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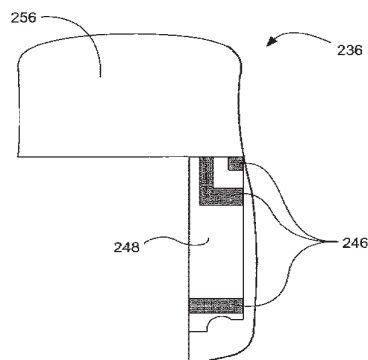
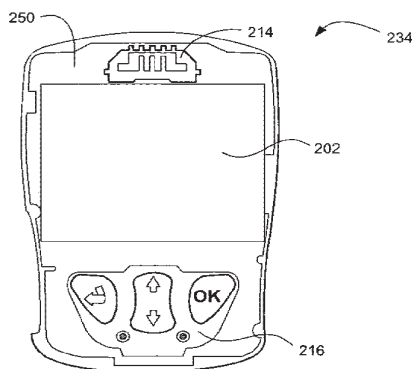
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(54) Title: BLOOD GLUCOSE METER CAPABLE OF WIRELESS COMMUNICATION



(57) Abstract: The present invention relates to a blood glucose meter (200) comprising a blood glucose measuring module (234) for performing a blood glucose measuring function and a wireless communication module (236) adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol. The blood glucose measuring module (234) and the wireless communication module (236) are physically- separate units electrically connected in order to allow for an exchange of electrical signals corresponding to information to be transmitted by the wireless communication module and/or information received by the wireless communication module (236). According to the invention, the blood glucose measuring module (234) and the wireless communication module (236) both comprise a connector component (238, 240), wherein the two connector components (238, 240) are adapted to releasably establish the electrical connection between the blood glucose measuring module (234) and the wireless communication module (236).

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Blood glucose meter capable of wireless communication

The present invention relates to a blood glucose meter comprising a blood glucose measuring module for performing a blood glucose measuring function and a wireless communication module adapted for wireless communication with an external device, and to a method of constructing such a blood glucose meter.

Diabetes mellitus is a chronic metabolic disorder caused by an inability of the pancreas to produce sufficient amounts of the hormone insulin so that the metabolism is unable to provide for the proper absorption of sugar and starch. This failure leads to hyperglycemia, i.e. the presence of an excessive amount of glucose within the blood plasma. Persistent hyperglycemia causes a variety of serious symptoms and life threatening long term complications such as dehydration, ketoacidosis, diabetic coma, cardiovascular diseases, chronic renal failure, retinal damage and nerve damages with the risk of amputation of extremities. Because healing is not yet possible, a permanent therapy is necessary which provides constant glycemic control in order to always maintain the level of blood glucose within normal limits. Such glycemic control is achieved by regularly supplying external insulin to the body of the patient to thereby reduce the elevated levels of blood glucose.

External insulin was commonly administered by means of typically one or two injections of a mixture of rapid and intermediate acting insulin per day via a hypodermic syringe. While this treatment does not require the frequent estimation of blood glucose, it has been found that the degree of glycemic control achievable in this way is suboptimal because the delivery is unlike physiological insulin production, according to which insulin enters the bloodstream at a lower rate and

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over a more extended period of time. Improved glycemic control may be achieved by the so-called intensive insulinotherapy which is based on multiple daily injections, including one or two injections per day of long acting insulin for providing basal insulin and additional injections of rapidly acting insulin before each meal in an amount proportional to the size of the meal. Although traditional syringes have at least partly been replaced by insulin pens, the frequent injections are nevertheless very inconvenient for the patient.

Substantial improvements in diabetes therapy have been achieved by the development of blood glucose systems relieving the patient of the daily use of syringes or insulin pens. Such blood glucose systems usually comprise a battery-operated blood glucose meter and one or more separate further devices, such as a battery-operated insulin pump. Further, such blood glucose systems usually comprise a control unit which is often provided as an integral part of the blood glucose meter, but may also be provided as a separate device communicating with the blood glucose meter and the remaining devices.

In such systems, the blood glucose meter is used to determine the blood glucose concentration, e.g. by receiving blood samples via enzyme-based test strips and calculating the blood glucose value based on the enzymatic reaction. Advantageously, the blood glucose system is configured such that the measured value is automatically delivered to the control unit. The insulin pump allows for the delivery of insulin in a more physiological manner and can be controlled to follow standard or individually modified protocols to give the patient a better glycemic control over the course of a day. It can be constructed as an implantable device for subcutaneous arrangement or can be constructed as an external device that is carried on the body of the patient.

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The operation of the insulin pump and of other devices can be controlled and modified by means of the control unit. For example, delivery of suitable amounts of insulin by the insulin pump requires that the patient frequently determines his or her blood glucose level and inputs this value into the control unit, which then calculates a suitable modification to the default or currently in use insulin delivery protocol, i.e. dosage and timing, and subsequently communicates with the insulin pump to adjust its operation accordingly. In this regard, it may be necessary to use the control unit each time the patient eats to instruct the pump to administer a specified amount of insulin to cover that meal. Recently, a more or less closed-loop control has been realized in which the control unit modifies the insulin delivery protocol automatically.

In view of the permanence of the therapy, it is desirable to provide the diabetic patient with flexibility, convenience and ease of use in order to increase the quality of his or her life. In this regard, it is evident that cable connections between the individual devices of a blood glucose system are disadvantageous. Thus, it is known to provide a blood glucose meter with wireless communication capabilities.

In some of such meters, care has been taken to separate the part that is responsible for the measuring functionality yielding a metered value corresponding to blood glucose level from the part that is responsible for establishing a wireless communication link and receiving and/or transmitting information via this link. This arrangement has the advantage that in case changes to the wireless communication part are made upon further development of the blood glucose meter, such changes do not have an influence on the blood glucose measuring functionality. In this way, it is ensured that a modification which only relates to the wireless communication part does not have an impact on the critical medical functionality so that a

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new testing and validation of the blood glucose measuring part is avoided. In blood glucose meters, this issue is of great importance, because uncertainties with regard to the correct measurement of blood glucose level cannot be accepted.

One exemplary blood glucose meter constructed in this way is described in US 2003/0065536 A1. This reference discloses a blood glucose meter capable of communicating medically relevant data information to another device such as e.g. a central server or a mobile terminal. The blood glucose meter includes a blood glucose measuring part for executing a blood glucose measuring function and a communication part responsible for wireless communication according to e.g. radio frequency communication, infrared communication, the Bluetooth protocol and/or the TCP/IP protocol. Both parts are connected in such a manner that they can exchange data information according to a predetermined protocol under the control of the blood glucose measuring part. Otherwise, the functionalities of both parts are separated in order to obtain two physically and functionally separated parts for the above reasons. While this blood glucose meter may facilitate advancement to the next product cycle to some degree, it lacks desired flexibility for the meter to be easily adapted to operation in different environments. The communication device part has predetermined functions, and in case a particular application requires a deviating wireless approach, a complex modification procedure is necessary.

In a different field of medical devices, US 6,731,962 discloses a finger oximeter with remote telecommunication capabilities enabling the oximeter to transmit measurement data from a patient to a remote device. The oximetry circuitry and the transmission circuitry may be provided on a single or on two separate printed circuit boards. This device has the same

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disadvantages mentioned above for the known blood glucose meter.

It is the object of the present invention to provide a blood glucose meter providing a high degree of flexibility with regard to adapting it to operation in different wireless communication environments and that remedies the disadvantages found in the prior art, and to provide a blood glucose system including such a blood glucose meter as well as a method of constructing such a blood glucose meter.

This object is achieved by a blood glucose meter with the features of claim 1, by a blood glucose system with the features of claim 23, and by a method with the features of claim 25. Further preferred embodiments of the invention are the subject-matter of the respective dependent claims.

The blood glucose meter of the present invention comprises a blood glucose measuring module for performing a blood glucose measuring function, i.e. the module includes a means for performing such function, such as e.g. a means that is able to analyze blood samples on enzyme-based test strips, that can be inserted into a test strip receiving slot of the meter in order to determine the blood glucose level based on the enzymatic reaction. This blood glucose measuring module may be adapted to perform all steps necessary to measure, calculate and provide a value of blood glucose level. For some applications, however, it may be advantageous if the blood glucose measuring module is adapted to perform only a part of these steps, while one or more additional devices, connected to the blood glucose meter by means of e.g. a wireless or cable connection, are provided to perform the remaining steps. For example, an external sensor may be provided for transmitting a signal characteristic of blood glucose level to the blood glu-

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cose meter, from which signal the blood glucose meter calculates and displays the blood glucose level.

The blood glucose meter further comprises a wireless communication module adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol. In the context of the present invention, the term frequency format refers to the physical characteristics of the wireless signals such as frequency or modulation. Although the wireless communication link will usually be bidirectional, for simple applications the link can also be unidirectional, i.e. the wireless communication module may be configured to only transmit or to only receive messages to or from the external device.

The blood glucose measuring module and the wireless communication module are physically separate units. In the context of the present invention, this means that the two modules as a whole are distinct structural parts which may be completely spatially separated from each other. However, they are releasably electrically connected in order to allow for an exchange of electrical signals corresponding to information to be transmitted by the wireless communication module and/or information received by the wireless communication module, i.e. in accordance with the considerations mentioned above the exchange of signals may be bidirectional or unidirectional.

It is to be noted that in addition to a means for performing a blood glucose measuring function, the blood glucose measuring module may also include other means for performing other functions relevant to the operation of the blood glucose meter. Only means relating to the wireless communication are necessarily disposed separate from this module and are located in

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the wireless communication module. In case the blood glucose measuring module includes a substantial part of the functional means or substantially all functional means of the blood glucose meter, the blood glucose measuring module could also be referred to as the main module of the meter.

According to the present invention, the blood glucose measuring module and the wireless communication module both comprise a connector component adapted to releasably establish the electrical connection between the blood glucose measuring module and the wireless communication module. Thus, the connector component of the blood glucose measuring module and the connector component of the wireless communication module can cooperate to effect the electrical connection between the two modules. This electrical connection is releasable, i.e. it can be selectively and repeatedly disconnected and re-established.

This construction provides the advantage that any connection and functional cooperation between the two physically separate modules can be easily and readily broken in case it is desired to replace one of the modules with another similar module providing a different functionality. Thus, while the above-referenced advantages due to separation of the blood glucose measuring functionality and the wireless communication functionality into two distinct units, i.e. the functional independence of these units, found in prior art blood glucose meters are retained, it is very simple to quickly replace a first wireless communication module, which is e.g. adapted for communication according to the Bluetooth standard, with a second wireless communication module, which is e.g. adapted for communication according to the ZigBee or ISM standard, thereby adapting the blood glucose meter to a different wireless communication environment. This advantageous flexibility can be utilized at the manufacturing stage or even later-on by the user. Thus, advantageously the blood glucose meter is con-

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structured such that the frequency format and/or protocol according to which the blood glucose meter can communicate with an external device can be changed by replacing the wireless communication module with another wireless communication module which can be connected to the connector component of the blood glucose measuring module by means of its own connector component and which is adapted to communicate according to a different frequency format and/or protocol.

Moreover, the construction according to the invention provides further advantages during the quality control procedure. Because the electrical connection between the blood glucose measuring module and the wireless communication module is releasable and the blood glucose measuring functionality and the wireless communication functionality are compartmentalized in different modules, separate quality control tests can be performed on the modules after spatially separating the modules. This avoids problems and a complicated procedure due to the two modules being electrically connected and in close proximity to each other. Otherwise, problems could arise e.g. due to the wireless signal generated by the wireless communication module interfering with the quality control testing of the blood glucose measuring module. Thus, the likelihood of encountering interferences during quality control testing can be reduced by performing the two quality control tests entirely separately in such a manner that the blood glucose measuring module and the wireless communication module are not electrically connected and not in close proximity to each other.

In an advantageous version of the invention, the blood glucose meter is constructed such that the frequency format and/or protocol according to which the blood glucose meter can communicate with an external device can be changed solely by replacing the wireless communication module with another wireless communication module which is adapted to communicate ac-

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according to a different frequency format and/or protocol. Thus, in order to adapt the meter to a different wireless communication environment, no other steps but disconnecting the present wireless communication module from the blood glucose measuring module, removing the wireless communication module and connecting a different wireless communication module having the desired wireless communication capabilities to the blood glucose measuring module are necessary for the adaptation. In particular, no changes whatsoever have to be made to the blood glucose measuring module. For this purpose, the electrical signals provided and expected by the blood glucose measuring module at its connector component are predetermined, and the new wireless communication module has to operate in accordance with the standard constituted by the corresponding set of predetermined signals.

In a preferred embodiment of the blood glucose meter, the blood glucose measuring module comprises a control means operable to control the electrical signals provided by the blood glucose measuring module at its connector component.

It is further preferred if the wireless communication module comprises a memory chip connector for electrically connecting the wireless communication module with a non-volatile semiconductor memory card or a so-called smart card, wherein the control means of the blood glucose measuring module is adapted to operate in accordance with information stored in a non-volatile semiconductor memory card or smart card connected to the memory chip connector of the wireless communication module. In this regard, it is also possible that the memory card or smart card includes circuitry which is connected via the memory chip connector and the connector components of the two modules to the control means of the blood glucose measuring device and then forms part of the control means to thereby change or adapt the operation of the control means to the par-

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ticular wireless communication module. In any case, the provision of a memory chip connector results in increased flexibility because the signals provided and expected by the blood glucose measuring module at its connector may be modified to thereby improve the capabilities of the wireless communication module and the meter as a whole.

In the alternative, it is preferred if the control means can be reprogrammed in order to change the electrical signals provided and/or expected during operation by the blood glucose measuring module at its connector component, i.e. the electrical signals can be reprogrammed in their functions. In a preferred embodiment such reprogramming can be effected by the wireless communication module. For this purpose, the wireless communication module may comprise a memory chip connector for electrically connecting the wireless communication module with a non-volatile semi-conductor memory card or smart card, wherein the control means of the blood glucose measuring module can be reprogrammed in accordance with information stored in a non-volatile semiconductor memory card or smart card connected to the memory chip connector of the wireless communication module. For example, the meter may be constructed such that this reprogramming is effected automatically upon establishing the releasable electrical connection between the blood glucose measuring module and the wireless communication module or by inserting a memory card or smart card into the memory chip connector. This design provides additional flexibility because the memory card or smart card does not always have to be present in the wireless communication module. In any case, the frequency format and/or protocol according to which the blood glucose meter can communicate with an external device can advantageously be changed by replacing the wireless communication module with another wireless communication module which is adapted to communicate according to a different fre-

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quency format and/or protocol and suitably reprogramming the control means of the blood glucose measuring module.

It should be noted that each of the memory chip connectors mentioned above could also be provided not in the wireless communication module, but at a different location in the blood glucose meter of the present invention. For example, they could be provided in the blood glucose measuring module. In any case, in the assembled state of the blood glucose meter the memory chip connectors have to be connected to the control means of the blood glucose measuring module. However, in most cases, disposing the memory chip connector in the wireless communication module provides the advantages of particular flexibility and space economy within the blood glucose measuring module.

