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证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：201810706496.2

申　请　类　型：发明专利

发明 创造 名称：交互式电子标签设备通信系统及方法

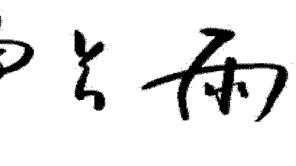
申　　请　　日：2018.07.02

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2019 年 01 月 31 日

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权 利 要 求 书

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1. 一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的 ID。

3. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4. 如权利要求 3 所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7. 一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的 ID，将所述电子标签设备的 ID 和所述第一数据发送至基站。

9. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至

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所述后台服务器。

10. 如权利要求 9 所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

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说　　明　　书

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交互式电子标签设备通信系统及方法

技术领域

本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

基于 2.4GHz 的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段（以下称电子标签设备的“监听周期”，例如 30s）自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间（以下称基站设备的“唤醒时长”，例如 35s）对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期（例如 20s）来减少功耗，以提升电池寿命。

在实际使用场景中，例如当操作人员在电子标签设备面前操作（向电子标签设备发送指令，更改数据等），希望电子标签设备可以即时反馈（一般 3s 以内）。为了提升电子标签设备的响应速度，需要缩短监听周期（例如 1s）。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是 20s，而现有监听周期是 1s，在现有监听周期下，电池功耗是原来的 20 倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

该交互式电子标签设备通信方法包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通

信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

图 2 是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

图 3 是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图 1 所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第

一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路（通道 1）为 2.4G RF（Radio Frequency，射频）通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路（通道 2）为其他无线通信模块，例如磁开关，NFC 开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据（包括屏幕更新、数据更新、设备控制、状态变更等）和接收数据（例如设备状态信息查询、读取公共区域数据、读取私有区域数据等）。

在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

在本发明实施例中，该电子标签设备拥有唯一的标签 ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的 ID，将附加了 ID 的第一数据发送至所述基站。

在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台

服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

图 2 是本发明实施例的交互式电子标签设备通信方法流程图，如图 2 所示，包括：

步骤 201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

步骤 202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

步骤 203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

步骤 204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

步骤 205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

步骤 206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第

一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图 3 所示：

1.外部设备通过通道 1 发送第一数据至电子标签设备；

2a. 电子标签设备发送上行数据（第一数据）和标签 ID 至多个基站；

2b. 电子标签设备进入快速监听模式；

3. 多个基站转发第一数据和各自的能量值给后台服务器；

4a.后台服务器对接收的多个第一数据进行去重处理；

4b. 后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

4c. 后台服务器选择最优基站下发相应的控制指令及第二数据；

5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

6. 电子标签设备通过通道 2 接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

本发明主要解决在大型的电子标签使用场景下（20000 及以上电子标签），实现快速的电子标签通信（3s 以内），同时不对电池寿命产生显著的影响。

本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质（包括但不限于磁盘存储器、CD-ROM、光学存储器等）上实施的计算机程序产品的形式。

本发明是参照根据本发明实施例的方法、设备（系统）、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方

框中指定的功能的装置。

这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

2018107064962

说 明 书 附 图

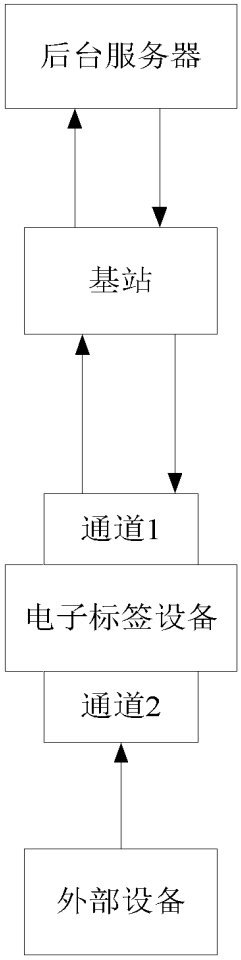


图 1

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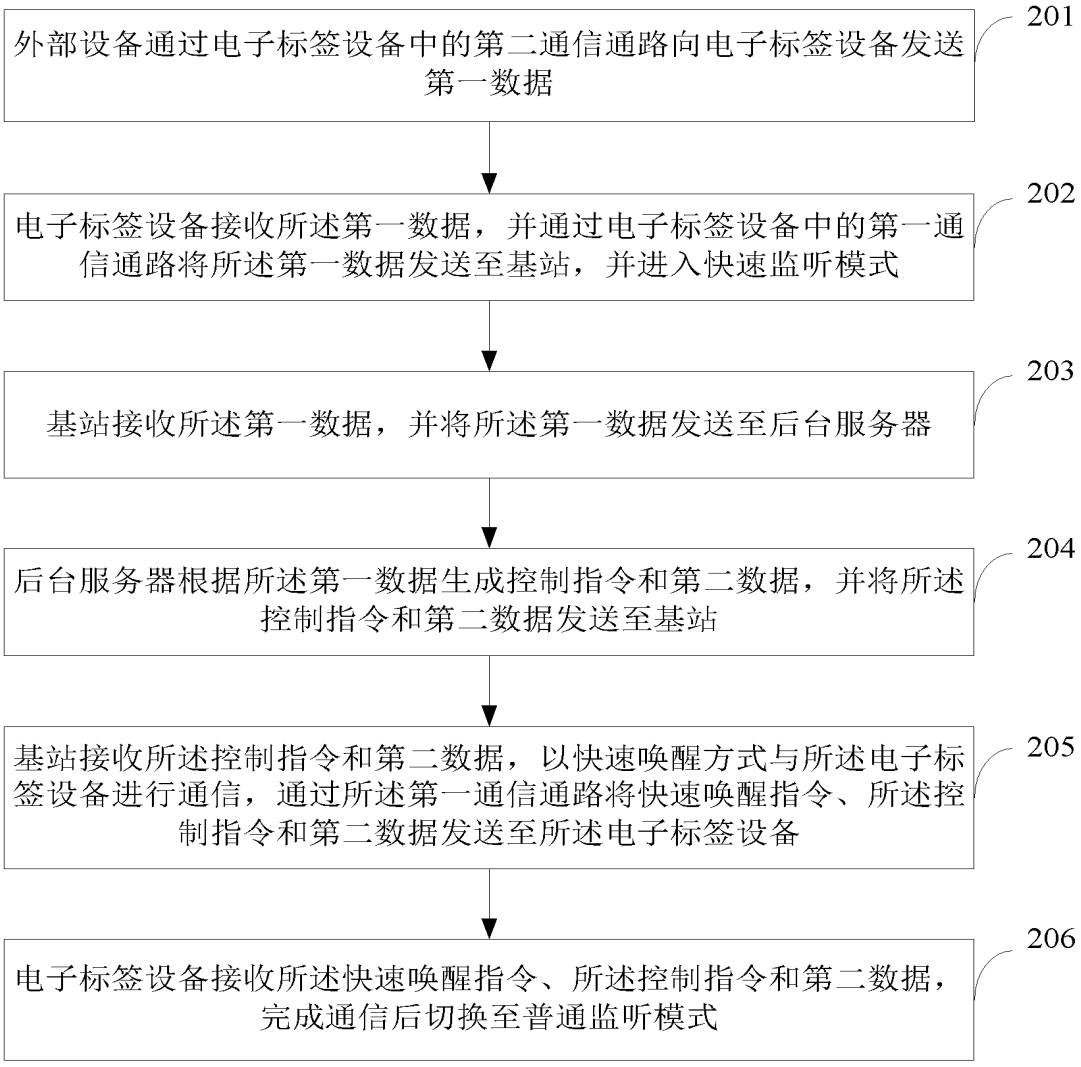


