY GAS HUMIDIFYER, WHERE RAYS OF LIGHT ARE TRANSMITTED THROUGH A DEHUMIFIED GAS FLOW	SE	0102860-4	8/28/2001	4/8/2003	519766	3/1/2003
1420842	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	EP	2760976.7	8/26/2002	11/8/2006	1420842	5/26/2004
523461	DEVICE AT QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	SE	0102861-2	8/28/2001	4/20/2004	523461	3/1/2003
1420691	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	EP	2759046.2	8/26/2002	7/26/2006	1420691	5/26/2004
519779	DEVICE FOR QUANTITATIVE ANALYSIS OF RESPIRATORY GASES	SE	0102862-0	8/28/2001	4/8/2003	519779	3/1/2003
524086	MEASURING HEAD FOR A GAS ANALYSER	SE	0103599-7	10/30/2001	6/22/2004	524086	5/1/2003
4644373	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	JP	2000-606119	3/24/2000	12/10/2010		
1617760	AN AIR GAS ANALYZER WINDOW AND A METHOD FOR PRODUCING SUCH A WINDOW	EP	4728997	4/22/2004	1/21/2009	1617760	1/25/2006
525095	AN AIR GAS ANALYZER WINDOW AND A METHOD FOR PRODUCING SUCH A WINDOW	SE	0301218-4	4/25/2003	11/30/2004	525095	10/26/2004
1171025	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	GB	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
532941	GAS SAMPLING LINE FOR RESPIRATORY GASES	SE	0801967-1	9/15/2008	5/18/2010	532941	3/16/2010
2065697	GAS MEASUREMENT SYSTEM	EP	8167482.2	10/24/2008	2/22/2012	2065697	6/3/2009
1171025	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	EP	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
60028953.2-08	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	DE	916663.8	3/24/2000	6/21/2006	1171025	1/16/2002
5436499	HIGH PERFORMANCE GAAS DEVICES AND METHOD	US	08/212115	3/11/1994	7/25/1995		
6010937	REDUCTION OF DISLOCATIONS IN A HETEROEPITAXIAL SEMICONDUCTOR STRUCTURE	US	08/523694	9/5/1995	1/4/2000		
8532728	PULSE OXIMETER PROBE-OFF DETECTOR	US	12/345537	12/29/2008	9/10/2013	2009/0112073 A1	4/30/2009
5671914	MULTI-BAND SPECTROSCOPIC PHOTODETECTOR ARRAY	US	08/553972	11/6/1995	9/30/1997		
6066204	HIGH PRESSURE MOCVD REACTOR SYSTEM	US	08/780724	1/8/1997	5/23/2000		
6255708	SEMICONDUCTOR P-I-N DETECTOR	US	08/949015	10/10/1997	7/3/2001		
6635559	FORMATION OF INSULATING ALUMINUM OXIDE IN SEMICONDUCTOR SUBSTRATES	US	09/949030	9/6/2001	10/21/2003	2003/00042501 A1	3/6/2003
7514725	NANOPHOTOVOLTAIC DEVICES	US	11/002850	11/30/2004	4/7/2009	2006/0113557 A1	6/1/2006
7955965	NANOPHOTOVOLTAIC DEVICES	US	12/851893	8/6/2010	6/7/2011	2010/0297803 A1	11/25/2010
7772612	NANOPHOTOVOLTAIC DEVICES	US	12/388895	2/19/2009	8/10/2010	2009/0165852 A1	7/2/2009
8242009	NANOPHOTOVOLTAIC DEVICES	US	13/152977	6/3/2011	8/14/2012	2011/0237015 A1	9/29/2011
7471969	PULSE OXIMETER PROBE-OFF DETECTOR	US	10/721607	11/25/2003	12/30/2008	2004/0158134 A1	8/12/2004
6654624	PULSE OXIMETER PROBE-OFF DETECTOR	US	10/027574	12/19/2001	11/25/2003	02/0072660	6/13/2002
8455290	METHOD OF FABRICATING EPITAXIAL STRUCTURES	US	12/807399	9/4/2010	6/4/2013	2012/0058591 A1	3/8/2012
6360114	PULSE OXIMETER PROBE-OFF DETECTOR	US	09/531820	3/21/2000	3/19/2002		
6771994	PULSE OXIMETER PROBE-OFF DETECTION SYSTEM	US	10/374303	2/24/2003	8/3/2004	03/0139656	7/24/2003
6526300	PULSE OXIMETER PROBE-OFF DETECTION SYSTEM	US	09/595081	6/16/2000	2/25/2003		
6152754	CIRCUIT BOARD BASED CABLE CONNECTOR	US	09/470401	12/21/1999	11/28/2000		
4987057	UNIVERSAL/UPGRADING PULSE OXIMETER	JP	2009-242957	1/25/2000	5/11/2012		
2684695	UNIVERSAL/UPGRADING PULSE OXIMETER	CA	2684695	1/25/2000	11/6/2012		
4986324	UNIVERSAL/UPGRADING PULSE OXIMETER	JP	2000-594379	1/25/2000	5/11/2012		
5590649	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATIONJ TO DETERMINE BLOOD PRESSURE	US	08/228213	4/15/1994	1/7/1997		
1148809	UNIVERSAL/UPGRADING PULSE OXIMETER	GB	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
1148809	UNIVERSAL/UPGRADING PULSE OXIMETER	FR	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
1148809	UNIVERSAL/UPGRADING PULSE OXIMETER	EP	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
60037106.9-08	UNIVERSAL/UPGRADING PULSE OXIMETER	DE	907031.9	1/25/2000	11/14/2007	1148809	10/31/2001
2358454	UNIVERSAL/UPGRADING PULSE OXIMETER	CA	2358454	1/25/2000	3/23/2010		
1309270	DUAL-MODE PULSE OXIMETER	SE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