It is preferred that the wireless communication module comprises a memory chip connector for electrically connecting the wireless communication module with a non-volatile semiconductor memory card. This memory chip connector can be one of the memory chip connectors mentioned above or an additional memory chip connector. In this way a variety of different functions of the wireless communication module and/or the blood glucose measuring module may be modified and adapted in a particularly simple manner. Further, a memory card or smart card can also serve as a storage means for storing various information relating to the measurement results obtained by the meter. In addition or in the alternative, one or more memory chip connectors for connecting a non-volatile semiconductor memory card with the blood glucose meter and fulfilling one or more of the above or one or more other functions could also be provided at other locations in the blood glucose meter of the present invention, e.g. in the blood glucose measuring module.

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For any memory chip connector present in the wireless communication module (or at a different location), it is advantageous if the memory chip connector is orientated such that a set of contacts on a memory card connected to the memory chip connector face downwards allowing a user to more easily observe upward facing artwork on the memory card as it is inserted into said blood glucose meter. In this way, the identity of the card can be easily verified without a need to remove the card from the memory chip connector.

According to a preferred embodiment of the invention, the wireless communication module does not comprise an own power supply. Rather, a corresponding power supply for operating the wireless communication module is disposed in the blood glucose measuring module. This power supply can be the power supply of the blood glucose measuring module or a separate, dedicated power supply. In any case, the electrical signals provided during operation by the blood glucose measuring module at its connector component include signals for supplying power to the wireless communication module. This construction provides the advantage of the possibility of a particularly simple and low-cost design of the wireless communication module, which is highly advantageous in view of the wireless communication modules being envisaged for interchangeability.

It is preferred that the wireless communication module comprises a transceiver, an antenna impedance matching network and an antenna, and possibly also an electrostatic discharge (ESD) protection circuit. In this manner, the wireless communication module is a self-contained unit. Arrangement of the antenna in close proximity to the remaining components of the wireless communication module is highly advantageous.

It is further preferred that the blood glucose meter comprises a housing in which the blood glucose measuring module and the

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wireless communication module are enclosed to provide a meter which is compact and easily manageable for the user.

In a preferred embodiment of the invention, the blood glucose measuring module comprises or consists of a first printed circuit board on which blood glucose measuring circuitry - and possibly further circuitry if the first printed circuit board is the main board of the meter - is mounted or provided, and the wireless communication module comprises or consists of a second printed circuit board, different from the first printed circuit board, on which wireless communication circuitry is mounted or provided. In this case, it is advantageous if the wireless communication module comprises a transceiver, an antenna impedance matching network and an antenna as well as possibly an ESD protection circuit, and if all these elements of the wireless communication module are mounted or provided on the second printed circuit board. Further, a particularly simple and efficient design can be realized if the first printed circuit board is a motherboard and the second printed circuit board is a daughterboard. Further, it is preferred if the second printed circuit board is disposed on the first printed circuit board. In any case, it is an advantage of this construction that the second printed circuit board or daughter board helps to economize space on the first printed circuit board or mother board.

It is preferred if one of the connector components of the blood glucose measuring module and the wireless communication module is the plug component of a plug and socket connector and the other connector component is the socket component of the plug and socket connection. Such a plug and socket connection is particularly easy to operate and simple in construction. The releasable electrical connection may be established by directly connecting the plug and the socket, i.e. by inserting the plug on the wireless communication module or the

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blood glucose measuring module into the socket on the blood glucose measuring module or wireless communication module, respectively, or by connecting them via an adapter or a cable.

The connector components of the blood glucose measuring module and the wireless communication module may also be adapted to be connected by a cable having suitable connector components at its ends. Such a construction provides flexibility with regard to the physical arrangement of the two modules within the meter.

The wireless communication module may advantageously be adapted to communicate according to the ISM, Bluetooth, ZigBee or WLAN standard or even according to two or more of these standards.

The blood glucose meter of the invention described above may advantageously be part of a blood glucose meter system further comprising at least one further wireless communication module similar to the wireless communication module but adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol different from the frequency format and/or protocol of the wireless communication module. As is evident from the above description, with such a system the frequency format and/or protocol according to which the blood glucose meter can communicate with an external device can be changed by replacing the wireless communication module with one of the at least one further wireless communication module by establishing a releasable connection between the blood glucose measuring module and the new wireless communication module by means of their connector components. Of course, such a system can also be regarded as comprising a blood glucose meter as described above with or without a wireless com-

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munication module connected to the blood glucose measuring module as well as a number or set of wireless communication modules which are adapted for different wireless communication capabilities. This set of wireless communication modules may e.g. include wireless communication modules adapted to communicate according to the ISM, Bluetooth, ZigBee or WLAN standard or even according to two or more of these standards.

Any of the blood glucose meters of the present invention described above may advantageously be constructed by a method in which a blood glucose measuring module for performing a blood glucose measuring function is provided and a plurality of wireless communication modules are provided, each adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol different from the frequency format and/or protocol of the other wireless communication modules. As noted in detail above, the blood glucose measuring modules and the wireless communication module are physically separate units and the blood glucose measuring module and each wireless communication module comprise respective connector components by means of which a selected one of the wireless communication modules may be releasably electrically connected in order to allow for an exchange of electrical signals corresponding to information to be transmitted by the respective wireless communication module and/or information received by the respective wireless communication module. Subsequently, one of the plurality of wireless communication modules is selected in accordance with the desired frequency format and protocol, and an electrical connection between the selected wireless communication module and the blood glucose measuring module is established by means of the respective connector components to thereby form the blood glucose meter. By this method, a manufacturer or even a user may easily and in a

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flexibly manner construct a blood glucose meter tailored to a particular application.

In the following, the invention is explained in more detail for preferred embodiments with reference to the figures.

Figure 1 is a top perspective view of a blood glucose meter according to the present invention.

Figure 2 is a schematic diagram showing the blood glucose meter of Figure 1 wirelessly communicating with a plurality of external medical devices.

Figure 3 is a simplified bottom plan view of a motherboard of the blood glucose meter shown in Figure 1.

Figure 4 is a simplified top plan view of the motherboard shown in Figure 3.

Figure 5 is a simplified top plan view of a daughterboard of the blood glucose meter shown in Figure 1.

Figure 6 is a simplified bottom plan view of the daughterboard shown in Figure 5.

Figure 7 is a bottom plan view of a memory chip for use with the daughterboard shown in Figures 5 and 6.

Figure 8 is a top plan view of the memory chip shown in Figure 7.

Figure 9 is a simplified bottom perspective view of the daughterboard shown in Figures 5 and 6.

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Figure 10 is a simplified bottom perspective view of the blood glucose meter with a bottom housing half removed.

Figure 1 is a perspective view of a blood glucose measurement device or meter in accordance with the present invention, which in a particular embodiment of the invention is provided in the form of a remote controller 200. This remote controller 200 may e.g. be part of the blood glucose system schematically shown in Figure 2. A medical device such as, for example, this glucose measurement device 200 may have the ability to wirelessly communicate with one or more peripheral medical devices. In the embodiment of this invention shown in Figure 2, the blood glucose measurement device or remote controller 200 communicates via a wireless signal 310 with peripheral medical devices such as, for example, an insulin pump 300 for dispensing insulin to the blood circuit of a patient, a continuous glucose monitor (CGM) 400, an insulin pen 500, or a combination thereof. The insulin pump 300 may be an external device to be worn on the body of a patient, or it may be constructed as an implantable device to be disposed subcutaneously.

Recently, there has been a continuing development in the field of wireless communications and it is likely that these improvements will continue in the future. There will also likely be a need for additional types of peripheral medical devices to wirelessly communicate with a blood glucose measurement device for facilitating the therapy of people with diabetes. This has led to a need for designing a medical device such as a blood glucose meter which can have its hardware easily adapted to a new wireless communication environment or application or upgraded by using a modular architecture. In an embodiment of this invention, the wireless circuitry is compartmentalized from the blood glucose measuring circuitry. Thus, in such a design, only the wireless circuitry must be replaced while the blood glucose measuring circuitry will require lit-

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tle or no modification. In general, this will make adapting, changing or upgrading the wireless functionality of a blood glucose measurement device faster and easier to perform.

Remote controller 200 may be used to episodically measure blood glucose and to wirelessly control insulin pump 300 and/or other peripheral medical device(s). In an embodiment of this invention, remote controller 200 may be a master and insulin pump 300 and/or other peripheral medical device(s) may be a slave. As shown in Figure 1, remote controller 200 includes a first housing half 201, a display 202, an OK button 204, a universal port connector 205, a down button 206, a second housing half 207, a back button 208, a port cover 209, an up button 210, light emitting diode (LED) 212, and a strip port connector (SPC) 214. In an embodiment of this invention, a first housing half 201 and second housing half 207 may adapt to join together to form an ergonomically shaped handheld glucose meter which encloses both a motherboard and a daughter-board which will be described in detail below.

Figures 3 and 4 show a simplified schematic bottom and top plan view, respectively, of an embodiment of a motherboard 234 having a bottom surface 252 and a top surface 250. As shown in Figure 4, motherboard 234 has mounted on top surface 250, the strip port connector 214, the display 202, and a plurality of navigation buttons 216, namely the OK button 204, the down button 206, the back button 208 and the up button 210 (see Figure 1) for effecting user entries e.g. by navigating through a menu structure of a user interface. The navigation buttons 216 may be utilized for initiating a particular action by the remote controller 200 or to input data into the remote controller 200, e.g. in order to adjust the operation of the insulin pump 300 with regard to various patient parameters such as e.g. his or her weight. As shown in Figure 3, motherboard 234 has mounted on bottom surface 252 an alarm 226, a

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blood glucose measurement means 220 for determining the level of blood glucose, a wired communication port 224, a memory 230, a first connector 238, a motherboard electrostatic discharge (ESD) circuitry 242, and a microprocessor 228.

Figures 5 and 6 show a simplified schematic top and bottom plan view, respectively, of an embodiment of a daughterboard 236 having a top surface 254 and a bottom surface 256. As shown in Figure 5, daughterboard 236 has mounted on its top surface 254, a memory chip port 232, a daughterboard ESD circuitry 244, an antenna impedance matching network 219, a radio frequency transceiver 218, and a second connector 240. As shown in Figure 6, daughterboard 236 has mounted on its bottom surface 256, a dielectric material 248 and an antenna element 246 coupled to the transceiver 218. It should be noted that a combination of dielectric material 248 and antenna element 246 may be simply referred to as an antenna. Antenna element 246 may be a contiguous conductive material having a 3-dimensional shape which is disposed on a portion of dielectric material 248 as also shown in Figure 9. The use of daughterboard 236 provides an additional set of two surfaces (i.e. top surface 254 and bottom surface 256) in which electronic components can be mounted. This allows more electronics to be efficiently enclosed within first housing half 201 and second housing half 207. The daughterboard 236 may also include control electronics, e.g. in the form of a microprocessor, operable to compose data frames to be transmitted by means of the transceiver 218, to analyze data frames received by the transceiver 218, and to activate and deactivate the transceiver 218 to transmit and/or receive data frames.

Motherboard 234 includes all of the functional circuitry required for performing an episodic glucose measurement test, whereas daughterboard 236 includes all of the functional circuitry required for a wireless communication with one or more

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peripheral medical devices such as insulin pump 300. From the above description, it is evident that the motherboard 234 forms a blood glucose measuring module in accordance with the present invention and that the daughterboard 236 forms a wireless communication module in accordance with the present invention. In the shown embodiment, motherboard 234 and daughterboard 236 are electrically connected, respectively, by the first connector 238 and the second connector 240, both of which are adapted to reversibly mate and to effect a releasable electrical connection which can be repeatedly and selectively disconnected and re-established. In an embodiment of this invention, motherboard 234 and daughterboard 236 are disposed in a stacking orientation such that when they are mated together by means of connectors 238 and 240 bottom surface 252 of motherboard 234 is orientated in a spaced apart and facing arrangement with top surface 254 of daughterboard 236 (see Figures 3, 5, and 10).

Figure 9 shows two batteries 222 which are disposed in a position such that a major axis of antenna element 246 is parallel to a major axis of batteries 222. Batteries 222 may be disposed in a battery compartment which is integrated as a portion of second housing half 207 (not shown). In the embodiment shown in Figures 5, 6 and 9, daughterboard 236 has an "L" shape to provide room for batteries 222 which in this case are two AAA alkaline batteries as shown in Figures 5 and 9.

Remote controller 200 may be designed such that it can be operated while on a tabletop or while being held by a user's hand. First housing half 201 may be a top surface of remote controller 200 and second housing half 207 may be a bottom surface of remote controller 200. During the use of remote controller 200, its bottom surface should be disposed on either a tabletop or the user's hand and thus should not be viewable by a user. However, the top surface of remote con-

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troller 200 should be viewable by a user during use. Therefore, display 202 and navigation buttons 216 should be mounted on top surface 250 of motherboard 234. In addition, top surface 250 of motherboard 234 should be disposed immediately underneath first housing half 201 such that corresponding apertures within first housing half 201 adapt to the shape of display 202 and navigation buttons 216. This allows display 202 and navigation buttons 216 to be viewable on the top surface of remote controller 200.

It is desirable to make the size of remote controller 200 relatively small so that it can easily fit into a palm of a user's hand. In general, a length and a width of motherboard 234 must be about the same as remote controller 200 in order to efficiently use all of the usable space available within remote controller 200 for mounting electronic components. Typically, there is a desire to have sufficiently large navigation buttons 216 and display 202 so that a user can easily see and handle them. Therefore, in order to design remote controller 200 as small as possible and have sufficiently large navigation buttons 216 and display 202, motherboard 234 should have an efficiently packed set of electronic components leaving little to no usable space. In an embodiment of this invention, the set of electronic components mounted to top surface 250 on motherboard 234 may include display 202, navigation buttons 216, and strip port connector 214. Figure 4 shows that the set of electronic components occupy nearly all of the usable area of the top surface of motherboard 234 making it difficult to mount additional electronic components without increasing the size of motherboard 234.

Display 202 may be a liquid crystal display (LCD) to show both textual and graphical information to a user. A user interface (UI) may be a software driven menu that is shown on display 202 that enables the user to operate remote controller 200. A

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user can navigate through the UI using navigation buttons 216 which include up button 210, down button 206, OK button 204, and back button 208. In an embodiment of this invention, the UI allows a user to operate an insulin pump, query the status of the insulin pump, measure blood glucose episodically, and to display data on display 202 (e.g. glucose concentration versus time).

Alarm 226 which may be in a variety of forms to warn a user of various statuses that might need an actionable response. For example, alarm 226 may include an audio alarm (monophonic beeps or polyphonic tones), a vibratory alarm, or a LED 212 which may be a multi-colored LED that can illuminate red, yellow, and green light. In an embodiment of this invention, an alarm signal may be used to warn a user that there is a low blood glucose reading, a partially filled blood glucose test strip, a low reservoir of insulin, an occlusion in insulin pump 300, a low battery status for insulin pump 300, a low battery status for remote controller 200, and/or an improperly filled test strip.