图 2

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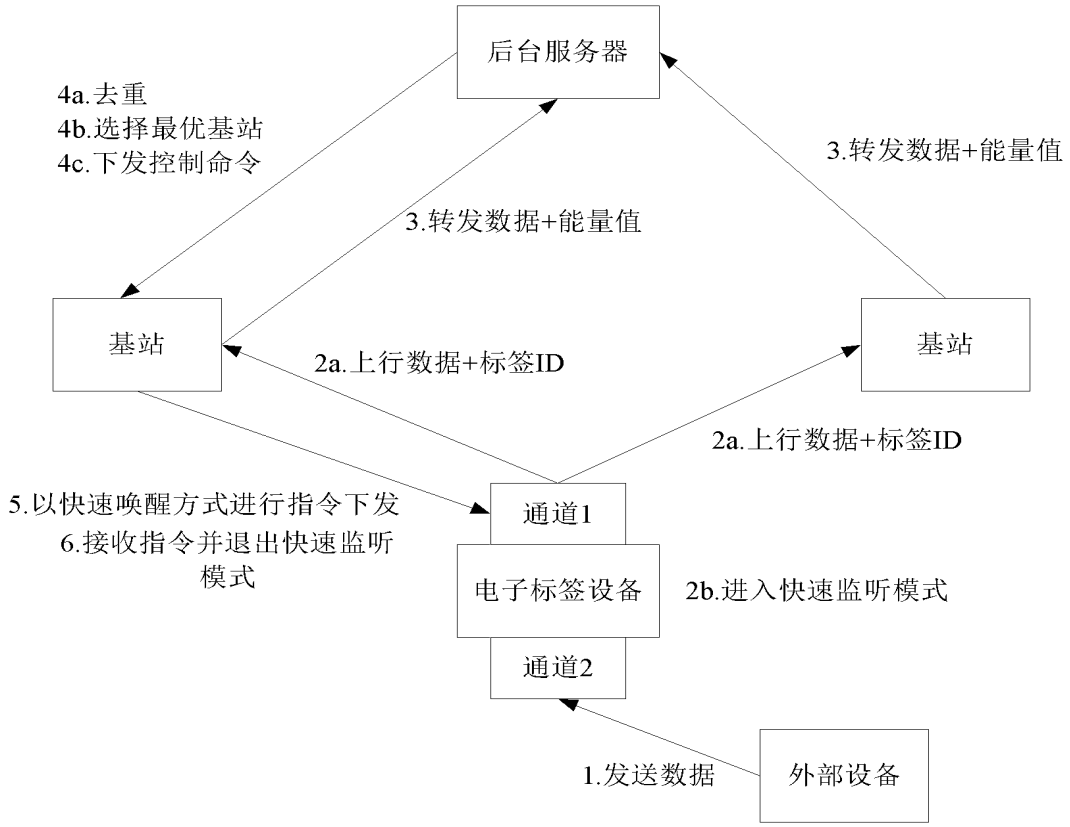


图 3

INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority to Chinese Patent Application No. 201810706496.2, filed on July 02, 2018, and entitled "Interactive Electronic tag device Communication System and Method", the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to the technical field of data communication, and in particular to an interactive electronic tag device communication system and method.

BACKGROUND

[0003] Based on a wireless communication protocol of an electronic price tag on 2.4GHz, a conventional practice is that a radio frequency module of the electronic tag device automatically wakes up every other time period (hereinafter referred to as a "monitoring period" of the electronic tag device, such as 30s) to monitor whether there is a communication request. If there is a communication request, the electronic tag device enters a data transmission mode for data reception, then executes or stores the received instructions and data. If a base station device which communicates with the radio frequency module intends to communicate with a certain electronic tag device, the electronic tag device needs to be waked up at first for a period (hereinafter referred to as a "wake-up duration" of the base station device, such as 35s) longer than the monitoring period of the electronic tag device, and then instructions and data can be transmitted. In this case, it requires at least a duration longer than the "wake-up duration" to transmit an instruction to an electronic tag device, so as to complete the communication with the electronic tag device. Due to limits of the electronic tag device in terms of volume, weight, cost and the like in practical applications, the battery and capacity of the electronic tag device are limited, and frequent monitoring of the electronic tag device will cause an increase of power consumption. In order to take into account communication speed and battery life, a longer monitoring period (such as 20s) is usually adopted to reduce the power consumption, so as to improve the battery life.

[0004] In actual usage scenarios, for example, when the operator operates in front of the electronic tag device (transmitting an instruction to the electronic tag device, changing data, etc.), it is hoped that the electronic tag device can provide immediate feedback (usually within 3s). In order to

improve the response speed of the electronic tag device, it is required to shorten the monitoring period (for example, 1s). In a usage scenario of a large-scale electronic tag device, since it is uncertain which electronic tag devices need to interact, the monitoring periods of all electronic tag devices have to be shortened to meet customer experience requirements. In this way, the power consumption of monitoring the wake-up signal in the electronic tag device will increase significantly. For example, the original monitoring period is 20s, while the existing monitoring period is 1s. Under the existing monitoring period, the battery power consumption is 20 times of the original power consumption, and this situation will have a great impact on the battery life. For the usage scenarios of the large-scale electronic tag device, it will cause more frequent replacements and increase labor costs.

SUMMARY

[0005] Embodiments of the present disclosure provide an interactive electronic tag device communication system and a method thereof. It only needs to set a normal monitoring mode and a fast monitoring mode in an electronic tag device, and set a normal wake-up mode and a fast wake-up mode in a base station, then the customer experience requirements can be met without shortening the monitoring periods of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs.

[0006] The interactive electronic tag device communication system comprises: a background server, a base station, an electronic tag device and an external device;

wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path; the first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode; and the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode;

the external device is configured to transmit first data to the electronic tag device through the second communication path;

the electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode;

the base station is configured to receive the first data and transmit the first data to the background server;

the background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station;

the base station is further configured to receive the control instruction and the second data,

communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path;

the electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.

[0007] The interactive electronic tag device communication method comprises:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

[0008] The embodiment of the present disclosure further provides a computer device comprising a memory, a processor and a computer program stored on the memory and executable by the processor, the processor implements, when executing the computer program, the interactive electronic tag device communication method as described above.

[0009] The embodiment of the present disclosure further provides a computer readable storage medium storing therein a computer program for executing the interactive electronic tag device communication method as described above.

[0010] In the embodiments of the present disclosure, it only needs to set a normal monitoring mode and a fast monitoring mode in the electronic tag device, and set a normal wake-up mode and a

fast wake-up mode in the base station, then the customer experience requirements can be met without shortening the monitoring periods of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs.

BRIEF DESCRIPTION OF DRAWINGS

[0011] In order to more clearly explain the embodiments of the invention or the technical solution in the prior art, drawings that need to be used in the description in embodiments or the prior art will be simply introduced below, obviously the drawings in the following description are merely some examples of the invention, for persons ordinarily skilled in the art, it is also possible to obtain other drawings according to these drawings without making creative efforts.

[0012] FIG. 1 is a structural diagram of an interactive electronic tag device communication system provided in an embodiment of the present disclosure;

[0013] FIG. 2 is a flow chart of an interactive electronic tag device communication method provided in an embodiment of the invention; and

[0014] FIG. 3 is a diagram of structure and data interaction of an interactive electronic tag device communication system provided in an embodiment of the present disclosure.

DESCRIPTION OF EMBODIMENTS

[0015] Hereinafter the technical solution in the embodiments of the present disclosure will be described clearly and integrally in combination with the accompanying drawings in the embodiments of the present disclosure, and obviously the described embodiments are merely part of the embodiments, rather than all of the embodiments. Based on the embodiments of the present disclosure, all other embodiments obtained by persons skilled in the art without making creative efforts fall within the protection scope of the present disclosure.