2064989	DUAL-MODE PULSE OXIMETER	EP	9002646.9	8/14/2001	3/21/2012	2064989	6/3/2009
1309270	DUAL-MODE PULSE OXIMETER	NL	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
5833618	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	US	08/561923	11/22/1995	11/10/1998		
5810734	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	US	08/556547	11/22/1995	9/22/1998		
5830131	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	US	08/561928	11/22/1995	11/3/1998		

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1309270	DUAL-MODE PULSE OXIMETER	MC	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	LU	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	IE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	GB	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	FR	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	FI	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	EP	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	DK	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	DE	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
1309270	DUAL-MODE PULSE OXIMETER	CH	1962370.1	8/14/2001	7/1/2009	1309270	5/14/2003
8532727	DUAL-MODE PULSE OXIMETER	US	11/894722	8/20/2007	9/10/2013	2008/0039701 A1	2/14/2008
7530949	DUAL-MODE PULSE OXIMETER	US	10/911391	8/3/2004	5/12/2009	2005/0065417 A1	3/24/2005
3908783	AUTOMATICLLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	JP	513247/1996	9/28/1995	1/26/2007		4/25/2007
6770028	DUAL-MODE PULSE OXIMETER	US	09/641542	8/18/2000	8/3/2004		
8405608	SYSTEM AND METHOD FOR ALTERING A DISPLAY MODE	US	12/039704	2/28/2008	3/26/2013	2008/0177160 A1	7/24/2008
7991446	SYSTEMS AND METHODS FOR ACQUIRING CALIBRATION DATA USABLE IN A PULSE OXIMETER	US	11/431151	5/8/2006	8/2/2011	2006/0258926 A1	11/16/2006
7428432	SYSTEMS AND METHODS FOR ACQUIRING CALIBRATION DATA USABLE IN A PULSE OXIMETER	US	10/420994	4/22/2003	9/23/2008	2003/0197679	10/23/2003
6584336	UNIVERSAL/UPGRADING PULSE OXIMETER	US	09/516110	3/1/2000	6/24/2003		
6463311 C1	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	90/012562	9/14/2012	4/25/2013		
1632172	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	5025367.3	12/28/1999	3/2/2011	1632172	3/8/2006
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	GB	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
2305103	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	10182439.9	12/28/1999	9/25/2013	2305103	4/6/2011
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	EP	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
69928569.0-08	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	DE	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
1148813	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	AT	99965341.3	12/28/1999	11/23/2005	1148813	10/31/2001
7988637	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	11/418328	5/3/2006	8/2/2011	2006/0206021 A1	9/14/2006
7044918	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	10/974095	10/27/2004	5/16/2006	US-2005-0085702-A1	4/21/2005
6816741	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	10/267446	10/8/2002	11/9/2004	03/0032873	2/13/2003
5904654	EXCITER-DETECTOR UNIT FOR MEASURING PHYSIOLOGICAL PARAMETERS	US	08/606563	2/26/1996	5/18/1999		
5791347	MOTION INSENSITIVE PULSE DETECTOR	US	08/700647	8/14/1996	8/11/1998		
6463311	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	09/471510	12/23/1999	10/8/2002		
1139858	OXIMETRY PULSE INDICATOR	GB	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
1139858	OXIMETRY PULSE INDICATOR	EP	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
60034426.6-08	OXIMETRY PULSE INDICATOR	DE	903166.7	1/7/2000	4/18/2007	1139858	10/10/2001
4300032	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	JP	2002-588840	5/13/2002	4/24/2009		
7024233 C1	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	90/012553	9/13/2012	9/3/2013		
6684090 C1	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	90/012567	9/14/2012	12/12/2013		
6027452	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	08/672218	6/26/1996	2/22/2000		
6632181	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	09/412295	10/5/1999	10/14/2003	2002/0099296 A1	7/25/2002