Blood glucose measurement means 220 may be a potentiostat designed for performing an episodic electrochemical measurement of a physiological fluid. In an embodiment of this invention, blood glucose measurement means 220 may apply a constant potential such as, for example, about +0.4 V between a working electrode and a reference electrode of a disposable test strip. A disposable test strip which may be suitable for use in the present invention is the OneTouch Ultra test strip which is commercially available from LifeScan, Inc. in Milpitas, California, U.S.A. The disposable test strip may be inserted into and electrically connected with strip port connector 214. After insertion, a physiological fluid such as blood may be applied to the disposable test strip causing the test to initiate. A reagent layer on the disposable test strip

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may proportionally convert an oxidized mediator to a reduced mediator allowing a current to be measured. A portion of the current may be sampled and mathematically converted to the glucose concentration which is displayed on display 202.

Port cover 209 in Figure 1 is an elastomeric material that covers over a wired connection port 224 and a memory chip port 232. Examples of a wired connection port may be a universal serial bus (USB) or a serial RS232. Wired connection port 224 may be used to connect to a personal computer for transferring/receiving data and/or a software code.

Radio frequency (RF) transceiver 218 may be an electronic circuit capable of receiving and sending a wireless signal to a peripheral medical device. RF transceiver 218 may include a microprocessor for managing and processing a wireless signal. In an embodiment of this invention, RF transceiver 218 may use one of a variety of frequency formats and/or protocols such as, for example, an Industry-Scientific-Medical (ISM) frequency band, a Bluetooth format, a ZigBee format, and a WLAN format. In the ISM frequency band, the frequency may range from about 868 MHz to about 928 MHz. Antenna element 246 may be mounted to dielectric material 248 which in turn is mounted to bottom surface 256 of daughterboard 236. Antenna element 246 may be used as a conduit for sending and receiving wireless signals 310. Antenna impedance matching network 219 may be used to compensate for non-idealities or variations in the impedance of antenna element 246. Electrical signals corresponding to wireless signals 310 received by transceiver 218 are provided, following suitable processing, at connector 240 of daughterboard 236. Electrical signals corresponding to wireless signals 310 to be transmitted by transceiver 218 are provided by motherboard 234 at its connector 238.

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Figures 7 and 8 show a bottom and top plan view, respectively, of a memory chip 290 having a bottom surface 260 and a top surface 258. Memory chip 290 may be in the form of a non-volatile semiconductor memory such as, for example, a flash memory or an electrically erasable programmable read only memory (EEPROM). In an embodiment of this invention, memory chip 290 may be a type of flash memory called a Smart Card as shown in Figure 7 and 8.

Figure 10 is a simplified schematic bottom perspective view of remote controller 200 with second housing half 207 removed. Memory chip 290 shown in Figures 7 and 8 may be inserted into memory chip port 232 for storing data and/or upgrading the software in remote controller 200, such as the software in microprocessor 228. Memory chip port 232 may be in the form of a slot on a side portion of remote controller 200 underneath port cover 209. Figure 10 shows a partial insertion of memory chip 290 into the slot. Memory chip port 232 is a connector having a plurality of memory chip port contacts 233 to electrically connect to a corresponding plurality of memory chip contacts 292 which are disposed on memory chip 290. Memory chip port 232 may be mounted on top surface 254 of daughter-board 236 allowing memory chip port contacts 233 to be facing upwards when inserted.

Memory chip 290 must be inserted into memory chip port 232 in a particular orientation such that a proper electrical connection can be established between memory chip 290 and remote controller 200. However, there are several orientations in which memory chip 290 may be inserted into memory chip port 232 and it may not be obvious to a user which way is proper. For example, there are four different permutations in which memory chip 290 may be inserted into memory chip port which are 1) top surface 258 facing upward towards a user and inserting initially a first end 294, 2) top surface 258 facing

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upward towards a user and inserting initially a second end 296, 3) bottom surface 260 facing upwards towards a user and inserting initially first end 294, and 4) bottom surface 260 facing upwards towards a user and inserting initially second end 296.

In an embodiment of this invention, memory chip 290 should have some printed artwork, such as an arrow and/or some text on either top surface 258 or bottom surface 260, to guide the user towards the proper orientation in inserting memory chip 290 and to clearly identify the memory chip 290. However, bottom surface 260 of memory chip 290 is substantially covered by memory chip contacts 292 making it difficult to print the artwork on bottom surface 260. Thus, the artwork should be printed on top surface 258 of memory chip 290. This will allow a user to view the artwork on top surface 258 of memory chip 290 while inserting it into memory chip port 232. In this configuration, memory chip contacts 292 should be facing downward and memory chip port contacts 233 should be facing upwards to allow for proper electrical connection.

It should be noted that daughterboard 236 provide an additional top surface 254 in which memory chip port 232 can be mounted such that memory chip port contacts 233 face upwards. It is not practical to mount memory chip port to top surface 250 of motherboard 234 because of a lack of usable space. As mentioned earlier, top surface 250 of motherboard 234 was predominantly occupied by navigational buttons 216 and display 202. Thus, the use of daughterboard 236 helps conserve space by allowing memory chip port 232 to mounted to it with memory chip connector contacts 233 facing upwards. This prevents having to mount memory chip port 232 to top surface 250 of motherboard 234 which would increase the size of motherboard 234 which is undesirable increase because this would, in turn, increase the size of remote controller 200.

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It is an advantage of this invention that remote controller 200 can adapt or upgrade its wireless hardware in a simple and flexible manner. Because the wireless circuitry is compartmentalized from the blood glucose measuring circuitry, it is a simple procedure to replace the wireless circuitry which in this case is located on daughterboard 236. Thus, daughterboard 236 may be swapped with a new one having a different set of wireless components mounted thereon while retaining the circuitry located on the motherboard 234 for measuring glucose.

It is another advantage of this invention that a modular glucose meter having a wireless functionality can have a simpler to perform quality control procedure. Because the functional circuitry for the wireless capability and the glucose measurement are on separate circuit boards, separate quality control tests can be performed on the spatially separated circuit boards. The wireless signal generated by the wireless circuitry may interfere with the quality control testing for the glucose measuring circuitry. This would make the quality control procedure complicated to perform if both sets of circuits are electrically connected and in close proximity to each other. Thus, the likelihood of encountering interferences during quality control testing will be reduced by performing the two quality control tests separately such that motherboard 234 and daughterboard 236 are not in close proximity to each other.

It is yet another advantage of this invention that daughterboard 236 helps economize space on motherboard 234. A sufficiently large LCD and navigation buttons can be mounted to top surface 250 of motherboard 234 that are easy for a user to see while at the same time allowing remote controller 200 to have a relatively small footprint. Further, daughterboard 236 allows memory chip port 232 to be mounted such that the memory

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chip 290 can be inserted with memory chip contacts 292 facing downward. This makes the insertion of memory chip 290 easier because the artwork can be placed on top surface 258 of memory chip 290 prompting and guiding the user to insert memory chip 290 with the proper orientation.

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Claims

1. A blood glucose meter (200) comprising:
a blood glucose measuring module (234) for performing a blood glucose measuring function and
a wireless communication module (236) adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol,
wherein the blood glucose measuring module (234) and the wireless communication module (236) are physically separate units electrically connected in order to allow for an exchange of electrical signals corresponding to information to be transmitted by the wireless communication module (236) and/or information received by the wireless communication module (236),
characterized in that the blood glucose measuring module (234) and the wireless communication module (236) both comprise a connector component (238, 240), wherein the two connector components (238, 240) are adapted to releasably establish the electrical connection between the blood glucose measuring module (234) and the wireless communication module (236).
2. The blood glucose meter according to claim 1, wherein the frequency format and/or protocol according to which the blood glucose meter (200) can communicate with an external device can be changed by replacing the wireless communication module (236) with another wireless communication module (236) which is adapted to communicate according to a different frequency format and/or protocol.
3. The blood glucose meter according to claim 1 or claim 2, wherein the blood glucose measuring module (234) comprises

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a control means (228) operable to control the electrical signals provided by the blood glucose measuring module (234) at its connector component (238).

4. The blood glucose meter according to any of the preceding claims, wherein the frequency format and/or protocol according to which the blood glucose meter (200) can communicate with an external device can be changed solely by replacing the wireless communication module (236) with another wireless communication module (236) which is adapted to communicate according to a different frequency format and/or protocol.
5. The blood glucose meter according to claim 3, wherein the wireless communication module (236) comprises a memory chip connector (232) for electrically connecting the wireless communication module (236) with a non-volatile semiconductor memory card (290), and wherein the control means (228) of the blood glucose measuring module (234) is adapted to operate in accordance with information stored in a non-volatile semiconductor memory card (290) connected to the memory chip connector (232) of the wireless communication module (236).
6. The blood glucose meter according to claim 3, wherein the control means (228) can be reprogrammed in order to change the electrical signals provided during operation by the blood glucose measuring module (234) at its connector component (238).
7. The blood glucose meter according to claim 6, wherein the wireless communication module (236) comprises a memory chip connector (232) for electrically connecting the wireless communication module (236) with a non-volatile semiconductor memory card (290) , and wherein the control

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means (228) of the blood glucose measuring module (234) can be reprogrammed in accordance with information stored in a non-volatile semiconductor memory card (290) connected to the memory chip connector (232) of the wireless communication module (236).

8. The blood glucose meter according to claim 6 or claim 7, wherein the frequency format and/or protocol according to which the blood glucose meter (200) can communicate with an external device can be changed by replacing the wireless communication module (236) with another wireless communication module (236) which is adapted to communicate according to a different frequency format and/or protocol and reprogramming the control means (228) of the blood glucose measuring module (234).
9. The blood glucose meter according to any of the preceding claims, wherein the wireless communication module (236) comprises a memory chip connector (232) for electrically connecting the wireless communication module (236) with a non-volatile semi-conductor memory card (290).
10. The blood glucose meter according to any of claims 5, 7, and 9, wherein the memory chip connector (232) is orientated such that a set of contacts (292) on a memory card (290) connected to the memory chip connector (232) face downwards allowing a user to more easily observe upward facing artwork on the memory card (290) as it is inserted into said blood glucose meter (200).
11. The blood glucose meter according to any of the preceding claims, wherein the blood glucose measuring module (234) comprises a power supply for operating the wireless communication module (236), and wherein the electrical signals provided during operation by the blood glucose measuring

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module (234) at its connector component (238) include signals for supplying power to the wireless communication module (236).

12. The blood glucose meter according to any of the preceding claims, wherein the wireless communication module (236) comprises a transceiver (218), an antenna impedance matching network (21) and an antenna (246, 248).
13. The blood glucose meter according to claim 12, wherein the wireless communication module (236) further includes an electrostatic discharge (ESD) protection circuit (244).
14. The blood glucose meter according to any of the preceding claims, wherein the blood glucose meter (200) comprises a housing (201, 207) in which the blood glucose measuring module (234) and the wireless communication module (236) are enclosed.
15. The blood glucose meter according to any of the preceding claims, wherein the blood glucose measuring module (234) comprises a first printed circuit board on which blood glucose measuring circuitry (220) is mounted, and the wireless communication module (236) comprises a second printed circuit board on which wireless communication circuitry (218, 219, 246) is mounted.
16. The blood glucose meter according to claims 12 and 15, wherein the transceiver (218), the antenna impedance matching network (219) and the antenna (246, 248) are mounted on the second printed circuit board.
17. The blood glucose meter according to claims 13 and 16, wherein the ESD protection circuit (244) is mounted on the second printed circuit board.

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18. The blood glucose meter according to any of claims 15 to 17, wherein the first printed circuit board is a mother-board and the second printed circuit board is a daughter-board.
19. The blood glucose meter according to any of claims 15 to 18, wherein the second printed circuit board is disposed on the first printed circuit board.
20. The blood glucose meter according to any of the preceding claims, wherein one of the connector components (238, 240) of the blood glucose measuring module (234) and the wireless communication module (236) is the plug component of a plug and socket connector and the other connector component (238, 240) is the socket component of the plug and socket connection.
21. The blood glucose meter according to any of claims 1 to 19, wherein the connector components (238, 240) of the blood glucose measuring module (234) and the wireless communication module (236) are adapted to be connected by a cable having suitable connector components at its ends.
22. The blood glucose meter according to any of the preceding claims, wherein the wireless communication module (236) is adapted to communicate according to the ISM, Bluetooth, ZigBee or WLAN standard.
23. A blood glucose meter system comprising:
a blood glucose meter (200) according to any of claims 1 to 19, and
at least one further wireless communication module (236) similar to the wireless communication module (236) but adapted for establishing a wireless communication link

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with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol different from the frequency format and/or protocol of the wireless communication module (236),

wherein the frequency format and/or protocol according to which the blood glucose meter (200) can communicate with an external device can be changed by replacing the wireless communication module (236) with one of the at least one further wireless communication module (236).

24. The blood glucose meter system according to claim 23, wherein the wireless communication module (236) and the at least one further wireless communication module (236) include wireless communication modules (236) adapted to communicate according to the ISM, Bluetooth, ZigBee or WLAN standard.

25. A method of constructing a blood glucose meter (200) according to any of claims 1 to 22 comprising the steps of: providing a blood glucose measuring module (234) for performing a blood glucose measuring function, providing a plurality of wireless communication modules (236), each adapted for establishing a wireless communication link with an external device and exchanging information with the external device via the wireless communication link according to a predetermined frequency format and protocol different from the frequency format and/or protocol of the other wireless communication modules (236), wherein the blood glucose measuring module (234) and the wireless communication modules (236) are physically separate units and wherein the blood glucose measuring module (234) and each wireless communication module (236) comprise respective connector components (238, 240) by means of which a selected one of the wireless communi-

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cation modules (236) may be releasably electrically connected to the blood glucose measuring module (234) in order to allow for an exchange of electrical signals corresponding to information to be transmitted by the respective wireless communication module (236) and/or information received by the respective wireless communication module (236),
selecting one of the plurality of wireless communication modules (236) in accordance with the desired frequency format and protocol, and
establishing an electrical connection between the selected wireless communication module (236) and the blood glucose measuring module (234) by means of the respective connector components (238, 240).