[0016] In an embodiment of the present disclosure, there is provided an interactive electronic tag device communication system and method. As shown in FIG. 1, the interactive electronic tag device communication system comprises: a background server, a base station, an electronic tag device and an external device; wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path. The first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode. The base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode.

[0017] The external device is configured to transmit first data to the electronic tag device through the second communication path.

[0018] The electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode.

[0019] The base station is configured to receive the first data and transmitting the first data to the background server.

[0020] The background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station.

[0021] The base station is further configured to receive the control instruction and the second data, communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path.

[0022] The electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.

[0023] In the embodiment of the present disclosure, the electronic tag device has two communication paths. The first communication path (channel 1) is a 2.4G RF (Radio Frequency) path. The electronic tag device performs data interaction with the base station and the background server through the first communication path which is used for the background server and the base station to transmit a control instruction and data to the electronic tag device, where the control instruction and data include screen update, data update, device control, status change, and device status information query and the like. The second communication path (channel 2) is other wireless communication modules, such as a magnetic switch, an NFC switch, an infrared switch, etc. The electronic tag device performs a data interaction with external devices through the second communication path which is used for the external device to transmit data (including screen update, data update, device control, status change, etc.) to the electronic tag device and receive data (such as device status information query, read public area data, read private area data, etc.).

[0024] By default, the electronic tag device performs monitoring in a normal monitoring mode supported by the first communication path. The base station communicates with the electronic tag device in a normal wake-up mode.

[0025] In the embodiment of the present disclosure, the electronic tag device has a unique tag ID. Therefore, when transmitting the first data to the base station, the electronic tag device also attaches the ID of the electronic tag device to the first data, and transmits the first data with the ID attached to the base station.

[0026] In the embodiment of the present disclosure, the data transmitted by the external device to

the electronic tag device through the second communication path may be forwarded by the electronic tag device through the first communication path to achieve the interaction. During the actual data forwarding, the first data may be received by a plurality of base stations. At this time, when the plurality of base stations transmit the first data to the background server, respective energy value information of the plurality of base stations is attached to the first data. The background server will parse and de-duplicate the first data uploaded by the plurality of base stations, then determine an optimal base station among the plurality of base stations according to the respective energy value information of the plurality of base stations, and transmit the control instruction and the second data to the electronic tag device through the optimal base station.

[0027] In the embodiment of the present disclosure, the electronic tag device cannot be in the fast wake-up mode all the time. When the fast wake-up instruction transmitted by the base station is not received within a preset time range, the electronic tag device will switch to the normal monitoring mode. Alternatively, when the fast wake-up instruction is received, but the control instruction and the second data are not received within the preset time range, the electronic tag device will switch to the normal monitoring mode.

[0028] Based on the same inventive concept, the embodiment of the present disclosure further provides an interactive electronic tag device communication method, as described in the following embodiment. Since the principle of the interactive electronic tag device communication method to solve the problem is similar to that of the interactive electronic tag device communication system, implementation of the interactive electronic tag device communication method can refer to the implementation of the interactive electronic tag device communication apparatus, and the repetition will not be repeated.

[0029] FIG. 2 is a flow chart of an interactive electronic tag device communication method according to the embodiment of the disclosure. As shown in FIG. 2, the method comprises:

[0030] a step 201 of transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

[0031] a step 202 of receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

[0032] a step 203 of receiving, by the base station, the first data and transmitting the first data to a background server;

[0033] a step 204 of generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

[0034] a step 205 of receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path;

[0035] a step 206 of receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

[0036] wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

[0037] In the embodiment of the present disclosure, only a method flow in which one base station receives the first data transmitted by the electronic tag device is mentioned in the above method. In the actual data transmission, the first data may be received by a plurality of base stations. The process of this method is shown in FIG. 3:

[0038] 1. The external device transmits the first data to the electronic tag device through channel 1.

[0039] 2a. The electronic tag device transmits uplink data (first data) and a tag ID to a plurality of base stations.

[0040] 2b. The electronic tag device enters the fast monitoring mode.

[0041] 3. The plurality of base stations forward the first data and their respective energy values to the background server.

[0042] 4a. The background server performs the deduplication processing on the received a plurality of first data.

[0043] 4b. The background server selects an optimal base station from the plurality of base stations according to the respective energy values of the plurality of base stations.

[0044] 4c. The background server selects the optimal base station to issue corresponding control instruction and second data.

[0045] 5. After the selected optimal base station receives the control instruction and the second data, the selected optimal base station communicates with the electronic tag device in a fast wake-up mode and issues the instruction.

[0046] 6. The electronic tag device receives the control command and the second data through the channel 2, completes fast communication, and returns to the normal monitoring mode.

[0047] The embodiment of the present disclosure further provides a computer device comprising a

memory, a processor and a computer program stored on the memory and executable by the processor, the processor implements, when executing the computer program, the interactive electronic tag device communication method as described above.

[0048] The embodiment of the present disclosure further provides a computer readable storage medium storing therein a computer program for executing the interactive electronic tag device communication method as described above.

[0049] In summary, in the present disclosure, it only needs to set a normal monitoring mode and a fast monitoring mode in the electronic tag device, and set a normal wake-up mode and a fast wake-up mode in the base station, then the customer experience requirements can be met without shortening the monitoring period of all electronic tag devices, without increasing battery power consumption, and without increasing labor costs.

[0050] The present disclosure mainly realizes the fast electronic tag communication (within 3s) under a large-scale electronic tag usage scenario (electronic tags of 20,000 and above), while not having a significant impact on the battery life.

[0051] Persons skilled in the art shall understand that, the embodiments of the present disclosure can be provided as a method, a system or a computer program product. Therefore, the present disclosure can adopt the forms of a full hardware example, a full software example, or a combination of a software example and a hardware example. Moreover, the present disclosure can adopt the form of a computer program product that is implemented on one or more computer-usable storage medium (including but not limited to a disk memory, a CD-ROM, an optical memory, and etc.) including computer-usable program codes.

[0052] The disclosure is described with reference to flow diagrams and/or block diagrams of the method, the device (system) and the computer program product according to the embodiment of the disclosure. It should be understood that each flow and/or block in the flow diagrams and/or block diagrams, and the combination of the flows and/or blocks in the flow diagrams and/or block diagrams can be achieved by computer program commands. These computer program commands can be provided to a CPU of a general-purpose computer, a special-purpose computer, an embedded processor or other programmable data processing device to produce a machine, so that a device for achieving functions designated in one or more flows in the flow diagrams and/or one or more blocks in the block diagrams can be generated by the command executed by the CPU of the computer or other programmable data processing device.

[0053] These computer program instructions can also be stored in a computer-readable memory that can guide a computer or other programmable data processing device to operate in a special way, so that the instruction stored in the computer-readable memory generates a manufactured product

including an instruction device which achieves functions designated in one or more flows in the flow diagrams and/or one or more blocks in the block diagrams.

[0054] These computer program instructions can also be loaded on a computer or other programmable data processing device, on which a series of operation steps are executed to generate processing achieved by the computer, so that the instruction executed on the computer or other programmable data processing device is provided for being used in the steps of achieving functions designated in one or more flows in the flow diagrams and/or one or more blocks in the block diagrams.

[0055] The foregoing is merely a preferred embodiment of the present disclosure and is not intended to limit the present disclosure, and various modifications and variations can be made to the embodiment of the present disclosure by those skilled in the art. Any modifications, equivalents, improvements, etc. made within the spirit and principle of the present disclosure are intended to be included within the protection scope of the present disclosure.