6939305	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	10/685068	10/14/2003	9/6/2005	04/0077956	4/22/2004
7041060	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	11/220035	9/6/2005	5/9/2006	2006/0004293 A1	1/5/2006
7618375	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	11/413718	4/28/2006	11/17/2009	2006/0206030 A1	9/14/2006
7951086	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	US	12/617648	11/12/2009	5/31/2011	2010/0056930 A1	3/4/2010
8046040	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	11/397372	4/4/2006	10/25/2011	2006/0195025 A1	8/31/2006
7024233	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	10/942672	9/16/2004	4/4/2006	2005/0033128 A1	2/10/2005
6996427	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	10/739794	12/18/2003	2/7/2006	US-2004-0133087-A1	7/8/2004
6684090	PULSE OXIMETRY DATA CONFIDENCE INDICATOR	US	09/858114	5/15/2001	1/27/2004	02/0035315	3/21/2002
6606511	PULSE OXIMETRY PULSE INDICATOR	US	09/478230	1/6/2000	8/12/2003		
6285896	FETAL PULSE OXIMETRY SENSOR	US	09/348767	7/7/1999	9/4/2001		
7899507 C1	PHYSIOLOGICAL MONITOR	US	90/012541	9/14/2012	12/26/2012		
1082050	STEREO PULSE OXIMETER	EP	99925958.3	5/27/1999	8/24/2011	1082050	3/14/2001
6852083	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	US	10/052977	1/17/2002	2/8/2005	02/0095090	7/18/2002
7894868	PHYSIOLOGICAL MONITOR	US	11/429473	5/5/2006	2/22/2011	2006/0258925 A1	11/16/2006
8255028	PHYSIOLOGICAL MONITOR	US	11/429471	5/5/2006	8/28/2012	2006/0258924 A1	11/16/2006
5785659	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	US	08/651201	5/17/1996	7/28/1998		
7891355	PHYSIOLOGICAL MONITOR	US	11/417661	5/3/2006	2/22/2011	2006/0281983 A1	12/14/2006
8364223	PHYSIOLOGICAL MONITOR	US	11/417931	5/3/2006	1/29/2013	2006/0258923 A1	11/16/2006
7899507	PHYSIOLOGICAL MONITOR	US	11/417545	5/3/2006	3/1/2011	2006/0270920 A1	11/30/2006
7761128	PHYSIOLOGICAL MONITOR	US	11/104720	4/13/2005	7/20/2010	2005/0197551 A1	9/8/2005
6898452	STEREO PULSE OXIMETER	US	10/668487	9/22/2003	5/24/2005	04/0059209	3/25/2004
6714804	STEREO PULSE OXIMETER	US	10/026013	12/21/2001	3/30/2004	02/0082488	6/27/2002
6334065	STEREO PULSE OXIMETER	US	09/323176	5/27/1999	12/25/2001		
6165005	PATIENT CABLE SENSOR SWITCH	US	09/456232	12/7/1999	12/26/2000		
5997343	PATIENT CABLE SENSOR SWITCH	US	09/044705	3/19/1998	12/7/1999		
7844313	PULSE OXIMETRY SENSOR ADAPTER	US	11/341999	1/27/2006	11/30/2010	2006/0189859 A1	8/24/2006
[illegible]	[illegible] PULSE OXIMETRY METHOD FOR MEASURING PULSUS PARADOXUS	US	09/151910	9/11/1998	10/10/2000		
6325761	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	US	09/514917	2/28/2000	12/4/2001		
771503	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	AU	60347/99	9/10/1999	7/8/2004		5/25/2000
2343092	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	CA	2343092	9/10/1999	11/4/2008		
1112023	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	EP	99969003.5	9/10/1999	1/10/2007	1112023	7/4/2001
1112023	DEVICE AND METHOD FOR MEASURING PULSUS PARADOXUS	GB	99969003.5	9/10/1999	1/10/2007	1112023	7/4/2001
6993371	PULSE OXIMETRY SENSOR ADAPTER	US	10/624446	7/22/2003	1/31/2006	US-2004-0147823-A1	7/29/2004

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6597933	PULSE OXIMETRY SENSOR ADAPTER	US	09/982453	10/17/2001	7/22/2003	02/0026107	2/28/2002
6349228	PULSE OXIMETRY SENSOR ADAPTER	US	09/404060	9/23/1999	2/19/2002		
5995855	PULSE OXIMETRY SENSOR ADAPTER	US	09/021957	2/11/1998	11/30/1999		
6830711	MOLD TOOL FOR AN OPTOELECTRONIC ELEMENT	US	10/336953	1/3/2003	12/14/2004	03/0143297	7/31/2003
7332784	METHOD OF PROVIDING AN OPTOELECTRONIC ELEMENT WITH A NON-PROTRUDING LENS	US	11/475725	6/27/2006	2/19/2008	2007/0007612 A1	1/11/2007
7067893	OPTOELECTRONIC ELEMENT WITH A NON-PROTRUDING LENS	US	10/337058	1/3/2003	6/27/2006	03/0132495	7/17/2003
6525386	NON-PROTRUDING OPTOELECTRONIC LENS	US	09/038494	3/10/1998	2/25/2003		
6184521	PHOTODIODE DETECTOR WITH INTEGRATED NOISE SHIELDING	US	09/003224	1/6/1998	2/6/2001		
5890929	SHIELDED MEDICAL CONNECTOR	US	08/868164	6/3/1997	4/6/1999		
8180420 C1	SIGNAL PROCESSING APPARATUS AND METHOD	US	90/012542	9/13/2012	11/19/2013		
6067462	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/081539	5/19/1998	5/23/2000		