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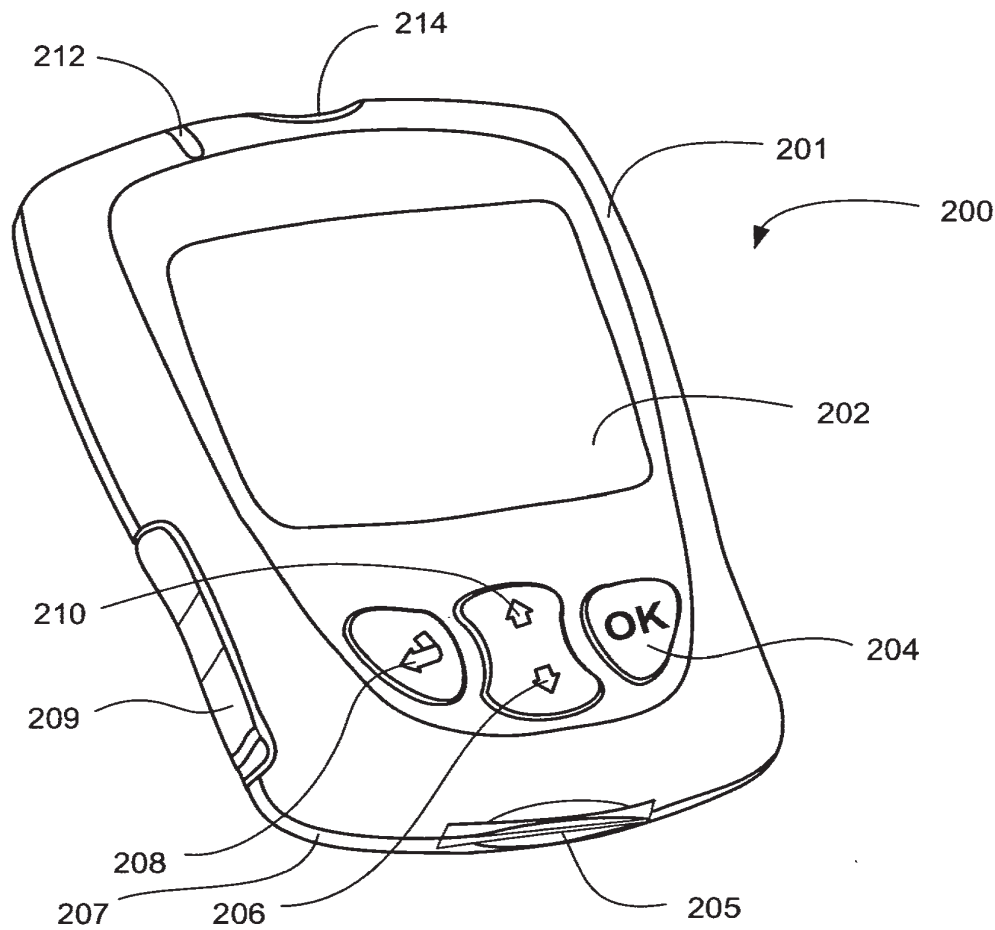
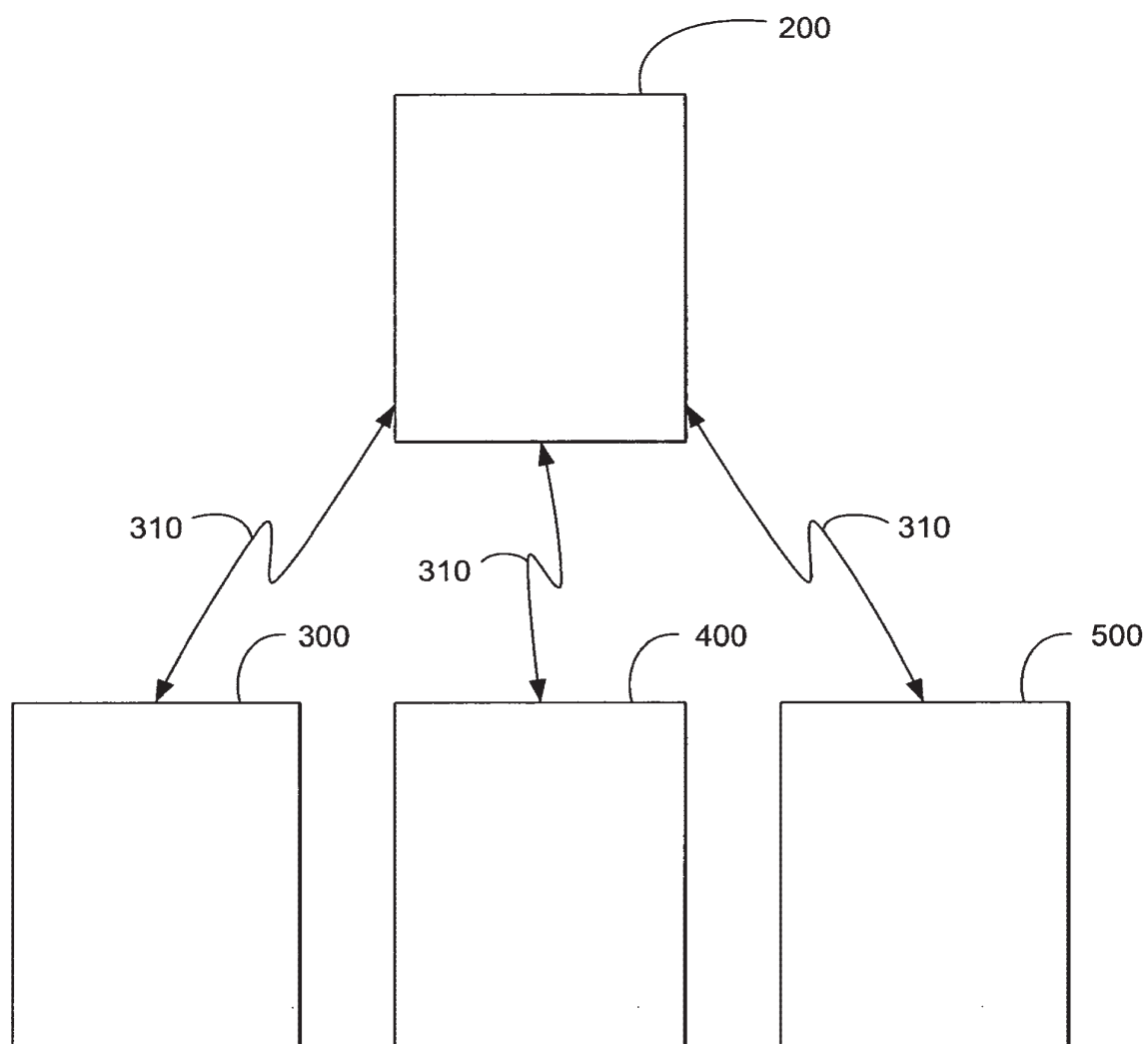


FIG. 1

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**FIG. 2**

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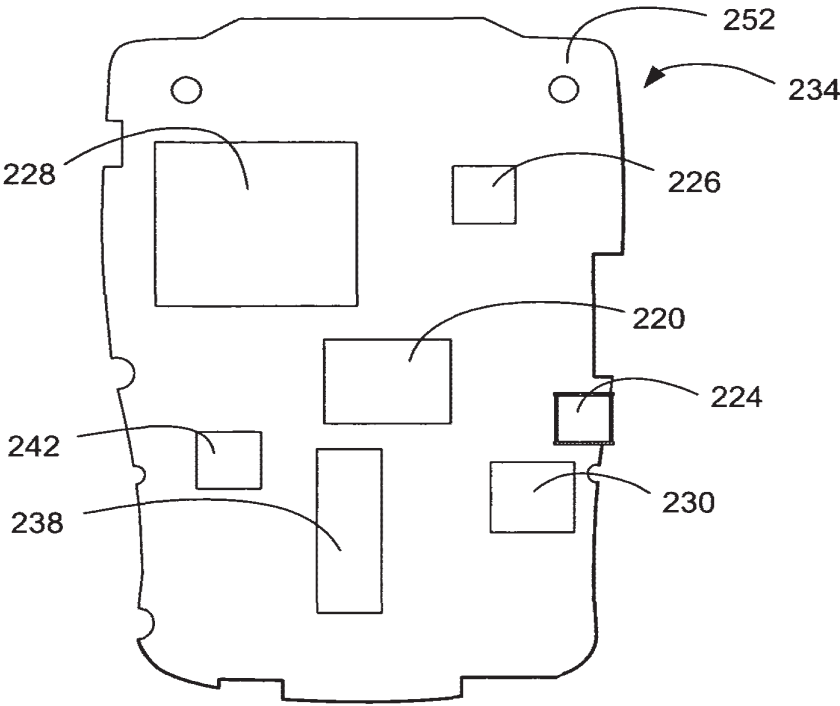


FIG. 3

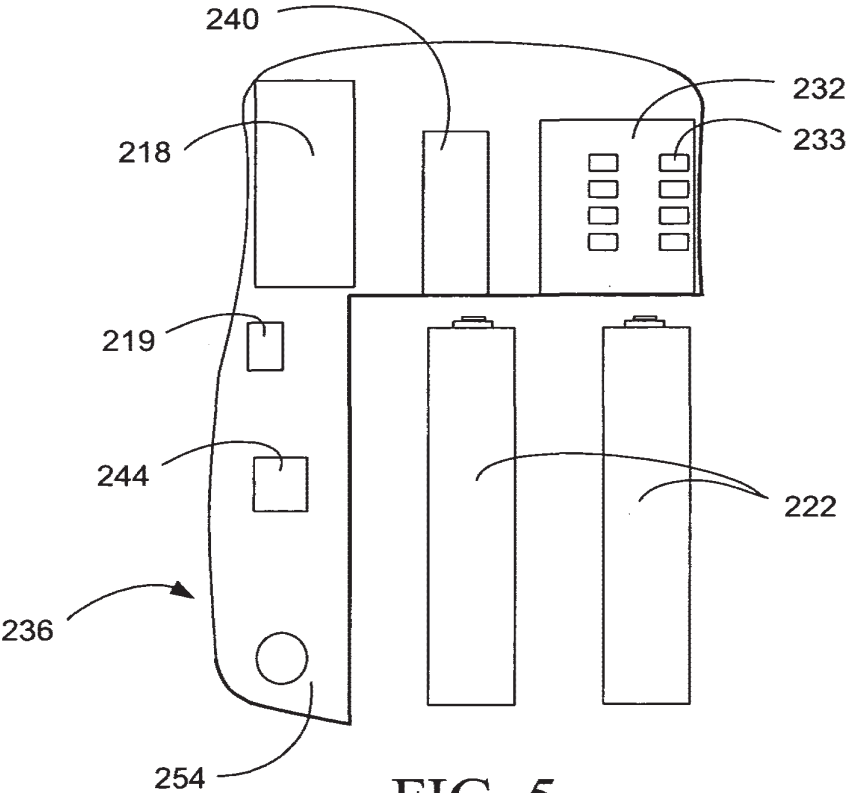


FIG. 5

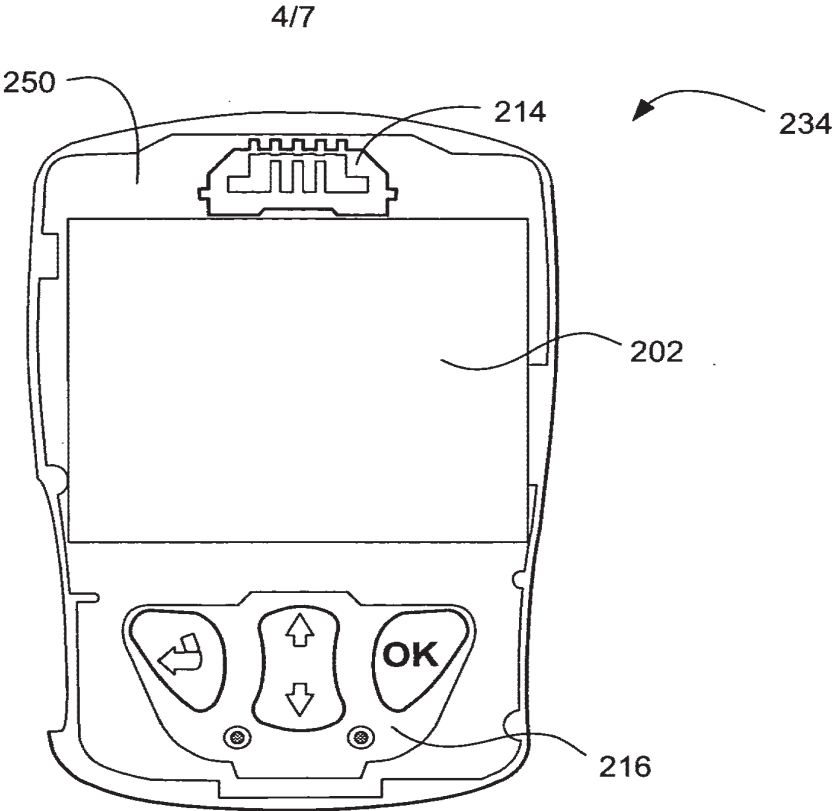


FIG. 4

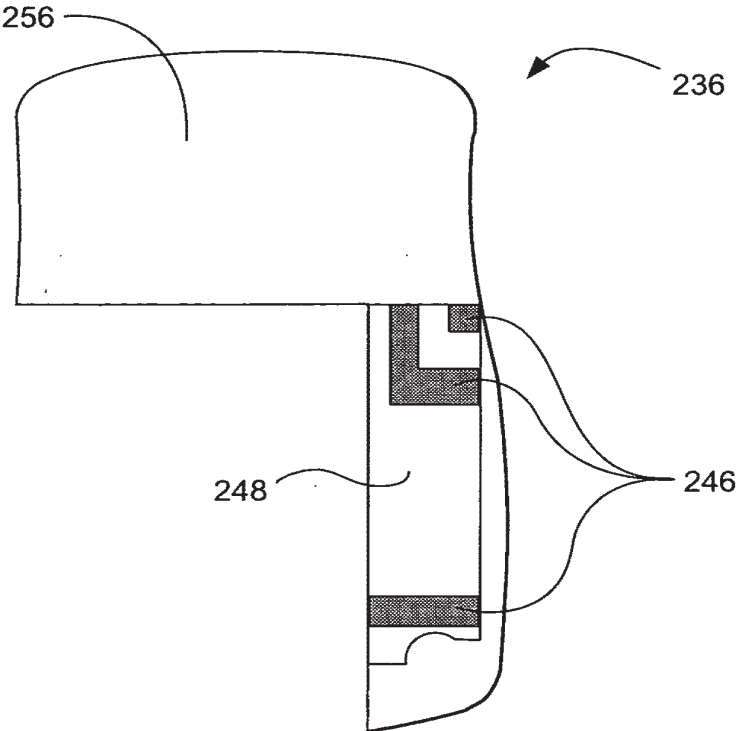


FIG. 6

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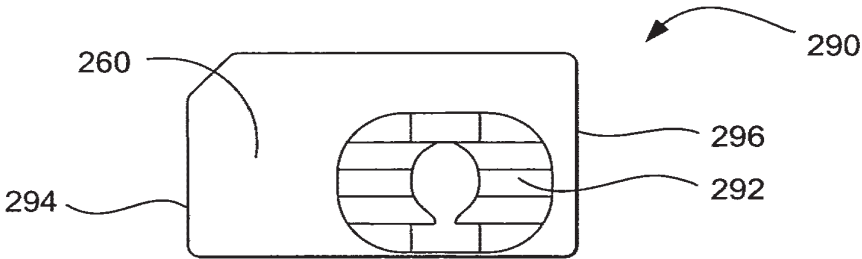