交互式电子标签设备通信系统及方法

本申请要求 2018 年 07 月 02 日递交的申请号为 201810706496.2、发明名称为“交互式电子标签设备通信系统及方法”的中国专利申请的优先权，其全部内容通过引用结合在本申请中。

技术领域

本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

基于 2.4GHz 的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段（以下称电子标签设备的“监听周期”，例如 30s）自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间（以下称基站设备的“唤醒时长”，例如 35s）对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期（例如 20s）来减少功耗，以提升电池寿命。

在实际使用场景中，例如当操作人员在电子标签设备面前操作（向电子标签设备发送指令，更改数据等），希望电子标签设备可以即时反馈（一般 3s 以内）。为了提升电子标签设备的响应速度，需要缩短监听周期（例如 1s）。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是 20s，而现有监听周期是 1s，在现有监听周期下，电池功耗是原来的 20 倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

该交互式电子标签设备通信方法包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

图 2 是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

图 3 是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于

本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图 1 所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路（通道 1）为 2.4G RF（Radio Frequency，射频）通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路（通道 2）为其他无线通信模块，例如磁开关，NFC 开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据（包括屏幕更新、数据更新、设备控制、状态变更等）和接收数据（例如设备状态信息查询、读取公共区域数据、读取私有区域数据等）。

在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

在本发明实施例中，该电子标签设备拥有唯一的标签 ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的 ID，将附加了 ID 的第一数据发送至所述基站。

在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

图 2 是本发明实施例的交互式电子标签设备通信方法流程图，如图 2 所示，包括：

步骤 201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

步骤 202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

步骤 203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

步骤 204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

步骤 205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

步骤 206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图 3 所示：

1.外部设备通过通道 1 发送第一数据至电子标签设备；

2a. 电子标签设备发送上行数据（第一数据）和标签 ID 至多个基站；

2b. 电子标签设备进入快速监听模式；

3. 多个基站转发第一数据和各自的能量值给后台服务器；

4a.后台服务器对接收的多个第一数据进行去重处理；

4b. 后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

4c. 后台服务器选择最优基站下发相应的控制指令及第二数据；

5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

6. 电子标签设备通过通道 2 接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

本发明主要解决在大型的电子标签使用场景下（20000 及以上电子标签），实现快速的电子标签通信（3s 以内），同时不对电池寿命产生显著的影响。

本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质（包括但不限于磁盘存储器、CD-ROM、光学存储器等）上实施的计算机程序产品的形式。

本发明是参照根据本发明实施例的方法、设备（系统）、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的装置。

这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

权利要求书

1. 一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的 ID。

3. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4. 如权利要求 3 所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7. 一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的 ID，将所述电子标签设备的 ID 和所述第一数据发送至基站。

9. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至所述后台服务器。

10. 如权利要求 9 所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

13. 一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，其特征在于，所述处理器执行所述计算机程序时实现权利要求 7 至 12 任一所述方法。

14. 一种计算机可读存储介质，其特征在于，所述计算机可读存储介质存储有执行权利要求 7 至 12 任一所述方法的计算机程序。

说明书摘要

本发明提供一种交互式电子标签设备通信系统及方法，包括：后台服务器、基站、电子标签设备和外部设备；外部设备通过电子标签设备的第二通信通路向电子标签设备发送第一数据；电子标签设备接收并通过其中的第一通信通路将第一数据发送至基站，并进入快速监听模式；基站接收并将第一数据发送至后台服务器；后台服务器根据第一数据生成控制指令和第二数据并将其发送至所述基站；基站接收并通过第一通信通路将快速唤醒指令、控制指令和第二数据发送至电子标签设备；电子标签设备接收快速唤醒指令、控制指令和第二数据完成通信后切换至普通监听模式。该方案可以实现快速的电子标签通信，同时不对电池寿命产生显著的影响。

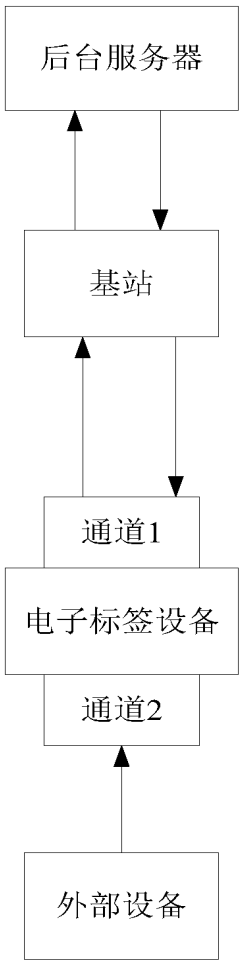


图 1

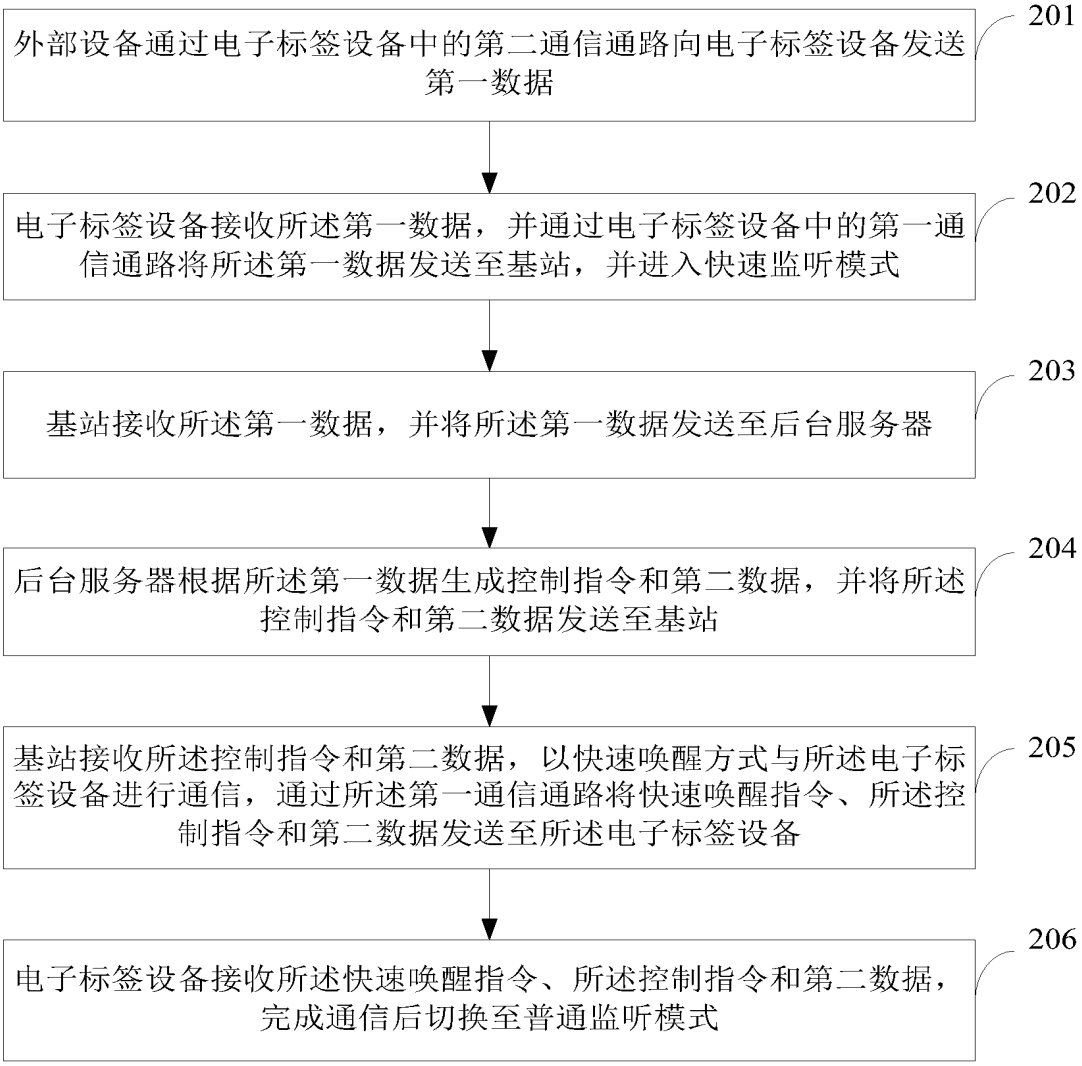

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据
201
电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式
202
基站接收所述第一数据，并将所述第一数据发送至后台服务器
203
后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站
204
基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备
205
电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式
206