6699194	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/547588	4/11/2000	3/2/2004		
6002952	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/834194	4/14/1997	12/14/1999		
4454854	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	JP	2000-543037	4/9/1999	2/12/2010		
1067861	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	GB	99916568.1	4/9/1999	7/12/2006	1067861	1/17/2001
1067861	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	EP	99916568.1	4/9/1999	7/12/2006	1067861	1/17/2001
6229856	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/058799	4/10/1998	5/8/2001		
5919134	METHOD AND APPARATUS FOR DEMODULATING SIGNALS IN A PULSE OXIMETRY SYSTEM	US	09/005898	1/12/1998	7/6/1999		
1030181	PATIENT CABLE CONNECTOR	JP	10985/1996	4/16/1996	11/6/1998		1/20/1999
2055550	PATIENT CABLE CONNECTOR	GB	2055550	4/16/1996	9/23/1996		
M9603723.7	PATIENT CABLE CONNECTOR	DE	9603723.7	4/16/1996	10/22/1996		
6280213	PATIENT CABLE CONNECTOR	US	09/708251	11/7/2000	8/28/2001		
5934925	PATIENT CABLE CONNECTOR	US	08/838392	4/9/1997	8/10/1999		
5645440	PATIENT CABLE CONNECTOR	US	08/543297	10/16/1995	7/8/1997		
5758644	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	08/478493	6/7/1995	6/2/1998		
6011986	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	09/016924	2/2/1998	1/4/2000		
6397091	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	09/451151	11/30/1999	5/28/2002	20123	9/6/2001
6678543	OPTICAL PROBE AND POSITIONING WRAP	US	10/005711	11/8/2001	1/13/2004	02/0062071	5/23/2002
7496391	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	10/757279	1/13/2004	2/24/2009	2004/0147824 A1	7/29/2004
7526328	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	11/640077	12/15/2006	4/28/2009	2007/0112260 A1	5/17/2007
8145287	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	12/430049	4/24/2009	3/27/2012	2009/0270703 A1	10/29/2009
6263222 C1	SIGNAL PROCESSING APPARATUS	US	90/012403	7/23/2012	8/9/2013		
5823950	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	08/745474	11/12/1996	10/20/1998		
729132	MANUAL AND AUTOMATIC PROBE CALIBRATION	AU	41065/99	6/4/1996	11/15/2001		
7530955 C1	SIGNAL PROCESSING APPARATUS	US	90/012566	9/14/2012	1/30/2014		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	AT	96917089.3	6/4/1996	8/28/2002		
704383	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	AU	59771/96	6/4/1996	7/29/1999		12/30/1996
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	BE	96917089.3	6/4/1996	8/28/2002		
PI9706436-0	MANUAL AND AUTOMATIC PROBE CALIBRATION	BR	PI9706436-0	12/19/1997	5/6/2008		12/7/1999
2221446	OPTICAL SENSOR INCLUDING INFORMATION ELEMENT	CA	2221446	6/4/1996	9/30/2008		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	CH	96917089.3	6/4/1996	8/28/2002		
96195864.2	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	CN	96195864.2	6/4/1996	7/2/2003		9/2/1998
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	DE	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	DK	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	EP	96917089.3	6/4/1996	8/28/2002		4/1/1998
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	ES	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	FI	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	FR	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	GB	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	GR	96917089.3	6/4/1996	8/28/2002		
HK1009848	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	HK	98110565.7	6/4/1996	4/4/2003	1009848	6/11/1999
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	IE	96917089.3	6/4/1996	8/28/2002		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	IT	96917089.3	6/4/1996	8/28/2002		
1238627	MEDICAL SENSOR AND INFORMATION SYSTEM	EP	2012382.4	6/4/1996	8/12/2009	1238627	9/11/2002
HK1049779	MEDICAL SENSOR AND INFORMATION SYSTEM	HK	3101733.7	6/4/1996	12/11/2009	HK1049779	5/30/2003
3837161	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	JP	9-501166	6/4/1996	8/4/2006		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	NL	96917089.3	6/4/1996	8/28/2002		
2357059	SIGNAL PROCESSING APPARATUS	CA	2357059	10/10/1995	12/7/2010		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	PT	96917089.3	6/4/1996	8/28/2002		