FIG. 7

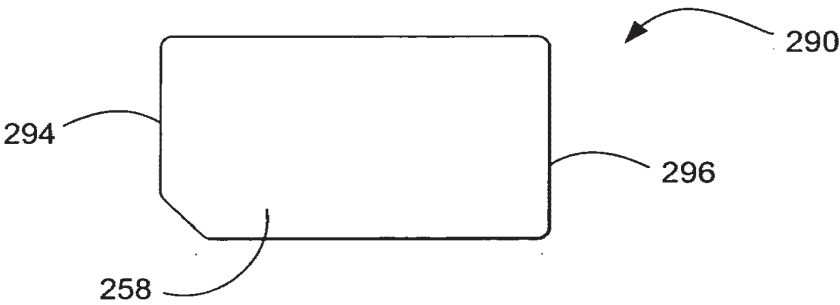


FIG. 8

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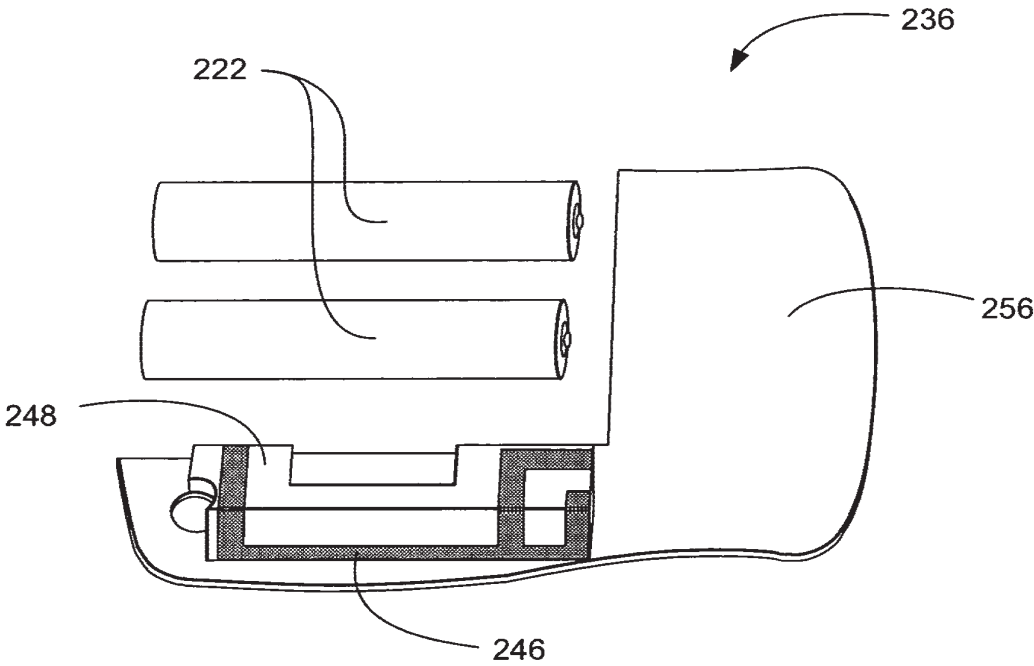


FIG. 9

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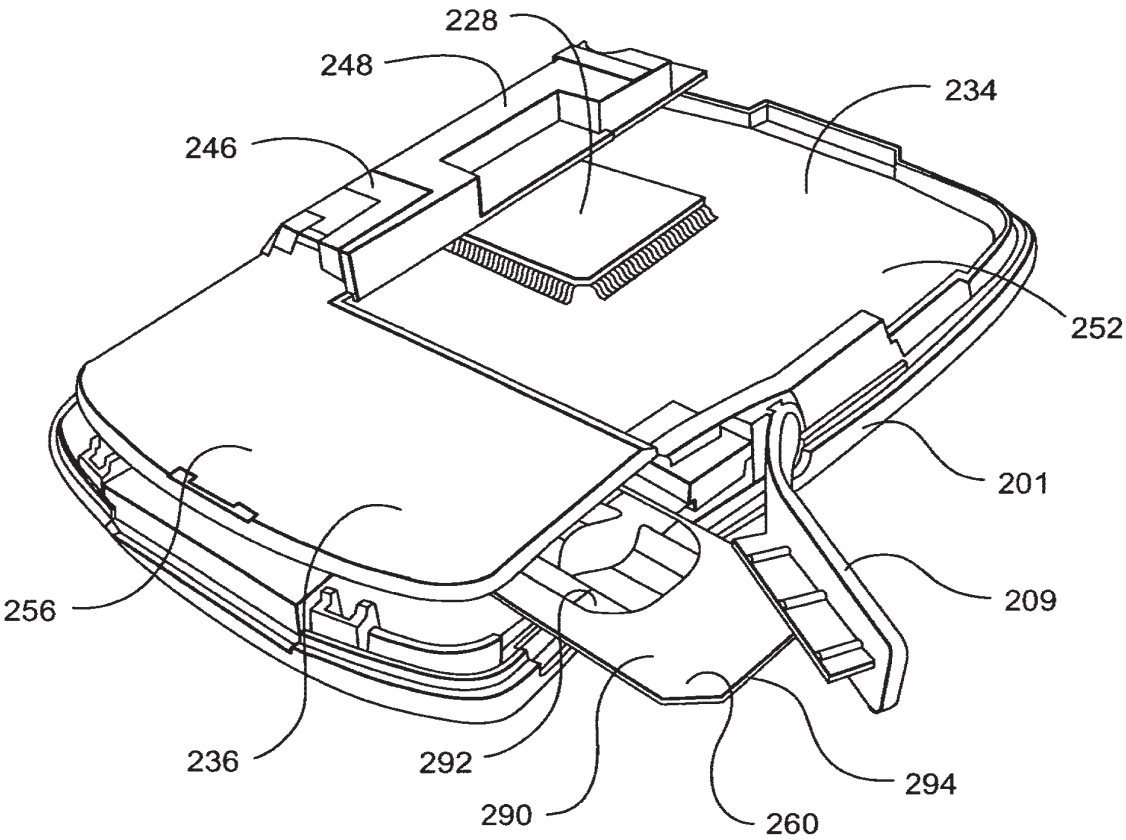


FIG. 10

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/011263

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61B5/00 G06F19/00
ADD. G01N33/487

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A61B G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2003/181798 A1 (AL-ALI AMMAR [US]) 25 September 2003 (2003-09-25) paragraphs [0026] - [0065]; figure 3 -----	1
X	DE 102 37 692 A1 (GHC GLOBAL HEALTH CARE GMBH [DE]) 26 February 2004 (2004-02-26) the whole document -----	1,2,11, 20,22-25
X	US 2006/248398 A1 (NEEL GARY T [US] ET AL) 2 November 2006 (2006-11-02) paragraphs [0036] - [0059]; figure 10 -----	1-25
X	US 2003/176183 A1 (DRUCKER STEVEN [US] ET AL DRUCKER STEVEN [US] ET AL) 18 September 2003 (2003-09-18) paragraph [0077]; figure 4 -----	1,14-19

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

24 July 2007

Date of mailing of the International search report

01/08/2007

Name and mailing address of the ISA/

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Authorized officer

Anscombe, Marcel

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2006/011263

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2003181798	A1	25-09-2003	US 2005135288 A1	23-06-2005
DE 10237692	A1	26-02-2004	AU 2003253406 A1	11-03-2004
			WO 2004017827 A1	04-03-2004
			EP 1531722 A1	25-05-2005
			US 2006122466 A1	08-06-2006
US 2006248398	A1	02-11-2006	WO 2006118763 A2	09-11-2006
US 2003176183	A1	18-09-2003	US 2005277164 A1	15-12-2005
			US 2005239156 A1	27-10-2005

Electronic Acknowledgement Receipt

EFS ID:	43602491
Application Number:	17411154
International Application Number:	
Confirmation Number:	1823
Title of Invention:	METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING
First Named Inventor/Applicant Name:	Wesley Scott Harper
Customer Number:	95508
Filer:	Glen Liu/Alana Fredericks
Filer Authorized By:	Glen Liu
Attorney Docket Number:	A0130.0090.C7
Receipt Date:	25-AUG-2021
Filing Date:	
Time Stamp:	16:37:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	9368USC7_A0130_0090_C7_ID S_14492.pdf	150079 a115082c7a439d97eda5d0b916871ce0e1a0afcc	no	1

Warnings:

Information:					
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2	Foreign Reference	EP1707115A2.pdf	576177 cd4c344b5eda29fdded3de47b1b2ccbe31d819791	no	14
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5	Foreign Reference	WO2008061552A1.pdf	1737112 7750b907cb7d60f9af5aa5a3e3b389acbea8887d	no	45
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Total Files Size (in bytes):			6061726		
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. <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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <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.					

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 17/411,154				
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	320			
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A	700			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	800			
TOTAL CLAIMS (37 CFR 1.16(j))	30 minus 20 =	* 10			OR	x 100 =	1000			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1 minus 3 =	*				x 480 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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).						0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))							0.00			
			TOTAL			TOTAL	2820			
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	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))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY		
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	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))							OR		
	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 found in the appropriate box in column 1.										



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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
17/411,154	08/25/2021	3791	2820	A0130.0090.C7	30	1

CONFIRMATION NO. 1823

FILING RECEIPT



CC000000128141002

95508
One LLP
4000 MacArthur Blvd.
East Tower, Suite 500
Newport Beach, CA 92660

Date Mailed: 09/02/2021

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 submit a written request for a corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Wesley Scott Harper, Alameda, CA;

Applicant(s)

ABBOTT DIABETES CARE INC., Alameda, CA;

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a CON of 17/245,719 04/30/2021 PAT 11116431
which is a CON of 16/228,910 12/21/2018 PAT 11013431
which is a CON of 15/061,774 03/04/2016 PAT 10194844
which is a CON of 13/925,694 06/24/2013 PAT 9310230
which is a CON of 12/769,635 04/28/2010 PAT 8483967
which claims benefit of 61/173,600 04/29/2009

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 09/01/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/411,154**

Projected Publication Date: 12/09/2021

Non-Publication Request: No

Early Publication Request: No

Title

METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING

Preliminary Class

600

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

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 (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

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.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

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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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823
95508	7590	09/29/2021	EXAMINER	
One LLP 4000 MacArthur Blvd. East Tower, Suite 500 Newport Beach, CA 92660			ART UNIT	PAPER NUMBER
			1631	
			NOTIFICATION DATE	DELIVERY MODE
			09/29/2021	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):

IPdocketing@onellp.com
PAIRgroup@onellp.com
onellpdocketing@onellp.com

<i>Decision Granting Request for Prioritized Examination (Track I)</i>	Application No. 17/411,154	Applicant(s) Harper, Wesley Scott	
	Examiner CHERYL P GIBSON BAYLOR	Art Unit OPET	AIA (FITF) Status No

1. THE REQUEST FILED 25 August 2021 IS **GRANTED** .

The above-identified application has met the requirements for prioritized examination

A. ☒ for an original nonprovisional application (Track I).

B. ☐ for an application undergoing continued examination (RCE).

2. **The above-identified application will undergo prioritized examination.** The application will be accorded special status throughout its entire course of prosecution until one of the following occurs:

A. filing a **petition for extension of time** to extend the time period for filing a reply;

B. filing an **amendment to amend the application to contain more than four independent claims, more than thirty total claims**, or a multiple dependent claim;

C. filing a **request for continued examination** ;

D. filing a notice of appeal;

E. filing a request for suspension of action;

F. mailing of a notice of allowance;

G. mailing of a final Office action;

H. completion of examination as defined in 37 CFR 41.102; or

I. abandonment of the application.

Telephone inquiries with regard to this decision should be directed to CHERYL GIBSON BAYLOR at (571)272-3213. In his/her absence, calls may be directed to Petition Help Desk at (571) 272-3282.

/CHERYL GIBSON BAYLOR/ Paralegal Specialist, OPET	
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823
95508	7590	11/09/2021	EXAMINER	
One LLP 4000 MacArthur Blvd. East Tower, Suite 500 Newport Beach, CA 92660			LIN, JERRY	
			ART UNIT	PAPER NUMBER
			1631	
			NOTIFICATION DATE	DELIVERY MODE
			11/09/2021	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):

IPdocketing@onellp.com
PAIRgroup@onellp.com
onellpdocketing@onellp.com

Office Action Summary**Application No.**

17/411,154

Applicant(s)

Harper, Wesley Scott

Examiner

JERRY LIN

Art Unit

1631

AIA (FITF) Status

No

-- 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 MONTHS 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 25 August 2021.

☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

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) 23-52 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) 23-52 is/are rejected.

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

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

* If any claims have been determined allowable, 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.

Application Papers

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

11) ☐ The drawing(s) filed on ____ 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).

Priority under 35 U.S.C. § 119

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

Certified copies:

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)).

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

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

3) ☐ Interview Summary (PTO-413)

Paper No(s)/Mail Date ____.

2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)

4) ☐ Other: ____.

Paper No(s)/Mail Date 8/25/2021.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Status of the Claims

Claims 23-52 are under examination.

Double Patenting

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 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); *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 nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed

determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

Claims 23-52 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-22 of U.S. Patent No. 8,483,967. Although the claims at issue are not identical, they are not patentably distinct from each other because the instant claims require all the limitations of the U.S. Patent with additional limitations. Thus, the subject matter of the U.S. Patent encompasses the subject matter of the instant claims and are not patentably distinct from each other.