图 2

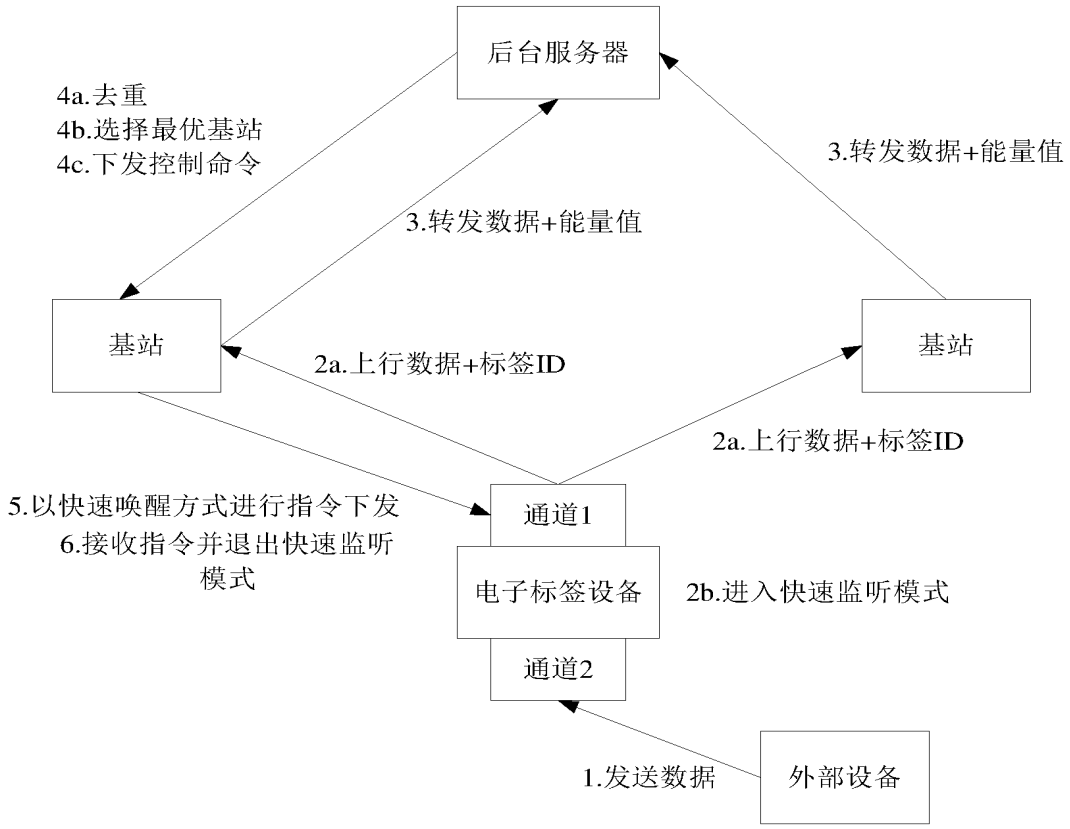

后台服务器
4a.去重
4b.选择最优基站
4c.下发控制命令
3.转发数据+能量值
3.转发数据+能量值
基站
2a.上行数据+标签ID
基站
2a.上行数据+标签ID
5.以快速唤醒方式进行指令下发
6.接收指令并退出快速监听模式
通道1
电子标签设备
2b.进入快速监听模式
通道2
1.发送数据
外部设备

图 3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zhejiang Hanshow Technology Co. Ltd	§	
	§	Group Art Unit: Not Yet Assigned
Serial No.: Not yet Assigned	§	
Confirmation No.: Not yet Assigned	§	Examiner: Not Yet Assigned
Filed: Concurrently herewith	§	

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: January 2, 2021
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

Pursuant to 37 C.F.R. §§ 1.55 (h), the Applicant hereby submits certified copies of the priority documents, as required in 37 C.F.R. §§ 1.55 (f) and (g), and requests the Office to consider the certified copies of the foreign applications (CN 201810706496.2).

It is submitted that the submission of the priority documents is in compliance with 37 C.F.R. § 1.55(h), and the Office is respectfully requested to consider the attached certified copies of the priority documents.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
2101 CityWest Blvd, STE 100
Houston, TX 77042, USA
Phone: 1-281-704-7896

PTO/SB/08a (02-18)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	
Filing Date	
First Named Inventor	Min LIANG
Art Unit	
Examiner Name	
Attorney Docket Number	SANU_0004USP

U.S.PATENTS Remove

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	107343259	CN	A	2017-11-10	SUZHOU HALATION PHOTONICS CO LTD		
	2	104219741	CN	A	2014-12-17	GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO LT		
	3	103105625	CN	A	2013-05-15	ASKEY TECHNOLOGY JIANGSU LTD; ASKEY COMP CO LTD		

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Min LIANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	SANU_0004USP

	4	110677898	CN	A	2020-01-10	ZHEJIANG HANSHOW TECH CO LTD		

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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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	International search report issued for counterpart Chinese patent application No. PCT/CN2019/070431 mailed on 22 Mar. 2019	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	
	Filing Date	
	First Named Inventor	Min LIANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	SANU_0004USP

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/CHIHHUAI CHIU/	Date (YYYY-MM-DD)	2021-01-02
Name/Print	CHIHHUAI CHIU	Registration Number	75299

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 governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour 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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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.

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TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/070431

A. CLASSIFICATION OF SUBJECT MATTER

H04W 52/02(2009.01)i

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)

H04W

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 practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; USTXT; WOTXT; EPTXT; 3GPP; IEEE; IETF: 电子标签, 服务器, 基站, 接入点, 触发, 唤醒, 叫醒, 快速, 周期, 频率, 监听, RFID, server, base station, BS, access point, AP, trigger, active, wake up, quick, fast, period, frequency, monitor, listen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107343259 A (SUZHOU HALATION PHOTONICS CO., LTD.) 10 November 2017 (2017-11-10) description, paragraphs [0005]-[0009]	1-14
A	CN 104219741 A (GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO., LTD.) 17 December 2014 (2014-12-17) entire document	1-14
A	CN 101305625 A (SYMBOL TECHNOLOGIES, INC.) 12 November 2008 (2008-11-12) entire document	1-14

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

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2019	**22 March 2019**
Name and mailing address of the ISA/CN **National Intellectual Property Administration, PRC (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/070431

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 107343259 A	10 November 2017	None	
CN 104219741 A	17 December 2014	None	
CN 101305625 A	12 November 2008	EP 1955560 A1	13 August 2008
		US 2007082714 A1	12 April 2007
		US 7440781 B2	21 October 2008
		WO 2007044253 A1	19 April 2007
		CA 2625166 A1	19 April 2007