725063	PHYSIOLOGICAL MONITOR AND METHOD OF MINIMIZING NOISE	AU	21258/99	10/10/1995	1/25/2001		
4021916	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	JP	2005-353967	6/4/1996	10/5/2007		12/12/2007
2199723	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	RU	98100085	6/4/1996	2/27/2003		
832421	LIGHT SOURCE WITH ADJUSTABLE WAVELENGTH FOR AN OXIMETER	SE	96917089.3	6/4/1996	8/28/2002		
196645	SIGNAL PROCESSING APPARATUS	MX	972434	10/10/1995	5/25/2000		
5638818	LOW NOISE OPTICAL PROBE	US	08/333132	11/1/1994	6/17/1997		
3705814	SIGNAL PROCESSING APPARATUS	JP	8-514054	10/10/1995	8/5/2005		10/12/2005
95196636.7	SIGNAL PROCESSING APPARATUS	CN	95196636.7	10/10/1995	2/12/2003		12/24/1997
2199016	SIGNAL PROCESSING APPARATUS	CA	2199016	10/10/1995	1/1/2002		
699762	SIGNAL PROCESSING APPARATUS	AU	39623/95	10/10/1995	4/1/1999		5/15/1996
760205	PHYSIOLOGICAL MONITOR AND METHOD OF MINIMIZING NOISE	AU	71730/00	10/10/1995	9/4/2003		
3576168	LOW NOISE OPTICAL PROBE	JP	8-514884	11/1/1995	7/16/2004		10/13/2004

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5632272	SIGNAL PROCESSING APPARATUS	US	08/320154	10/7/1994	5/27/1997		
4173429	LOW NOISE OPTICAL PROBE	JP	2003-390644	11/1/1995	8/22/2008		10/29/2008
7962190	SIGNAL PROCESSING APPARATUS	US	09/111604	7/7/1998	6/14/2011		
723417	FINGER-COT OXIMETRIC PROBE	GB	94922544.5	7/13/1994	4/2/2003		
723417	FINGER-COT OXIMETRIC PROBE	FR	94922544.5	7/13/1994	4/2/2003		
723417	FINGER-COT OXIMETRIC PROBE	EP	94922544.5	7/13/1994	4/2/2003	723417	7/31/1996
69432421.3	FINGER-COT OXIMETRIC PROBE	DE	94922544.5	7/13/1994	4/2/2003		
94194813.7	FINGER-COT OXIMETRIC PROBE	CN	94194813.7	7/13/1994	1/8/2003		1/29/1997
688352	SENSOR PROBE COMPRISING A FINGER COT AND A SOURCE AND DETECTOR OF ELECTROMAGNETIC ENERGY (AMENDED TITLE)	AU	73613/94	7/13/1994	7/2/1998		2/13/1995
6371921	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	US	09/430928	11/1/1999	4/16/2002		
6595316	TENSION-ADJUSTABLE MECHANISM FOR STETHOSCOPE EARPIECES	US	09/907796	7/18/2001	7/22/2003	2003/0015368 A1	1/23/2003
5561275	HEADSET FOR ELECTRONIC STETHOSCOPE	US	08/234254	4/28/1994	10/1/1996		
75753	THORACIC COUPLER	CA	1994-2101	10/21/1994	2/16/1995		
DES361840	STETHOSCOPE HEAD	US	29/021668	4/21/1994	8/29/1995		
76446	EAR TIP	CA	1994-2103	10/21/1994	5/25/1995		
DES363120	STETHOSCOPE EAR TIP	US	29/021665	4/21/1994	10/10/1995		
76445	STETHOSCOPE HEADSET	CA	1994-2102	10/21/1994	5/25/1995		
DES362063	STETHOSCOPE HEADSET	US	29/021646	4/21/1994	9/5/1995		
74948	STETHOSCOPE HEAD	CA	28-05-93-8	11/12/1993	10/13/1994		
DES353196	STETHOSCOPE HEAD	US	29/008786	5/28/1993	12/6/1994		
74277	ELECTRONIC STETHOSCOPE HOUSING	CA	28-05-93-9	11/12/1993	5/26/1994		
DES353195	ELECTRONIC STETHOSCOPE HOUSING	US	29/008785	5/28/1993	12/6/1994		
5602924	ELECTRONIC STETHOSCOPE	US	08/164382	12/9/1993	2/11/1997		
6236872	SIGNAL PROCESSING APPARATUS	US	09/199744	11/25/1998	5/22/2001		
7215984	SIGNAL PROCESSING APPARATUS	US	10/838593	5/4/2004	5/8/2007	2004/0204636 A1	10/14/2004
6650917	SIGNAL PROCESSING APPARATUS	US	10/005631	12/4/2001	11/18/2003	2003/0036689 A1	2/20/2003
6745060	SIGNAL PROCESSING APPARATUS	US	10/006427	12/3/2001	6/1/2004	02/0077536	6/20/2002
RE38476	SIGNAL PROCESSING APPARATUS	US	10/185804	6/27/2002	3/30/2004		
8364226	SIGNAL PROCESSING APPARATUS	US	13/370239	2/9/2012	1/29/2013	2012/0149997 A1	6/14/2012
7454240	SIGNAL PROCESSING APPARATUS	US	11/432278	5/11/2006	11/18/2008	2006/0217609 A1	9/28/2006
7383070	SIGNAL PROCESSING APPARATUS	US	11/003231	12/3/2004	6/3/2008	2006/0089549 A1	4/27/2006
6157850	SIGNAL PROCESSING APPARATUS	US	08/859837	5/16/1997	12/5/2000		
5534851	ALARM FOR PATIENT MONITOR AND LIFE SUPPORT EQUIPMENT	US	08/254393	6/6/1994	7/9/1996		
5319355	ALARM FOR PATIENT MONITOR AND LIFE SUPPORT EQUIPMENT SYSTEM	US	07/727308	7/10/1991	6/7/1994		
7483730	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	10/957843	10/4/2004	1/27/2009	2005/0043600 A1	2/24/2005
6813511	LOW-NOISE OPTICAL PROBES FOR REDUCING AMBIENT NOISE	US	10/260049	9/27/2002	11/2/2004	03/0045785	3/6/2003
6792300	LOW-NOISE OPTICAL PROBES FOR REDUCING LIGHT PIPING	US	09/898990	7/3/2001	9/14/2004	02/0026109	2/28/2002
6256523	LOW-NOISE OPTICAL PROBES	US	09/094202	6/9/1998	7/3/2001		