Claims 23-52 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-30 of U.S. Patent No. 11,116,431. Although the claims at issue are not identical, they are not patentably distinct from each other because the instant claims require all the limitations of the U.S. Patent with additional limitations. Thus, the subject matter of the U.S. Patent encompasses the subject matter of the instant claims and are not patentably distinct from each other.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JERRY LIN whose telephone number is (571)272-2561. The examiner can normally be reached M-F, 7am-3:30pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Skowronek can be reached on (571) 272-9047. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY LIN/
Primary Examiner, Art Unit 1631

<i>Search Notes</i> 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

CPC - Searched*		
Symbol	Date	Examiner
A61B5/14532, G16H40/40, A61B5/1473, A61B5/1495, G01D18/00, G01N31/22, G01N33/66	11/04/2021	JL

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
See Printout	11/04/2021	JL
Inventor search of Wesley Harper in PALM	11/04/2021	JL

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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PTO/SB/08 (09-08)

Approved for use through 10/31/2028. OMB 0651-0031

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

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i>	
				Application Number	To be assigned
				Filing Date	August 25, 2021
				First Named Inventor	Wesley Scott Harper
				Art Unit	To be assigned
				Examiner Name	To be assigned
Sheet	1	of	21	Attorney Docket No: A0130.0090.C7	

US PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document Number Number-Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		3,581,062	05-21-1971	Aston	
		3,926,760	12-16-1975	Allen, et al.	
		3,949,388	04-06-1976	Fuller	
		4,036,749	07-19-1977	Anderson	
		4,055,175	10-25-1977	Clemens, et al.	
		4,129,128	12-12-1978	McFarlane	
		4,245,634	01-20-1981	Albisser, et al.	
		4,327,725	05-04-1982	Cortese, et al.	
		4,344,438	08-17-1982	Schultz	
		4,349,728	09-14-1982	Phillips, et al.	
		4,425,920	01-17-1984	Bourland, et al.	
		4,441,968	04-10-1984	Emmer, et al.	
		4,464,170	08-07-1984	Clemens, et al.	
		4,478,976	10-23-1984	Goertz, et al.	
		4,494,950	01-22-1985	Fischell	
		4,509,531	04-09-1985	Ward	
		4,527,240	07-02-1985	Kvitash	
		4,538,616	09-03-1985	Rogoff	
		4,619,793	10-28-1986	Lee	
		4,671,288	06-09-1987	Gough	
		4,703,756	11-03-1987	Gough, et al.	
		4,731,726	03-15-1988	Allen, III	
		4,749,985	06-07-1988	Corsberg	
		4,757,022	07-12-1988	Shults, et al.	
		4,759,828	07-26-1988	Young, et al.	
		4,777,953	10-18-1988	Ash, et al.	
		4,779,618	10-25-1988	Mund, et al.	
		4,847,785	07-11-1989	Stephens	
		4,854,322	08-08-1989	Ash, et al.	
		4,890,620	01-02-1990	Gough	
		4,925,268	05-15-1990	Iyer, et al.	
		4,953,552	09-04-1990	DeMarzo	
		4,986,271	01-22-1991	Wilkins	
		4,995,402	02-26-1991	Smith, et al.	
		5,000,180	03-19-1991	Kuypers, et al.	
		5,002,054	03-26-1991	Ash, et al.	
		5,019,974	05-28-1991	Beckers	
		5,050,612	09-24-1991	Matsumura	
		5,051,688	09-24-1991	Murase, et al.	

EXAMINER

DATE CONSIDERED

Substitute Disclosure Statement Form (PTO-1449)
 * 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. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

PTO/SB/08 (09-08)

Approved for use through 10/31/2028. OMB 0651-0031

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

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Substitute for form 1449/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(Use as many sheets as necessary)</i>				<i>Complete if Known</i>	
				Application Number	To be assigned
				Filing Date	August 25, 2021
				First Named Inventor	Wesley Scott Harper
				Art Unit	To be assigned
				Examiner Name	To be assigned
Sheet	2	of	21	Attorney Docket No: A0130.0090.C7	

US PATENT DOCUMENTS					
Examiner Initials*	Cite No.	Document Number Number-Kind Code	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5,055,171	10-08-1991	Peck	
		5,082,550	01-21-1992	Rishpon, et al.	
		5,106,365	04-21-1992	Hernandez	
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Sheet	21	of	21	Attorney Docket No: A0130.0090.C7	

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 ²	
		TURNER, A.P.F., et al., "Diabetes Mellitus: Biosensors for Research and Management", Biosensors, Vol. 1, 1985, pp 85-115.		
		UPDIKE, S. J., et al., "Principles of Long-term Fully Implanted Sensors with Emphasis on Radiotelemetric Monitoring of Blood Glucose from inside a Subcutaneous Foreign Body Capsule (FBC)", Biosensors in the Body: Continuous In vivo Monitoring, Chapter 4, 1997, pp. 117-137.		
		VELHO, G., et al., "Strategies for calibrating a subcutaneous glucose sensor", Biomedica Biochimica Acta, Vol. 48, 1989, pp. 957-964.		
		WILSON, G. S., et al., "Progress toward the Development of an Implantable Sensor for Glucose", Clinical Chemistry, Vol. 38, No. 9, 1992, pp. 1613-1617.		

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.L/

EXAMINER /JERRY LIN/

DATE CONSIDERED 11/04/2021

Substitute Disclosure Statement Form (PTO-1449)
 * 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. 1 Applicant's unique citation designation number (optional) 2 Applicant is to place a check mark here if English language Translation is attached

PTO/SB/08a (08-03)

Approved for use through 7/31/28. OMB 0651-0031

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

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

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	To be assigned
				Filing Date	August 25, 2021
				First Named Inventor	Wesley Scott Harper
				Art Unit	To be assigned
				Examiner Name	To be assigned
Sheet	1	of	1	Attorney Docket Number	A0130.0090.C7

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No. ¹	U.S. Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	
		Number-Kind Code ² (if known)			
	1	2002/0107557 A1	08-08-2002	Edell et al.	
	2	2003/0004403 A1	01-02-2003	Drinan et al.	
	3	2004/0247671 A1	12-09-2004	Prescott et al.	
	4	2005/0043598 A1	02-24-2005	Goode, Jr. et al.	
	5	2005/0192493 A1	09-01-2005	Wuori	
	6	2006/0099971 A1	05-11-2006	Staton et al.	
	7	2006/0161225 A1	07-20-2006	Sormann et al.	
	8	2007/0118030 A1	05-24-2007	Bruce et al.	
	9	2008/0312841 A1	12-18-2008	Hayter	
	10	2009/0024177 A1	01-22-2009	Shuros et al.	
	11	2009/0054749 A1	02-26-2009	He	
	12	2009/0055149 A1	02-26-2006	Hayter et al.	
	13	2009/0085768 A1	04-02-2009	Patel et al.	
	14	2009/0105636 A1	04-23-2009	Hayter et al.	
	15				

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document		T ⁶
		Country ³ Number ⁴ Kind Code ⁵ (if known)				
	16	EP 1 707 115 A2	10-04-2006	Codman & Shurtleff, Inc.		
	17	WO 2008/051409 A2	05-02-2008	Bayer Healthcare LLC		
	18	WO 2008/052199 A3	05-02-2008	Abbott Diabetes Care Inc. et al.		
	19	WO 2008/061552 A1	05-29-2008	Lifescan Scotland Limited		
	20					

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.L./

Examiner Signature	/JERRY LIN/	Date Considered	11/04/2021
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This collection of information is required by 37 CFR 1.97 and 1.98. 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 govern by 35 USC 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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 are required 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, Mail Stop Amendment, P.O. Box 1450, Alexandria, VA 22313-1450

WEST Search History for Application 17411154

Creation Date: 2021110420:53

Prior Art Searches

Query	DB	Hits	Op.	Plur.	Thes.	Date
11116431.pn.	PGPB, USPT, EPAB, JPAB, DWPI	3	OR	YES		11-04-2021
glucose same sensor	PGPB, USPT, EPAB, JPAB, DWPI	55707	OR	YES		11-04-2021
(glucose same sensor) same (failure or error or attenuation or adverse)	PGPB, USPT, EPAB, JPAB, DWPI	5829	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse)) same (time or gap)	PGPB, USPT, EPAB, JPAB, DWPI	2909	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap)) same (correction or correct or fix or fixed)	PGPB, USPT, EPAB, JPAB, DWPI	348	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed)) same (graph or plot)	PGPB, USPT, EPAB, JPAB, DWPI	9	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed)) and (graph or plot)	PGPB, USPT, EPAB, JPAB, DWPI	233	OR	YES		11-04-2021
		45952	OR	YES		11-04-2021

A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.	PGPB, USPT, EPAB, JPAB, DWPI					
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor)	PGPB, USPT, EPAB, JPAB, DWPI	16904	OR	YES		11-04-2021
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor same (failure or error or attenuation or adverse))	PGPB, USPT, EPAB, JPAB, DWPI	4054	OR	YES		11-04-2021
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(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed))	PGPB, USPT, EPAB, JPAB, DWPI	246	OR	YES		11-04-2021
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed) and (graph or plot))	PGPB, USPT, EPAB, JPAB, DWPI	160	OR	YES		11-04-2021



Transcript ON

2021_0070_Transcript

History

CAS Lexicon

Database

Multiple Files

L1 30742 GLUCOSE AND SENSOR

=> s l1 and (failure or attenuation or adverse or error)

L2 3619 L1 AND (FAILURE OR ATTENUATION OR ADVERSE OR ERROR)

=> s l2 and (gap or time)

L3 1672 L2 AND (GAP OR TIME)

=> s l3 and (graph or plot or line)

L4 114 L3 AND (GRAPH OR PLOT OR LINE)

=> dup rem l4

PROCESSING COMPLETED FOR L4

L5 80 DUP REM L4 (34 DUPLICATES REMOVED)

=> dis his

(FILE 'HOME' ENTERED AT 20:53:55 ON 04 NOV 2021)

FILE 'MEDLINE, EMBASE, BIOSIS, COMPUSCIENCE' ENTERED AT
20:54:11 ON 04
NOV 2021

L1 30742 S GLUCOSE AND SENSOR

L2 3619 S L1 AND (FAILURE OR ATTENUATION OR ADVERSE
OR ERROR)

L3 1672 S L2 AND (GAP OR TIME)

L4 114 S L3 AND (GRAPH OR PLOT OR LINE)

L5 80 DUP REM L4 (34 DUPLICATES REMOVED)

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Session

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L1 30742 S GLUCOSE AND
SENSORL2 3619 S L1 AND (FAILURE OR
ATTENUATION OR ADVERSE OR
ERROR)L3 1672 S L2 AND (GAP OR
TIME)L4 114 S L3 AND (GRAPH OR
PLOT OR LINE)L5 80 DUP REM L4 (34
DUPLICATES REMOVED)

POWER OF ATTORNEY TO PROSECUTE BEFORE THE USPTO
By Assignee

ABBOTT DIABETES CARE INC., assignee of the application(s) for United States Letters Patent identified in the attached statement under 37 CFR 3.73(b) or (c), does revoke all powers of attorney previously given and hereby appoints as its attorneys and/or agents, with full power of substitution and revocation, to prosecute this application and transact all business in the United States Patent and Trademark Office, and in countries other than the United States, and to do all things necessary or appropriate therefor before any competent International Authorities in connection with any international patent application(s) corresponding to the above-identified application, all of the registered practitioners identified by Customer Number 183890.

ONE LLP
4000 MacArthur Blvd.,
East Tower, Suite 500
Newport Beach, CA 92660
(949)-502-2870

The undersigned, also hereby authorizes and empowers all of the registered practitioners associated with Customer Number 183890 to sign statements under 37 CFR 3.73(b) or (c) on behalf of the undersigned to establish the undersigned's right to take actions in applications for United States Letters Patent.

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) or (c) to the address associated with Customer Number 183890.

The individual whose signature is supplied below is authorized to act on behalf of the assignee.

Full Name of Assignee: ABBOTT DIABETES CARE INC.	
Post Office Address: 1420 Harbor Bay Parkway, Alameda, CA 94502	
Signature of Declarant or Assignee:	Date: 11/11/2021
Full Name of Declarant: Paul D. Yasger If Other Than Assignee:	
Title of Declarant: Assistant Secretary	
Address of Declarant: 1420 Harbor Bay Parkway, Alameda, CA 94502	

Electronic Acknowledgement Receipt

EFS ID:	44275931
Application Number:	17411154
International Application Number:	
Confirmation Number:	1823
Title of Invention:	METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING
First Named Inventor/Applicant Name:	Wesley Scott Harper
Customer Number:	95508
Filer:	Glen Liu/Alana Fredericks
Filer Authorized By:	Glen Liu
Attorney Docket Number:	A0130.0090.C7
Receipt Date:	14-NOV-2021
Filing Date:	25-AUG-2021
Time Stamp:	14:37:16
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Assignee showing of ownership per 37 CFR 3.73	A0130_0090_C7_373Form.pdf	92420	no	3
			8e0508d1a8d0178eac40e62d0877f5c64800320e		

Warnings:

Information:					
2	Power of Attorney	ADC_US_POA_183890.pdf	283502	no	1
			6cd8a3e4f388b02a6fc1f4299921e8dd2621202f		
Warnings:					
Information:					
			Total Files Size (in bytes):		
			375922		
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. <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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <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.					

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.

STATEMENT UNDER 37 CFR 3.73(c)Applicant/Patent Owner: Wesley Scott HarperApplication No./Patent No.: 17/411,154Filed/Issue Date: 08/25/2021Titled: METHOD AND SYSTEM FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSINGABBOTT DIABETES CARE INC., a CORPORATION

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☒ The assignee of the entire right, title, and interest.
2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):
- ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.
- ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (e.g., bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 057280, Frame 0705, or for which a copy thereof is attached.
- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:
1. From: _____ To: _____
- The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.
2. From: _____ To: _____
- The document was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

[Page 1 of 2]

This collection of information is required by 37 CFR 3.73(b). 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 1.11 and 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.**

STATEMENT UNDER 37 CFR 3.73(c)

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
 Reel _____, Frame _____, or for which a copy thereof is attached.

4. From: _____ To: _____

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5. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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6. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at
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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☒ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Glen Liu/

11/14/2021

Signature

Date

Glen Liu

75,058

Printed or Typed Name

Title or Registration Number

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.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7

CONFIRMATION NO. 1823

POA ACCEPTANCE LETTER



OC000000129831745

183890
One LLP - ADC
4000 MacArthur Blvd.
East Tower, Suite 500
Newport Beach, CA 92660

Date Mailed: 11/17/2021

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/14/2021.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/yfeferra/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7

CONFIRMATION NO. 1823

PUBLICATION NOTICE



OC000000130347609

183890
One LLP - ADC
23 Corporate Plaza
Suite 150
Newport Beach, CA 92660

Title:METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING

Publication No.US-2021-0378564-A1

Publication Date:12/09/2021

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 Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, 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 <https://portal.uspto.gov/pair/PublicPair>. 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.

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

REMARKS

Claims 23, 26-31, 33, 35-50, and 53-58 are pending, of which claims 23, 26-31, 33, 35-37, 39-48, and 50 have been amended without prejudice, and claims 53-58 have been newly added. Claims 24-25, 32, 34, 51-52 have been canceled without prejudice, and claims 1-22 remain canceled without prejudice. Claim 23 is the only independent claim. Support for the amendments and the new claims can be found, for example, at paragraphs [0025], [0030] to [0033], [0038], [0046], and [0051] to [0086], as well as Figures 1 to 6, 7A, and 7B, the original claims, and elsewhere throughout the application published as U.S. Publ. No. 2021/0378564.¹ No new matter has been introduced.

For the reasons set forth below, it is respectfully submitted that the pending claims are allowable.

NON-STATUTORY DOUBLE PATENTING REJECTIONS

Claims 23-52 were rejected on the ground of non-statutory double patenting over claims 1-22 of U.S. Patent No. 8,483,967. *See* 11/9/21 NFOA at 2-3. In addition, claims 23-52 were also rejected on the ground of non-statutory double patenting over claims 1-30 of U.S. Patent No. 11,116,431. *See id.*

It is respectfully submitted that the double patenting rejections have been mooted by the Applicants' amendments to claims 23, 26-31, 33, 35-37, 39-48, and 50 in the instant application. As such, it is respectfully requested that the non-statutory double patenting rejections be withdrawn.