Espacenet

Bibliographic data: CN103105625 (A) — 2013-05-15

Fastening piece detecting device

Inventor(s): HE FEI; XIE QINGFENG ± (HE FEI, ; XIE QINGFENG)

Applicant(s): ASKEY TECHNOLOGY JIANGSU LTD; ASKEY COMP CO LTD ± (ASKEY TECHNOLOGY (JIANGSU) LTD, ; ASKEY COMPUTER CO., LTD)

Classification: **- international:** ***G01V3/00***
- cooperative:

Application number: CN201110355274 20111111 Global Dossier

Priority number(s): CN201110355274 20111111

Abstract of CN103105625 (A)

The invention provides a fastening piece detecting device. The fastening piece detecting device comprises a substrate, a detecting unit, a movable platform and a prompt unit. The fastening piece detecting device is used for detecting a plurality of installing holes of a machine body and an installing state between the fastening pieces corresponding to the installing holes. By means of the fastening piece detecting device, the machine body can be placed in the substrate and the detecting unit is driven by the movable platform to move relatively. The detecting unit is close to the machine body, thus the installing holes are detected. A detection signal is produced by responding probes corresponding to each installing hole and a contact state of each fastening piece by the detecting unit. The detection signal is received by the prompt unit. Each installing hole is respectively indicated by the detection signal as a correct installing state or a wrong installing state. Therefore, by means of the fastening piece detecting device, the installing holes with the wrong installing state can be found directly and correspondingly, thus rapid, convenient and correct fastening piece detection can be achieved.

(19)中华人民共和国国家知识产权局

(12)发明专利申请

(10)申请公布号 CN 103105625 A
(43)申请公布日 2013.05.15

(21)申请号 201110355274.9

(22)申请日 2011.11.11

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代理人 金利琴

(51)Int.Cl.
G01V 3/00(2006.01)

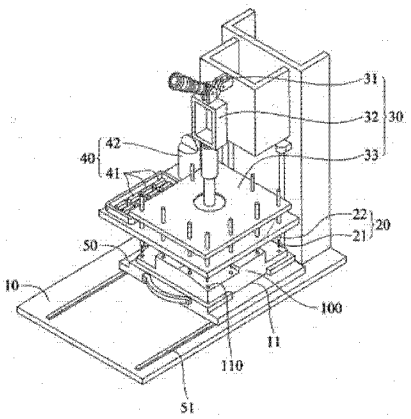
权利要求书1页 说明书5页 附图6页

(54)发明名称

紧固件检测装置

(57)摘要

本发明提供一种紧固件检测装置，包含基座、检测单元、移动平台及提示单元，用于检测一机体上的多个安装孔与其所对应的紧固件之间的安装状态，该紧固件检测装置可将该机体容置于该基座，并由该移动平台驱动该检测单元相对移动而接近该机体并对所述安装孔进行检测，该检测单元系响应各该安装孔对应的探针与各该紧固件的接触状态产生检测讯号，而由提示单元接收该检测讯号而分别指示每一安装孔为正确安装状态或错误安装状态；由此，本发明的紧固件检测装置可直接对应找出错误安装状态的安装孔，并达成快速、方便且正确的紧固件检测。



CN 103105625 A

1. 一种紧固件检测装置，其用于检测一机体的多个安装孔与其所对应的多个紧固件之间的安装状态，其特征在于：该紧固件检测装置包含：

基座，其具有一容置区，用于容置该机体；

检测单元，其具有对应各该安装孔的位置的多个探针；

移动平台，其设置于该基座，并连接该检测单元，用于驱动该检测单元相对的移动于该容置区，以使该检测单元响应各该探针与各该紧固件的接触状态产生对应的一检测讯号；以及

提示单元，其与该检测单元电性连接，用于根据各该检测讯号产生对应的一提示讯号。

2. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中所述提示单元包含多个发光组件，所述发光组件分别对应所述安装孔，用以显示各该安装孔中的紧固件的安装状态。

3. 如权利要求 2 所述的紧固件检测装置，其特征在于：其中，所述发光组件系为发光二极管。

4. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中，所述提示单元进一步具有一警示器，该警示器用于根据所述提示讯号产生指示正确安装状态及错误安装状态的至少其一之一状态警示讯号。

5. 如权利要求 4 所述的紧固件检测装置，其特征在于：其中，所述警示器为蜂鸣器及光源警示组件的其中之一。

6. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中，所述检测单元进一步包含一调整部，用于使该探针对应该机体的外型或该安装孔的深度而调整。

7. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中，各所述探针进一步包含一触发部及一可伸缩探头，且各该触发部系电性连接于该提示单元，各该触发部与各该可伸缩探头之间相隔一预设间距，用于使各该可伸缩探头接触各该紧固件后被推进该预设间距而连接至该触发部，并产生该检测讯号。

8. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中，所述移动平台包含一握把、连接于该握把的一连杆及连接该连杆的升降台，且该检测单元设置于该升降台底部，该握把用于带动该连杆而驱动该升降台上升或下降。

9. 如权利要求 1 所述的紧固件检测装置，其特征在于：还进一步包含一移动载座，用于承载该机体，且该移动载座与该基座系分别设有相对应的导槽与滑轨，以使该移动载座相对的移动于该容置区。

10. 如权利要求 1 所述的紧固件检测装置，其特征在于：其中，各所述紧固件与各所述安装孔分别具有彼此对应的螺纹。

紧固件检测装置

技术领域

[0001] 本发明关于一种紧固件检测装置，尤其是关于一种用于检测一机体的紧固件安装状态的紧固件检测装置。

背景技术

[0002] 各式各样的电子装置通常由电路板、内部组件以及外壳体所组装而成的机体，而必须由例如螺丝、螺杆或螺栓等紧固件锁固于机体上对应的安装孔，以达成该机体的组装。因此，为了确保产品质量，必须在紧固件的安装步骤之后进行紧固件安装状态的检测，以避免紧固件缺漏安装或紧固件未确实安装的情况发生。

[0003] 现有技术中采用人工目视的方式进行紧固件安装状态的检测，然而，当电子装置上的安装孔数量众多时，检测人员必须逐一地检查各安装孔，而增加了时间成本；并且，电子装置常具有凹凸、曲面或高低变化的外型，而影响检测人员检查不同位置的安装孔的难易度；此外，当安装孔具有较深的深度，而使紧固件锁固于安装孔后难以目视观测，更增加了人工目视的检测结果错误的机会，使不良品通过检测。

[0004] 因此，现有以人工目视的检测方式容易因人为疏忽而导致误判的检测结果，并具有耗费人力成本与时间成本的缺点。

发明内容

[0005] 本发明的目的为提供一种紧固件检测装置，用于检测机体中紧固件的安装状态，以快速、方便并正确地进行紧固件安装状态之检测。

[0006] 本发明的另一目的为提供一种紧固件检测装置，可对应指示每一紧固件的安装状态，以利于确认错误安装紧固件的安装孔的位置。

[0007] 本发明的再一目的为提供一种紧固件检测装置，可对应调整检测单元以配合该机体上的每一紧固件于安装孔中的高度或位置，以一次性完成所有紧固件安装状态的检测。

[0008] 为了达成上述目的，本发明提供一种紧固件检测装置，其用于检测一机体的多个安装孔与其所对应的多个紧固件之间的安装状态，该紧固件检测装置包含：基座，其具有一容置区，用于容置该机体；检测单元，其具有对应各该安装孔的位置的多个探针；移动平台，其设置于该基座，并连接该检测单元，用于驱动该检测单元相对的移动于该容置区，以使该检测单元响应各该探针与各该紧固件的接触状态产生对应的一检测讯号；以及提示单元，其与该检测单元电性连接，用于根据各该检测讯号产生对应之一提示讯号。