6088607	LOW NOISE OPTICAL PROBE	US	08/790674	1/28/1997	7/11/2000		
5041187	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE AND METHOD OF FORMING THE SAME	US	07/591552	10/1/1990	8/20/1991		
5069213	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE AND ENCODER	US	07/452719	12/19/1989	12/3/1991		
4964408	OXIMETER SENSOR ASSEMBLY WITH INTEGRAL CABLE	US	07/188217	4/29/1988	10/23/1990		
5431170	PULSE RESPONSIVE DEVICE	US	07/938179	5/28/1991	7/11/1995		
6826419	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/327234	12/20/2002	11/30/2004	03/0097049	5/22/2003
6501975	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/757444	1/9/2001	12/31/2002		
6206830	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/441736	11/17/1999	3/27/2001		
6036642	SIGNAL PROCESSING APPARATUS AND METHOD	US	09/102131	6/22/1998	3/14/2000		
5769785	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/479918	6/7/1995	6/23/1998		
7132641	SHIELDED OPTICAL PROBE HAVING AN ELECTRICAL CONNECTOR	US	10/404961	3/31/2003	11/7/2006	2003/0162414 A1	8/28/2003
6541756	SHIELDED OPTICAL PROBE HAVING AN ELECTRICAL CONNECTOR	US	09/770757	1/25/2001	4/1/2003	45532	11/29/2001
DES.393830	PATIENT CABLE CONNECTOR	US	29/045258	10/16/1995	4/28/1998		
7937130	SIGNAL PROCESSING APPARATUS	US	12/340577	12/19/2008	5/3/2011	2009/0099430 A1	4/16/2009
7469157	SIGNAL PROCESSING APPARATUS	US	10/779033	2/13/2004	12/23/2008	2004/0236196 A1	11/25/2004
6263222	SIGNAL PROCESSING APPARATUS	US	08/943511	10/6/1997	7/17/2001		
5685299	SIGNAL PROCESSING APPARATUS	US	08/572488	12/14/1995	11/11/1997		
5490505	SIGNAL PROCESSING APPARATUS	US	08/132812	10/6/1993	2/13/1996		
5452717	FINGER-COT PROBE	US	08/253100	6/2/1994	9/26/1995		
5337744	LOW NOISE FINGER COT PROBE	US	08/091873	7/14/1993	8/16/1994		
2096985	LOW NOICE OPTICAL PROBE	RU	93058378	3/5/1992	11/27/1997		
3464215	LOW NOISE OPTICAL PROBE	JP	507871/1992	3/5/1992	8/22/2003		
576560	LOW NOISE OPTICAL PROBE	IT	92908666.8	3/5/1992	5/3/2000		
HK1010670	LOW NOISE OPTICAL PROBE	HK	98111719	3/5/1992	1/12/2001	1010670	6/25/1999
576560	LOW NOISE OPTICAL PROBE	GB	92908666.8	3/5/1992	5/3/2000		
576560	LOW NOISE OPTICAL PROBE	FR	92908666.8	3/5/1992	5/3/2000		
576560	LOW NOISE OPTICAL PROBE	EP	92908666.8	3/5/1992	5/3/2000		1/5/1994
576560	LOW NOISE OPTICAL PROBE	DE	92908666.8	3/5/1992	5/3/2000		
2105681	LOW NOISE OPTICAL PROBE	CA	2105681	3/5/1992	7/8/2003		10/1/1992
576560	LOW NOISE OPTICAL PROBE	BE	92908666.8	3/5/1992	5/3/2000		
664175	LOW NOISE OPTICAL PROBE	AU	15691/92	3/5/1992	3/5/1996		
5782757	LOW NOISE OPTICAL PROBES	US	08/543789	10/16/1995	7/21/1998		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	SE	92907861.6	3/5/1992	9/15/1999		
2144211	SIGNAL PROCESSING APPARATUS AND METHOD	RU	93058616	3/5/1992	1/10/2000		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	NL	92907861.6	3/5/1992	9/15/1999		
3363150	SIGNAL PROCESSING APPARATUS AND METHOD	JP	507451/1992	3/5/1992	10/25/2002		

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574509	SIGNAL PROCESSING APPARATUS AND METHOD	IT	92907861.6	3/5/1992	9/15/1999		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	GB	92907861.6	3/5/1992	9/15/1999		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	FR	92907861.6	3/5/1992	9/15/1999		
574509	SIGNAL PROCESSING APPARATUS AND METHOD	EP	92907861.6	3/5/1992	9/15/1999		12/22/1993
69229994.7	SIGNAL PROCESSING APPARATUS AND METHOD	DE	92907861.6	3/5/1992	9/15/1999		
2105682	SIGNAL PROCESSING APPARATUS AND METHOD	CA	2105682	3/5/1992	9/2/2003		9/17/1992
574509	SIGNAL PROCESSING APPARATUS AND METHOD	BE	92907861.6	3/5/1992	9/15/1999		
658177	SIGNAL PROCESSING APPARATUS AND METHOD	AU	15369/92	3/5/1992	7/24/1995		
RE38492	SIGNAL PROCESSING APPARATUS AND METHOD	US	10/095586	3/11/2002	4/6/2004		
5482036	SIGNAL PROCESSING APPARATUS AND METHOD	US	08/249690	5/26/1994	1/9/1996		
5494043	ARTERIAL SENSOR	US	08/059425	5/4/1993	2/27/1996		
5163438	METHOD AND APPARATUS FOR CONTINUOUSLY AND NONINVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	US	07/586794	9/24/1990	11/17/1992		
4960128	METHOD AND APPARATUS FOR CONTINUOUSLY AND NON-INVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	US	07/270224	11/14/1988	10/2/1990		