CONCLUSION

Amendments to and/or cancellations of the claims are made without prejudice and solely to clarify the issues before the Examiner and/or to advance prosecution of this application and do not constitute a *de facto* acquiescence to any objection and/or rejection. Accordingly, this response does not concede that previously pending claims are not patentable.

¹ All citations are provided purely for the benefit of the Examiner. These citations are only examples and in no way constitute an exhaustive recitation of all written and depicted support for the claims. Additional support can be found elsewhere, including citations from both the specification and figures that are not stated, as well as the knowledge of those of ordinary skill in the art. These citations in no way constitute a disclaimer that the claim covers only that subject matter which is cited herein and in no way define the inventive subject matter as being only that which is cited herein.

The right is reserved to pursue claims to any subject matter supported by the disclosure of this application in one or more continuation and/or divisional applications at a later time, including the subject matter of any previously pending claims regardless of whether those claims were amended or cancelled herein. This may entail the pursuit of broader claims, narrower claims, and subject matter that was previously relinquished by virtue of argument or amendment.

Any silence with regard to the rejections of and/or objections to certain dependent claims constitutes a recognition that such are moot based on amendments or remarks made with respect to the independent claim from which the dependent claims depend. Such silence does not constitute a *de facto* acquiescence to any objection and/or rejection.

In view of the foregoing, it is respectfully submitted that all claims are in allowable form. In the event that the Examiner deems that a discussion would be helpful in advancing prosecution, the Examiner is invited to call the undersigned at (949) 444-5970. The USPTO is hereby authorized to charge any outstanding fees to Deposit Account No. 50-5201.

Dated: December 20, 2021

Respectfully submitted,

/Glen Liu/

Glen Liu
Registration No.: 75,058
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Attorney for Applicant

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Wesley Scott Harper

Application No.: 17/411,154

Confirmation No.: 1823

Filed: August 25, 2021

Art Unit: 1631

For: METHODS AND SYSTEMS FOR EARLY
SIGNAL ATTENUATION DETECTION AND
PROCESSING

Examiner: Jerry Lin

RESPONSE TO NON-FINAL OFFICE ACTION UNDER 37 C.F.R. § 1.111

EFS Web
Commissioner for Patents

INTRODUCTORY COMMENTS

In response to the Non-Final Office Action dated November 9, 2021 (“11/9/21 NFOA”),
please see the following:

Amendments to the Claims beginning on page 2 of this paper; and

Remarks beginning on page 9 of this paper.

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all previous versions of the claims in the application.

1-22. (Canceled)

23. (Currently amended) A glucose monitoring system for backfilling data gaps that occur while a user monitors glucose levels, the glucose monitoring system comprising:

~~(1) an on-body unit configured to be positioned on a user's body, the on-body unit comprising:~~

a glucose sensor, a portion of which is configured to be positioned under skin of the user, wherein the glucose sensor is configured to sample a biological fluid of the user ~~and to provide glucose-related sensor data; and~~

a data processing and transmitter unit coupled ~~with~~ to the glucose sensor, the data processing and transmitter unit comprising a power supply, a processor of the data processing and transmitter unit, memory of the data processing and transmitter unit, and a radio frequency transceiver of the data processing and transmitter unit, wherein the data processing and transmitter unit is configured to:

receive the ~~glucose-related~~ sensor data from the glucose sensor and store the sensor data in the memory of the data processing and transmitter unit;

process the ~~glucose-related~~ sensor data using calibration data to provide processed sensor data, wherein the calibration data comprises data associated with a sensitivity of the glucose sensor, and wherein the processed sensor data is stored in the memory of the data processing and transmitter unit; and

~~store, in memory of the data processing and transmitter unit during a time period associated with a failure mode condition, the glucose-related sensor data, the processed sensor data, or both; and~~

transmit the processed sensor data over a Bluetooth wireless communication link using the radio frequency transceiver of the data processing and transmitter unit; and

(2) a receiver unit[[,]] comprising[[(:)] a processor of the receiver unit, memory of the receiver unit, a radio frequency transceiver of the receiver unit, [[and]] an antenna, and a display, wherein the receiver unit is configured to:

receive, using the antenna and the radio frequency transceiver of the receiver unit, the processed sensor data ~~transmitted by the data processing and transmitter unit~~ over the Bluetooth wireless communication link[[(:)],

~~a display configured to display numerical values and graphical representations of the processed sensor data; and~~

~~a processor coupled with memory of the receiver unit, wherein instructions stored in the memory of the receiver unit, when executed by the processor, cause the processor to:~~

~~detect the presence of the data processing and transmitter unit when the data processing and transmitter unit is within a range of the receiver unit,~~

~~establish the Bluetooth wireless communication link with the data processing and transmitter unit,~~

output to the display of the receiver unit, a numerical value representing the processed sensor data,

output to the display of the receiver unit, a first line graph that is a substantially continuous depiction of the processed sensor data over time,

~~output a first graphical representation of the processed sensor data to the display of the receiver unit, wherein the first graphical representation comprises a first line graph, and wherein an end of the first line graph correlates with a time associated with a start of the failure mode condition, and~~

~~output a second graphical representation of the processed sensor data to the display of the receiver unit after the failure mode condition has been corrected, wherein the second graphical representation comprises a second line graph having a length greater than the first line graph~~

wherein the glucose monitoring system is configured to detect an adverse condition, wherein the adverse condition results in the receiver unit displaying a data gap such that the first line graph displayed on the receiver unit has an end corresponding to a time associated with a start of the adverse condition;

wherein, during a time period corresponding to the adverse condition, sensor data, processed sensor data, or both, are stored in the memory of the data processing and transmitter unit;

wherein the receiver unit is configured to output to the display, after the adverse condition is corrected, processed sensor data for the time period corresponding to the adverse condition such that the data gap is backfilled, and

wherein the processed sensor data for the time period corresponding to the adverse condition that is outputted to the display after the adverse condition is corrected comprises a second line graph having a first end corresponding to the time associated with the start of the adverse condition and a second end corresponding to a time associated with an end of the adverse condition.

24-25. (Canceled)

26. (Currently amended) The glucose monitoring system of claim 23 [[25]], wherein the first line graph and the second line graph are outputted to a same graph comprising a first axis having a time unit of measurement and a second axis having a glucose concentration unit of measurement.

27. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a sensor communication error.

28. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a signal error associated with the glucose sensor.

29. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a signal error associated with the data processing and transmitter unit.

30. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a signal error associated with the receiver unit.

31. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a system malfunction associated with the data processing and transmitter unit or a system malfunction associated with the receiver unit.

32. (Canceled)

33. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises an inability of the receiver unit to display or output at least a portion of the graphical representations of the processed sensor data to the display the first line graph.

34. (Canceled)

35. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a sensor instability condition.

36. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a calibration failure condition.

37. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a monitoring system failure condition.

38. (Previously presented) The glucose monitoring system of claim 23, wherein the glucose sensor comprises a working electrode and a counter electrode.

39. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure mode~~ adverse condition comprises a sensor misposition error.

40. (Currently amended) The glucose monitoring system of claim 23, wherein the on body unit further comprises a temperature sensor, and wherein the ~~failure-mode~~ adverse condition comprises a temperature measurement outside a predetermined range.

41. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure-mode~~ adverse condition comprises an analyte level exceeding a predetermined threshold.

42. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure-mode~~ adverse condition comprises a rate of change of an analyte level exceeding a predetermined threshold.

43. (Currently amended) The glucose monitoring system of claim ~~[[23]]~~ 53, wherein the ~~failure-mode~~ adverse condition comprises a signal error associated with the blood glucose reference data.

44. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~failure-mode~~ adverse condition comprises a data unavailability condition.

45. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~instructions stored in the memory of the receiver unit, when executed by the processor, further cause the processor~~ is further configured to display the second line graph immediately after the correction of the ~~failure-mode~~ adverse condition.

46. (Currently amended) The glucose monitoring system of claim 23, wherein the ~~instructions stored in the memory of the receiver unit, when executed by the processor, further cause the processor~~ is further configured to wait a predetermined period of time after the correction of the ~~failure-mode~~ adverse condition before displaying the second line graph.

47. (Currently amended) The glucose monitoring system of claim 23, wherein the data processing and transmitter unit, the receiver unit, or both is further configured to store time information associated with the ~~failure mode~~ adverse condition.

48. (Currently amended) The glucose monitoring system of claim 23, wherein ~~the on body unit comprises a single integrated housing, and wherein~~ the data processing and transmitter unit and at least a portion of the glucose sensor are disposed within ~~[[the]]~~ a single integrated housing.

49. (Previously presented) The glucose monitoring system of claim 23, wherein the receiver unit comprises a mobile phone.

50. (Currently amended) The glucose monitoring system of claim 23, wherein the time period associated with the ~~failure mode~~ adverse condition comprises at least one hour.

51-52. (Canceled)

53. (New) The glucose monitoring system of claim 23, wherein the glucose monitoring system is further configured for periodic calibration, and wherein the calibration data is based at least in part on glucose reference data received after the portion of the glucose sensor has been positioned under the skin of the user.

54. (New) The glucose monitoring system of claim 53, wherein the glucose monitoring system is further configured for calibration twelve hours after the portion of the glucose sensor has been positioned under the skin of the user.

55. (New) The glucose monitoring system of claim 23, wherein the data processing and transmitter unit is configured to transition from a low-power mode to an operating mode, and wherein the data processing and transmitter unit consumes more power from the power supply in the operating mode than in the low-power mode.

56. (New) The glucose monitoring system of claim 23, wherein the power supply of the data processing and transmitter unit is configured to provide power for about three months of continuous operation.

57. (New) The glucose monitoring system of claim 23, further comprising a secondary receiver unit, wherein the secondary receiver unit is configured to include a limited number of functions as compared with the receiver unit, wherein the secondary receiver unit is configured to receive processed sensor data from the data processing and transmitter unit, and wherein the secondary receiver unit is a watch.

58. (New) The glucose monitoring system of claim 23, wherein the glucose sensor is further configured to continuously sample the biological fluid of the user to provide the sensor data.

REMARKS

Claims 23, 26-31, 33, 35-50, and 53-58 are pending, of which claims 23, 26-31, 33, 35-37, 39-48, and 50 have been amended without prejudice, and claims 53-58 have been newly added. Claims 24-25, 32, 34, 51-52 have been canceled without prejudice, and claims 1-22 remain canceled without prejudice. Claim 23 is the only independent claim. Support for the amendments and the new claims can be found, for example, at paragraphs [0025], [0030] to [0033], [0038], [0046], and [0051] to [0086], as well as Figures 1 to 6, 7A, and 7B, the original claims, and elsewhere throughout the application published as U.S. Publ. No. 2021/0378564.¹ No new matter has been introduced.

For the reasons set forth below, it is respectfully submitted that the pending claims are allowable.

NON-STATUTORY DOUBLE PATENTING REJECTIONS

Claims 23-52 were rejected on the ground of non-statutory double patenting over claims 1-22 of U.S. Patent No. 8,483,967. *See* 11/9/21 NFOA at 2-3. In addition, claims 23-52 were also rejected on the ground of non-statutory double patenting over claims 1-30 of U.S. Patent No. 11,116,431. *See id.*

It is respectfully submitted that the double patenting rejections have been mooted by the Applicants' amendments to claims 23, 26-31, 33, 35-37, 39-48, and 50 in the instant application. As such, it is respectfully requested that the non-statutory double patenting rejections be withdrawn.

CONCLUSION

Amendments to and/or cancellations of the claims are made without prejudice and solely to clarify the issues before the Examiner and/or to advance prosecution of this application and do not constitute a *de facto* acquiescence to any objection and/or rejection. Accordingly, this response does not concede that previously pending claims are not patentable.

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In view of the foregoing, it is respectfully submitted that all claims are in allowable form. In the event that the Examiner deems that a discussion would be helpful in advancing prosecution, the Examiner is invited to call the undersigned at (949) 444-5970. The USPTO is hereby authorized to charge any outstanding fees to Deposit Account No. 50-5201.

Dated: December 20, 2021

Respectfully submitted,

/Glen Liu/

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ONE LLP
23 Corporate Plaza, Suite 150
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Attorney for Applicant

Electronic Acknowledgement Receipt

EFS ID:	44566536
Application Number:	17411154
International Application Number:	
Confirmation Number:	1823
Title of Invention:	METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING
First Named Inventor/Applicant Name:	Wesley Scott Harper
Customer Number:	183890
Filer:	Glen Liu/Alana Fredericks
Filer Authorized By:	Glen Liu
Attorney Docket Number:	A0130.0090.C7
Receipt Date:	20-DEC-2021
Filing Date:	25-AUG-2021
Time Stamp:	17:54:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		9368USC7_A0130_0090_C7_Response_to_NFOA_dated_11_9_2021.pdf	129854 16d63c9d37e8d42512379ec95929de3b3fec47ce	yes	10

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	8
	Applicant Arguments/Remarks Made in an Amendment	9	10
Warnings:			
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Total Files Size (in bytes):		129854	
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 17/411,154		Filing Date 08/25/2021		☐ To be Mailed	
ENTITY: ☒ LARGE ☐ SMALL ☐ MICRO									
APPLICATION AS FILED - PART I									
FOR		(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	RATE (\$)		FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A	N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))		N/A	N/A	N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A	N/A					
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 =	*	x \$100 =					
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*	x \$480 =					
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 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					
APPLICATION AS AMENDED - PART II									
AMENDMENT	12/20/2021	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	* 30	Minus	** 30	= 0	x \$100 =	0		
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	x \$480 =	0		
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE	0		
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$0 =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$0 =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
						TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE			
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/CAROLYN E THOMAS/			
*** 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.**

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NOTICE OF ALLOWANCE AND FEE(S) DUE

183890 7590 02/07/2022
One LLP - ADC
23 Corporate Plaza
Suite 150
Newport Beach, CA 92660

EXAMINER

LIN, JERRY

ART UNIT

PAPER NUMBER

1631

DATE MAILED: 02/07/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823

TITLE OF INVENTION: METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/09/2022

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:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

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

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

183890 7590 02/07/2022
One LLP - ADC
23 Corporate Plaza
Suite 150
Newport Beach, CA 92660

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823

TITLE OF INVENTION: METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/09/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIN, JERRY	1631	702-085000

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/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/AIA/47 or 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,

1 _____

(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.

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823
183890	7590	02/07/2022	EXAMINER	
One LLP - ADC 23 Corporate Plaza Suite 150 Newport Beach, CA 92660			LIN, JERRY	
			ART UNIT	PAPER NUMBER
			1631	
DATE MAILED: 02/07/2022				

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

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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 30 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.

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) 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.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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. 17/411,154	Applicant(s) Harper, Wesley Scott	
	Examiner JERRY LIN	Art Unit 1631	AIA (FITF) Status No

-- 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 the reply filed December 20, 2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
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 See Continuation Sheet. 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).
Certified copies:
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) | 5. ☐ Examiner's Amendment/Comment |
| 2. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____. | 6. ☒ Examiner's Statement of Reasons for Allowance |
| 3. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material _____. | 7. ☐ Other _____. |
| 4. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____. | |

/JERRY LIN/
Primary Examiner, Art Unit 1631

Continuation of 3. The allowed claim(s) is/are: 23,26-31,33,35-50 and 53-58

Notice of Pre-AIA or AIA Status

The present application is being examined under the pre-AIA first to invent provisions.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance: The amendments are sufficient to nonstatutory double patenting rejections. The rejections are withdrawn.