[0009] 上述的紧固件检测装置，其中该提示单元可包含多个发光组件，所述发光组件分别对应所述安装孔，用以显示各该安装孔中的紧固件的安装状态；此外，所述发光组件可为发光二极管。

[0010] 上述的紧固件检测装置，其中，该提示单元可进一步具有一警示器，该警示器用于根据所述提示讯号产生指示正确安装状态及错误安装状态的至少其一的一状态警示讯号；此外，该警示器为蜂鸣器或光源警示组件，该光源警示组件可为发光二极管。

[0011] 上述的紧固件检测装置，其中，该检测单元可进一步包含一调整部，用于使该探针可对应该机体的外型或该安装孔的深度而调整。

[0012] 上述的紧固件检测装置，其中，各该探针进一步包含一触发部及一可伸缩探头，且各该触发部电性连接于该提示单元，各该触发部与各该可伸缩探头之间相隔一预设间距，用于使各该可伸缩探头接触各该紧固件后被推进该预设间距而连接至该触发部，并产生该检测讯号。

[0013] 上述的紧固件检测装置，其中，该移动平台包含一握把、连接于该握把的一连杆及连接该连杆的升降台，且该检测单元的设置于该升降台底部，该握把用于带动该连杆而驱动该升降台上升或下降。

[0014] 上述的紧固件检测装置，其中，该紧固件检测装置进一步包含一移动载座，用于承载该机体，且该移动载座与该基座上分别设有相对应的导槽与滑轨，以使该移动载座相对的移动于该容置区。

[0015] 上述的紧固件检测装置，其中，各该紧固件与各该安装孔分别具有彼此对应的螺纹，例如，所述紧固件可为螺丝、螺栓或螺杆的螺接组件，所述安装孔则为设有相对应螺纹的螺孔。

[0016] 因此，本发明的紧固件检测装置，其可用于检测机体中紧固件的安装状态，以快速、方便并正确地进行紧固件安装状态的检测，并可对应指示每一紧固件的安装状态，以利于确认错误安装紧固件的安装孔的位置，同时，可根据所有紧固件的安装状态进一步警示对应全部紧固件均正确安装或有至少一紧固件错误安装的状态警示讯号；此外，可对应调整检测单元以配合该机体上的每一紧固件于安装孔中的高度或位置，以一次性完成所有紧固件安装状态的检测；故本发明的紧固件检测装置可避免因人为疏忽而导致误判的检测结果，并可降低人力成本与时间成本。

附图说明

[0017] 图 1 系为本发明具体实施例中紧固件检测装置的示意图。

[0018] 图 2 系为本发明具体实施例中紧固件检测装置的检测状态之示意图。

[0019] 图 3 系为图 2 之紧固件检测装置的检测状态之剖面示意图。

[0020] 图 4 系为本发明具体实施例之紧固件检测装置中，检测单元的探针进行检测之示意图。

[0021] 图 5 系为本发明具体实施例之紧固件检测装置中，检测单元具有调整部之示意图。

[0022] 图 6A 及图 6B 系为本发明具体实施例之紧固件检测装置中，检测单元的探针之结构示意图。

[0023] 图中：

10，基座；

11，容置区；

20，检测单元；

21，探针；

21’，探针；

211, 触发部；
212, 可伸缩探头；
22, 调整部；
30, 移动平台；
31, 握把；
32, 连杆；
33, 升降台；
40, 提示单元；
41, 发光组件；
42, 警示器；
50, 移动载座；
51, 滑轨；
52, 导槽；
100, 机体；
110, 安装孔；
110', 安装孔；
120, 紧固件；
120', 紧固件；
D, 预设间距。

具体实施方式

[0024] 为充分了解本发明的目的、特征及功效，兹由以下具体实施例，并配合所附图式，对本发明作一详细说明。

[0025] 请参照图 1 至图 3，为本发明具体实施例的紧固件检测装置的示意图。本发明具体实施例的紧固件检测装置用于检测一机体 100 的多个安装孔 110 与其所对应的紧固件 120 之间的安装状态，即检测该紧固件 120 为正确安装状态或错误安装状态，该正确安装状态代表所有安装孔 100 所安装的紧固件 120 均为正确安装，该错误安装状态系包含所述安装孔 100 中至少其中之一为缺漏安装状态，或所安装的紧固件 120 为未确实安装状态（例如未与安装孔 100 完全结合的状态）；于本实施例中，该紧固件 120 以螺丝作为示例，且该安装孔 110 中设有对应该紧固件 120 的螺纹，然紧固件的态样不限于此，其可为具有螺纹的螺杆或螺栓等组件。

[0026] 本发明具体实施例的紧固件检测装置包含基座 10、检测单元 20、移动平台 30 及提示单元 40，其中，该基座 10 具有容置区 11，用于容置该机体 100；该检测单元 20 具有对应各该安装孔 110 的位置的多个探针 21；移动平台 30 设置于该基座 10 并连接该检测单元 20，用于驱动该检测单元 20 相对的移动于该容置区 11，以使该检测单元 20 响应各该探针 21 与各该紧固件 120 的接触状态产生对应的一检测讯号；提示单元 40 与该检测单元 20 电性连接，用于根据各该检测讯号产生对应的一提示讯号。

[0027] 因此，紧固件检测装置将该机体 100 放置于该容置区 11 中，并由该移动平台 30 驱动该检测单元 20 朝向该容置区 11 中的机体 100 移动，而由各该探针 21 检测各该安装孔

110 中的紧固件 120 的安装状态，当各该安装孔 110 中的紧固件 120 为正确安装状态时，各该探针 21 可接触于所对应的紧固件 120 的顶端而形成接触状态，并产生对应的检测讯号，该提示单元 40 接收该检测讯号后对应产生该提示讯号，以提示各该安装孔 110 中所安装的紧固件 120 为正确安装状态；当各该安装孔 110 中缺漏安装紧固件 120 时，各该探针 21 无法形成接触状态，故各该探针 21 不会产生对应的检测讯号，而该提示单元 40 由于未接收到该检测讯号而提示该安装孔 110 为错误安装状态；此外，配合参照图 4 所示，如果各该安装孔 110 中所安装的紧件 120' 未确实安装状态，例如紧固件 120' 未完全螺接至安装孔底部时，相较于紧固件 120 的正确安装状态下，其顶端与所对应的该探针 21' 前端之间的距离为短，故当该检测单元 20 藉由该移动平台 30 接近该机体 100 的过程中，探针 21' 比其他探针更早接触于安装孔 110' 中的紧固件 120' 而形成接触状态，并提早产生对应的检测讯号且由提示单元 40 接收，而形成了提示单元 40 只提示该安装孔 110' 中的紧固件 120' 为显示正确安装状态，而其他安装孔为显示错误安装状态，此时，由于显示错误安装状态的安装孔数量远多于显示正确安装状态的安装孔数量，而形成不合理的检测结果，则可由操作人员判断或检查而可快速找出真正错误安装的紧固件 120' 的安装孔 110'；据此，可由该提示单元 40 所产生的提示讯号而判断每一个安装孔 110 中紧固件 120 的安装状态。

[0028] 本实施例的紧固件检测装置中，该提示单元 40 包含多个发光组件 41，所述发光组件 41 分别对应所述安装孔 110，即每一个发光组件 41 代表不同位置的安装孔 110，用以显示各该安装孔 110 中的紧固件 120 的安装状态，故可由所述发光组件 41 的提示讯号而直接找出错误安装的安装孔 110。其中，所述发光组件 41 可为发光二极管，然并不限于此，只要是可具有指示灯号的发光组件均可应用于本发明。