5533511	APPARATUS AND METHOD FOR NONINVASIVE BLOOD PRESSURE MEASUREMENT	US	08/177448	1/5/1994	7/9/1996		
5726440	WAVELENGTH SELECTIVE PHOTODETECTOR	US	08/553875	11/6/1995	3/10/1998		
69618654.3	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	DE	96934010.8	10/2/1996	1/2/2002		
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	EP	96934010.8	10/2/1996	1/2/2002	855874	8/5/1998
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	FR	96934010.8	10/2/1996	1/2/2002		
855874	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	GB	96934010.8	10/2/1996	1/2/2002		
3703496	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	JP	9-514398	10/2/1996	7/29/2005		10/5/2005
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	DE	96934056.1	10/3/1996	6/29/2005	857034	8/12/1998
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	EP	96934056.1	10/3/1996	6/29/2005	857034	8/12/1998
857034	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	GB	056	10/3/1996	6/29/2005	857034	8/12/1998
3712418	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSICAL CONDITION OF THE HUMAN ARTERIAL SYSTEM	JP	9-515847	10/3/1996	8/26/2005		
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	DE	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	EP	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	FR	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
785746	AUTOMATICALLY ACTIVATED BLOOD PRESSURE MEASUREMENT DEVICE	GB	95935672.6	9/28/1995	2/25/2004	785746	7/30/1997
2187638	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	CA	2187638	4/3/1995	2/29/2000		
69523150.2	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	DE	95915523.5	4/3/1995	10/10/2001		
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	EP	95915523.5	4/3/1995	10/10/2001		1/29/1997
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	FR	95915523.5	4/3/1995	10/10/2001		
755221	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	GB	95915523.5	4/3/1995	10/10/2001		
2831471	APPARATUS AND METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE BLOOD PRESSURE	JP	7-526991	4/3/1995	9/25/1998		
1334211	METHOD AND APPARATUS FOR CONTINUOUSLY AND NON-INVASIVELY MEASURING THE BLOOD PRESSURE OF A PATIENT	CA	614837	9/29/1989	1/31/1995		
955868	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	EP	97930025.8	6/12/1997	8/16/2006	955868	11/17/1999
955868	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	GB	97930025.8	6/12/1997	8/16/2006	955868	11/17/1999
3957758	RAPID NON-INVASIVE BLOOD PRESSURE MEASURING DEVICE	JP	10-503199	6/12/1997	5/18/2007		8/15/2007
1227754	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	DE	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
1227754	METHOD FOR MEASURING AN INDUCED PERTURBATION TO DETERMINE A PHYSIOLOGICAL PARAMETER	EP	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
1227754	SYSTEM AND METHOD OF DETERMINING WHETHER TO RECALIBRATE A BLOOD PRESSURE MONITOR	GB	976847.4	11/1/2000	6/13/2007	1227754	8/7/2002
69518434T2	LOW NOISE OPTICAL PROBE	DE	95940704	11/1/1995	8/16/2000		
790800	LOW NOISE OPTICAL PROBE	EP	95940704	11/1/1995	8/16/2000		8/27/1997
790800	LOW NOISE OPTICAL PROBE	FR	95940704	11/1/1995	8/16/2000		
790800	LOW NOISE OPTICAL PROBE	GB	95940704	11/1/1995	8/16/2000		
4223001	SIGNAL PROCESSING APPARATUS	JP	2004-362173	10/10/1995	11/28/2008		2/12/2009
HK1055235	METHOD AND APPARATUS FOR ESTIMATING PULMONARY ARTERY PRESSURE	HK	3107612	8/29/2001	7/13/2007	1971541.6	1/2/2004
679473	ELECTRONIC STETHOSCOPE	AU	55587/94	12/7/1993	10/23/1997		
2140658	ELECTRONIC STETHOSCOPE	CA	2140658	12/7/1993	7/24/2001		6/23/1994
6081735	SIGNAL PROCESSING APPARATUS	US	08/887815	7/3/1997	6/27/2000		
671895	ELECTRONIC STETHOSCOPE	EP	94900696.9	12/7/1993	5/13/1998	671895	9/20/1995
758213	HEADSET FOR ELECTRONIC STETHOSCOPE	EP	95916525.9	4/21/1995	7/12/2000	758213	2/19/1997
DES359546	FILTER HOUSING FOR A DENTAL UNIT	US	29/017956	1/27/1994	6/20/1995		
75922	DESIGN FOR WASHING AND DISINFECTING WATER SUPPLY CONDUCTS	CA	1994-1438	7/22/1994	3/9/1995		

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5479934	EEG HEADPIECE WITH DISPOSABLE ELECTRODES AND APPARATUS AND SYSTEM AND METHOD FOR USE THEREWITH	US	08/126113	9/23/1993	1/2/1996		