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 JERRY LIN whose telephone number is (571)272-2561. The examiner can normally be reached M-F, 7am-3:30pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Skowronek can be reached on (571) 272-9047. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of published or unpublished applications may be obtained from Patent Center. Unpublished application information in Patent Center is available to registered users. To file and manage patent submissions in Patent Center, visit: <https://patentcenter.uspto.gov>. Visit <https://www.uspto.gov/patents/apply/patent-center> for more information about Patent Center and <https://www.uspto.gov/patents/docx> for information about filing in DOCX format. For additional questions,

contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JERRY LIN/
Primary Examiner, Art Unit 1631

Issue Classification 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

CPC						
Symbol					Type	Version
A61B	/	5	/	14532	F	2013-01-01
A61B	/	5	/	1473	I	2013-01-01
A61B	/	5	/	1495	I	2013-01-01
G16H	/	40	/	40	I	2018-01-01
G01D	/	18	/	00	I	2013-01-01
G01N	/	31	/	22	I	2013-01-01
G01N	/	33	/	66	I	2013-01-01

CPC Combination Sets					
Symbol				Type	Version
	/		/		

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner) _____ (Date) 15 January 2022		O.G. Print Claim(s) None	O.G. Print Figure None

Issue Classification 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

INTERNATIONAL CLASSIFICATION			
CLAIMED			
A61B5/145	/	5	/ 145

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner)	15 January 2022 (Date)	O.G. Print Claim(s) None	O.G. Print Figure None

<i>Issue Classification</i> 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

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

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner) _____ (Date) 15 January 2022		O.G. Print Claim(s) None	O.G. Print Figure None

<i>Search Notes</i> 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

CPC - Searched*		
Symbol	Date	Examiner
A61B5/14532, G16H40/40, A61B5/1473, A61B5/1495, G01D18/00, G01N31/22, G01N33/66	01/15/2022	JL

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
See Printout	01/15/2022	JL
Inventor search of Wesley Harper in PALM	01/15/2022	JL

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
A61B5	14532, 1473, 1495	01/15/2022	JL
G16H40	40	01/15/2022	JL
G01D18	00	01/15/2022	JL
G01N31	22	01/15/2022	JL
G01N33	66	01/15/2022	JL

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Search Notes 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

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Bibliographic Data

Application No: 17/411,154

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged:

/JERRY LIN/

Examiner's Signature

Initials

Title:

METHODS AND SYSTEMS FOR EARLY SIGNAL
ATTENUATION DETECTION AND PROCESSING

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
08/25/2021	702	1631	A0130.0090.C7
RULE			

APPLICANTS

ABBOTT DIABETES CARE INC., Alameda, CA,

INVENTORS

Wesley Scott Harper, Alameda, CA, UNITED STATES

CONTINUING DATA

This application is a CON of 17245719 04/30/2021 PAT 11116431

17245719 is a CON of 16228910 12/21/2018 PAT 11013431

16228910 is a CON of 15061774 03/04/2016 PAT 10194844

15061774 is a CON of 13925694 06/24/2013 PAT 9310230

13925694 is a CON of 12769635 04/28/2010 PAT 8483967

12769635 has PRO of 61173600 04/29/2009

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

09/01/2021

STATE OR COUNTRY

UNITED STATES

ADDRESS

One LLP - ADC

23 Corporate Plaza

Suite 150

Newport Beach, CA 92660

UNITED STATES

FILING FEE RECEIVED

\$7,160

WEST Search History for Application 17411154

Creation Date: 2022011511:00

Prior Art Searches

Query	DB	Hits	Op.	Plur.	Thes.	Date
11116431.pn.	PGPB, USPT, EPAB, JPAB, DWPI	3	OR	YES		11-04-2021
glucose same sensor	PGPB, USPT, EPAB, JPAB, DWPI	55707	OR	YES		11-04-2021
(glucose same sensor) same (failure or error or attenuation or adverse)	PGPB, USPT, EPAB, JPAB, DWPI	5829	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse)) same (time or gap)	PGPB, USPT, EPAB, JPAB, DWPI	2909	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap)) same (correction or correct or fix or fixed)	PGPB, USPT, EPAB, JPAB, DWPI	348	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed)) same (graph or plot)	PGPB, USPT, EPAB, JPAB, DWPI	9	OR	YES		11-04-2021
(glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed)) and (graph or plot)	PGPB, USPT, EPAB, JPAB, DWPI	233	OR	YES		11-04-2021
		45952	OR	YES		11-04-2021

A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.	PGPB, USPT, EPAB, JPAB, DWPI					
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor)	PGPB, USPT, EPAB, JPAB, DWPI	16904	OR	YES		11-04-2021
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(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed))	PGPB, USPT, EPAB, JPAB, DWPI	246	OR	YES		11-04-2021
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01d18/00.cpc. or G01n31/22.cpc. or g01n33/66.cpc.) and (glucose same sensor same (failure or error or attenuation or adverse) same (time or gap) same (correction or correct or fix or fixed) and (graph or plot))	PGPB, USPT, EPAB, JPAB, DWPI	160	OR	YES		11-04-2021
(glucose same (monitor or sensor))	PGPB, USPT, EPAB, JPAB, DWPI	72229	OR	YES		01-15-2022
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((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error)) same (backfill or correction or correct)	PGPB, USPT, EPAB, JPAB, DWPI	631	OR	YES		01-15-2022
((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct)) same data	PGPB, USPT, EPAB, JPAB, DWPI	327	OR	YES		01-15-2022
((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct) same data) and display	PGPB, USPT, EPAB, JPAB, DWPI	295	OR	YES		01-15-2022
((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct) same data) same (display or graphic or graph)	PGPB, USPT, EPAB, JPAB, DWPI	43	OR	YES		01-15-2022
A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01D18/00.cpc. or G01N31/22.cpc. or G01N33/66.cpc.	PGPB, USPT, EPAB, JPAB, DWPI	46706	OR	YES		01-15-2022
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01D18/00.cpc. or G01N31/22.cpc. or G01N33/66.cpc.) and ((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error))	PGPB, USPT, EPAB, JPAB, DWPI	4362	OR	YES		01-15-2022
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01D18/00.cpc. or G01N31/22.cpc. or G01N33/66.cpc.) and ((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct))	PGPB, USPT, EPAB, JPAB, DWPI	471	OR	YES		01-15-2022
(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01D18/00.cpc. or G01N31/22.cpc. or G01N33/66.cpc.) and ((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct) same data and display)	PGPB, USPT, EPAB, JPAB, DWPI	261	OR	YES		01-15-2022

(A61B5/14532.cpc. or G16h40/40.cpc. or A61B5/1473.cpc. or A61B5/1495.cpc. or G01D18/00.cpc. or G01N31/22.cpc. or G01N33/66.cpc.) and ((glucose same (monitor or sensor)) same (gap or adverse or malfunction or error) same (backfill or correction or correct) same data same (display or graphic or graph))	PGPB, USPT, EPAB, JPAB, DWPI	39	OR	YES		01-15-2022
---	--	----	----	-----	--	------------

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: **(571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the **ISSUE FEE** and **PUBLICATION FEE** (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS: (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

103800 7590 02/07/2022

One LLP - ADC
23 Corporate Plaza
Suite 150
Newport Beach, CA 92660

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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823

TITLE OF INVENTION: METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING

APPL. TYPE	ENTRY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	05/09/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
LIN, JERRY	1631	702-085000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

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.

ONE LLP

☐ Change of correspondence address (see Change of Correspondence Address form PTO/AIA/122 or PTO/SB/122) attached.

☐ "Fee Address" indication (see "Fee Address" Indication form PTO/AIA/47 or PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

ABBOTT DIABETES CARE INC.

Alameda, 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. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first comply with previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /Glen Liu/
Glen Liu

Date February 8, 2022
75,058

Typed or printed name _____

Registration No. _____

Electronic Patent Application Fee Transmittal

Application Number:	17411154			
Filing Date:	25-Aug-2021			
Title of Invention:	METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING			
First Named Inventor/Applicant Name:	Wesley Scott Harper			
Filer:	Glen Liu/Alana Fredericks			
Attorney Docket Number:	A0130.0090.C7			
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1200

Electronic Acknowledgement Receipt

EFS ID:	44940132
Application Number:	17411154
International Application Number:	
Confirmation Number:	1823
Title of Invention:	METHODS AND SYSTEMS FOR EARLY SIGNAL ATTENUATION DETECTION AND PROCESSING
First Named Inventor/Applicant Name:	Wesley Scott Harper
Customer Number:	183890
Filer:	Glen Liu/Alana Fredericks
Filer Authorized By:	Glen Liu
Attorney Docket Number:	A0130.0090.C7
Receipt Date:	08-FEB-2022
Filing Date:	25-AUG-2021
Time Stamp:	11:08:13
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1200
RAM confirmation Number	E202228B08314147
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

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)	9368USC7_A0130_0090_C7_Issue_Fee_Transmittal.pdf	331461	no	1
			424fdbabdc7114ae64a9b24ff1147141fee f28		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37767	no	2
			7b2b0f3e9a3c5f59e70fc3cd8746559cb262 d344		
Warnings:					
Information:					
Total Files Size (in bytes):			369228		
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. <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. <u>National Stage of an International Application under 35 U.S.C. 371</u> 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. <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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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	08/25/2021	Wesley Scott Harper	A0130.0090.C7	1823
183890	7590	03/14/2022	EXAMINER	
One LLP - ADC			LIN, JERRY	
23 Corporate Plaza			ART UNIT	
Suite 150			PAPER NUMBER	
Newport Beach, CA 92660			1631	
			NOTIFICATION DATE	
			DELIVERY MODE	
			03/14/2022	
			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):

IPdocketing@onellp.com
adc_alameda_ip_dept@abbott.com
gliu@onellp.com

Corrected Notice of Allowability	Application No. 17/411,154	Applicant(s) Harper, Wesley Scott	
	Examiner JERRY LIN	Art Unit 1631	AIA (FITF) Status No

-- 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 the reply filed December 20, 2021.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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 23,26-50 and 53-58. 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).

Certified copies:

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 _____
--	--

/JERRY LIN/ Primary Examiner, Art Unit 1631	
--	--

Issue Classification 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

CPC						
Symbol					Type	Version
A61B	/	5	/	14532	F	2013-01-01
A61B	/	5	/	1473	I	2013-01-01
A61B	/	5	/	1495	I	2013-01-01
G16H	/	40	/	40	I	2018-01-01
G01D	/	18	/	00	I	2013-01-01
G01N	/	31	/	22	I	2013-01-01
G01N	/	33	/	66	I	2013-01-01

CPC Combination Sets							
Symbol				Type	Set	Ranking	Version
	/		/				

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner)	07 March 2022 (Date)	O.G. Print Claim(s) None	O.G. Print Figure None

Issue Classification 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

INTERNATIONAL CLASSIFICATION			
CLAIMED			
A61B5/145	/	5	/ 145

NON-CLAIMED			
/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner)	07 March 2022 (Date)	O.G. Print Claim(s) None	O.G. Print Figure None

Issue Classification 	Application/Control No. 17/411,154	Applicant(s)/Patent Under Reexamination Harper, Wesley Scott
	Examiner JERRY LIN	Art Unit 1631

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

CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	23	10	36	19	46	28	56								
2	26	11	37	20	47	29	57								
3	27	12	38	21	48	30	58								
4	28	13	39	22	49										
5	29	14	40	23	50										
6	30	15	41	24	53										
7	31	16	42	25	43										
8	33	17	44	26	54										
9	35	18	45	27	55										

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 30	
/JERRY LIN/ Primary Examiner, Art Unit 1631 (Primary Examiner) _____ (Date) 07 March 2022		O.G. Print Claim(s) None	O.G. Print Figure None

PTO/SB/08a (08-03)

Approved for use through 7/31/28. OMB 0651-0031

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				Complete if Known	
				Application Number	To be assigned
				Filing Date	August 25, 2021
				First Named Inventor	Wesley Scott Harper
				Art Unit	To be assigned
				Examiner Name	To be assigned
Sheet	1	of	1	Attorney Docket Number	A0130.0090.C7

U.S. PATENT DOCUMENTS

Examiner Initials	Cite No. ¹	U.S. Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number-Kind Code ² (if known)		
	1	2002/0107557 A1	08-08-2002	Edell et al.
	2	2003/0004403 A1	01-02-2003	Drinan et al.
	3	2004/0247671 A1	12-09-2004	Prescott et al.
	4	2005/0043598 A1	02-24-2005	Goode, Jr. et al.
	5	2005/0192493 A1	09-01-2005	Wuori
	6	2006/0099971 A1	05-11-2006	Staton et al.
	7	2006/0161225 A1	07-20-2006	Sormann et al.
	8	2007/0118030 A1	05-24-2007	Bruce et al.
	9	2008/0312841 A1	12-18-2008	Hayter
	10	2009/0024177 A1	01-22-2009	Shuros et al.
	11	2009/0054749 A1	02-26-2009	He
	12	2009/0055149 A1	~~02-26-2008~~	Hayter et al. 02/2009
	13	2009/0085768 A1	04-02-2009	Patel et al.
	14	2009/0105636 A1	04-23-2009	Hayter et al.
	15			

FOREIGN PATENT DOCUMENTS

Examiner Initials	Cite No. ¹	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶
		Country ³ Number ⁴ Kind Code ⁵ (if known)			
	16	EP 1 707 115 A2	10-04-2006	Codman & Shurtleff, Inc.	
	17	WO 2008/051409 A2	05-02-2008	Bayer Healthcare LLC	
	18	WO 2008/052199 A3	05-02-2008	Abbott Diabetes Care Inc. et al.	
	19	WO 2008/061552 A1	05-29-2008	Lifescan Scotland Limited	
	20				

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /J.L./

Examiner Signature	/JERRY LIN/	Date Considered	11/04/2021
-----------------------	-------------	--------------------	------------

*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. ¹Applicants unique citation designation number (optional). ²See Kinds of U.S. Patent Documents at www.uspto.gov or MPEP 901.04. ³Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. 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 govern by 35 USC 122 and 37 CFR 1.14. This collection is estimated to take 2 hours 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 are required 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, Mail Stop Amendment, P.O. Box 1450, Alexandria, VA 22313-1450



APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/411,154	04/12/2022	11298056	A0130.0090.C7	1823

183890 7590 03/23/2022

One LLP - ADC
23 Corporate Plaza
Suite 150
Newport Beach, CA 92660

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 0 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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional inventors):

Wesley Scott Harper, Alameda, CA;

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

ABBOTT DIABETES CARE INC., Alameda, CA;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.