6721585	UNIVERSAL MODULAR PULSE OXIMETER PROBE FOR USE WITH REUSABLE AND DISPOSABLE PATIENT ATTACHMENT DEVICES	US	09/931273	8/17/2001	4/13/2004		
6735459	REUSABLE PULSE OXIMETER PROBE AND DISPOSABLE BANDAGE APPARATUS	US	10/237038	9/9/2002	5/11/2004	2003/0009092 A1	1/9/2003

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9813309.3	GAS SAMPLING LINE FOR RESPIRATORY GASES	EP	9/11/2009	2326246	6/1/2011
13/063648	GAS SAMPLING LINE	US	6/6/2011	2011/0237969 A1	9/29/2011
12/800824	METHOD OF FABRICATING BIFACIAL TANDEM SOLAR CELLS	US	5/24/2010	2011/0287578 A1	11/24/2011
13/892051	EPITAXIAL STRUCTURES ON SIDES OF A SUBSTRATE	US	5/10/2013	2013/0243021 A1	9/19/2013
11/899512	DEVICES AND METHODS FOR MEASURING PULSUS PARADOXUS	US	9/6/2007	2008/0064965 A1	3/13/2008
13/430451	MANUAL AND AUTOMATIC PROBE CALIBRATION	US	3/26/2012	2012/0184832 A1	7/19/2012
10184916.4	SIGNAL PROCESSING APPARATUS	EP	10/10/1995	2341446	7/6/2011
7023060.2	SIGNAL PROCESSING METHOD	EP	10/10/1995	1905352	4/2/2008
13/706298	SIGNAL PROCESSING APPARATUS AND METHOD	US	12/5/2012	2013/0197328 A1	8/1/2013
13/745590	PHYSIOLOGICAL MONITOR	US	1/18/2013	2013/0197330 A1	8/1/2013
10182866.3	STEREO PULSE OXIMETER	EP	5/27/1999	2319398	5/11/2011
13/280282	PULSE AND CONFIDENCE INDICATOR DISPLAYED PROXIMATE PLETHYSMOGRAPH	US	10/24/2011	2012/0041316 A1	2/16/2012
13/196220	PLETHYSMOGRAPH PULSE RECOGNITION PROCESSOR	US	8/2/2011	2011/0288383 A1	11/24/2011
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11/894721	SYSTEMS AND METHODS FOR ACQUIRING CALIBRATION DATA USABLE IN A PULSE OXIMETER	US	8/20/2007	2008/0030468 A1	2/7/2008
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14/022106	DUAL-MODE PATIENT MONITOR	US	9/9/2013	2014/0012100 A1	1/9/2014
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10181436.6	IMPROVED PULSE OXIMETER PROBE-OFF DETECTOR	EP	3/24/2000	2298159	3/23/2011
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13/942562	VARIABLE INDICATION ESTIMATOR	US	7/15/2013	2014/0025306 A1	1/23/2014
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13/777936	PHYSIOLOGICAL PARAMETER TRACKING SYSTEM	US	2/26/2013	2013/0274572 A1	10/17/2013
12/360830	PULSE OXIMETER ACCESS APPARATUS AND METHOD	US	1/27/2009	2009/0137885 A1	5/28/2009
13/721497	MULTI-MODE PATIENT MONITOR CONFIGURED TO SELF-CONFIGURE FOR A SELECTED OR DETERMINED MODE OF OPERATION	US	12/20/2012	2013/0109935 A1	5/2/2013
12/188154	PHYSIOLOGICAL PARAMETER SYSTEM	US	8/7/2008	2008/0300471 A1	12/4/2008
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11/633656	PHYSIOLOGICAL ALARM NOTIFICATION SYSTEM	US	12/4/2006	2007/0180140 A1	8/2/2007
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10100400.2	SYSTEM AND METHOD FOR MONITORING THE LIFE OF A PHYSIOLOGICAL SENSOR	HK	10/11/2007	1133377	3/26/2010
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13/079756	LOW NOISE OXIMETRY CABLE INCLUDING CONDUCTIVE CORDS	US	4/4/2011	2011/0174517 A1	7/21/2011
12/248855	PHYSIOLOGICAL PARAMETER DETECTOR	US	10/9/2008	2009/0095926 A1	4/16/2009

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12/147299	DISPOSABLE ACTIVE PULSE SENSOR	US	6/26/2008	2009/0030330 A1	1/29/2009
13/287060	FLUID TITRATION SYSTEM	US	11/1/2011	2012/0046557 A1	2/23/2012
12/559815	PATIENT MONITOR INCLUDING MULTI-PARAMETER GRAPHICAL DISPLAY	US	9/15/2009	2010/0069725 A1	3/18/2010
PCT/US2009/057023	PATIENT MONITOR INCLUDING MULTI-PARAMETER GRAPHICAL DISPLAY	WO	9/15/2009	WO 2010/031070	3/18/2010
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CONVEYING PARTY DATA

Name	Execution Date
MASIMO CORPORATION	04/23/2014
MASIMO AMERICAS, INC.	04/23/2014

RECEIVING PARTY DATA

Name:	JPMORGAN CHASE BANK, NATIONAL ASSOCIATION
Street Address:	2828
City:	CHICAGO
State/Country:	ILLINOIS
Postal Code:	55356

PROPERTY NUMBERS Total: 411

Property Type	Number
Patent Number:	RE43169
Patent Number:	RE41317
Patent Number:	RE43860
Patent Number:	RE41912
Patent Number:	8175672
Patent Number:	7245953
Patent Number:	6684091
Patent Number:	6321100
Patent Number:	6519487
Patent Number:	6343224
Patent Number:	6144868
Patent Number:	6301493
Patent Number:	6128521
Patent Number:	6317627
Patent Number:	6430437
Patent Number:	8430817
Patent Number:	8523781
Patent Number:	8641631
Patent Number:	6661161
Patent Number:	6368283