[0029] 本实施例的紧固件检测装置中，该提示单元 40 可进一步具有一警示器 42，该警示器 42 用于根据所述提示讯号而产生指示正确安装状态或错误安装状态的一状态警示讯号；其中，当所有提示讯号均为正确安装状态时，该警示器 42 产生指示正确安装状态的一状态警示讯号；或者，当提示讯号中其中之一为错误安装状态时，该警示器 42 产生指示错误安装状态的一状态警示讯号。其中，该警示器 42 可由不同的状态警示讯号以分别表示正确安装状态及错误安装状态，或者，该警示器 42 可只在正确安装状态下才产生状态警示讯号，故当该警示器 42 未产生该状态警示讯号时，代表为错误安装状态，反之，该警示器 42 可只在错误安装状态下才产生状态警示讯号，故当该警示器 42 未产生该状态警示讯号时，代表为正确安装状态；此外，该警示器 42 可为蜂鸣器，可由二个蜂鸣器或一个可发出不同声响的蜂鸣器来分别代表正确安装状态及错误安装状态，或者，由一个蜂鸣器发出声响来代表正确安装状态或错误安装状态，故该蜂鸣器未发出声响时，则代表为相反的安装状态；另外，该警示器 42 也可为例如发光二极管的光源警示组件，可由设置不同颜色的二个发光二极管以分别代表正确安装状态及错误安装状态，或者，由一个发光二极管的发光状态来代表正确安装状态或错误安装状态，故该发光二极管未发光时，则代表为相反的安装状态。

[0030] 本实施例的紧固件检测装置中，该检测单元 20 进一步包含调整部 22，用于使该探针 21 可对应该机体 100 的外型或该安装孔 110 的深度而调整，以使各该探针 21 可对应各该紧固件 120 的顶端而形成接触状态来进行检测；例如，配合参照于图 5 所示，该调整部 22 可为具有装设孔的柱体，所述装设孔对应于该机体 100 上的安装孔 110 位置而排列以供装设该探针 21，可由装设孔的深度调整该探针 21 相对该板体的突出长度，或者，可由装设孔

中的螺纹长度的配置，调整该探针 21 相对该板体的突出长度，进而使各该探针 21 可对位于各该安装孔 110 的位置，并可接触于各该紧固件 120 的顶端而形成接触状态来进行检测。

[0031] 请参照图 6A 及图 6B，本实施例的紧固件检测装置中，该探针 21 进一步包含一触发部 211 及一可伸缩探头 212，且各该触发部 211 电性连接于该提示单元（图未示），该可伸缩探头 212 可伸缩地设于探针 21 的前端，其中各该触发部 211 与各该可伸缩探头 212 之间相隔一预设间距 D，用于使各该可伸缩探头 212 接触各该紧固件 120 后被推进该预设间距 D 而连接至该触发部 211，并产生该检测讯号；举例而言，可由电路板的电路设计，当该可伸缩探头 212 被该紧固件 120 抵顶推进而电性连接至该触发部 211 时，可形成导电回路以产生该检测讯号。

[0032] 此外，如图 1 至图 3 所示，本实施例的紧固件检测装置中，该移动平台 30 可包含握把 31、连接于该握把 31 的连杆 32 及连接该连杆 32 的升降台 33，且该检测单元 20 设置于该升降台 33 底部并朝向该容置区 11，该握把 31 用于带动该连杆 32 而驱动该升降台 33 上升或下降；因此，当进行该机体 11 的紧固件检测时，操作人员可由握持该握把 31 使升降台 33 下降，该检测单元 20 朝向容置区 11 中的机体 11 接近，而使各该探针 21 对位或进入各该安装孔 110 进行检测。

[0033] 再者，如图 3 所示，本实施例的紧固件检测装置中，更进一步包含移动载座 50，该移动载座 50 与基座 10 上分别设有相对应的滑轨 51 与导槽 52，用于承载该机体 100，以使该移动载座相对的移动于该容置区 11，以便于操作人员将该机体 100 装载于移动载座 50 后，由滑轨 51 与导槽 52 相对滑动而使该机体 100 容置于该容置区 11 当中，以提高检测程序初始的待测件装载步骤中，操作人员装载该机体 11 的方便性。

[0034] 因此，本发明的紧固件检测装置，其可用于检测机体中紧固件的安装状态，以快速、方便并正确地进行紧固件安装状态的检测，并可对应指示每一紧固件的安装状态，以利于确认错误安装紧固件的安装孔的位置，同时，可根据所有紧固件的安装状态进一步警示对应全部紧固件均正确安装或有至少一紧固件错误安装的状态警示讯号；此外，可对应调整检测单元以配合该机体上的每一紧固件于安装孔中的高度或位置，以一次性完成所有紧固件安装状态的检测；故本发明的紧固件检测装置可避免因人为疏忽而导致误判的检测结果，并可降低人力成本与时间成本。

[0035] 本发明在上文中已以较佳实施例揭露，然熟习本项技术者应理解的是，上述实施例仅用于说明本发明，而不应解读为限制本发明的范围。应注意的是，举凡与实施例等效的变化与置换，均应设为涵盖于本发明之范畴内。因此，本发明的保护范围应以申请专利范围所界定者为准。

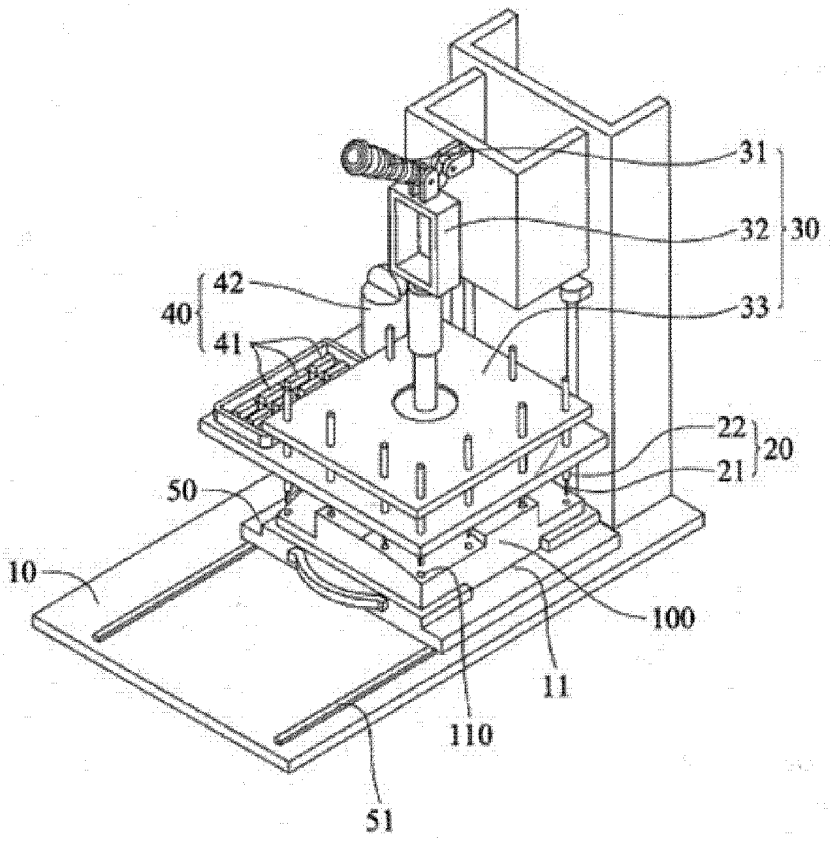


图 1

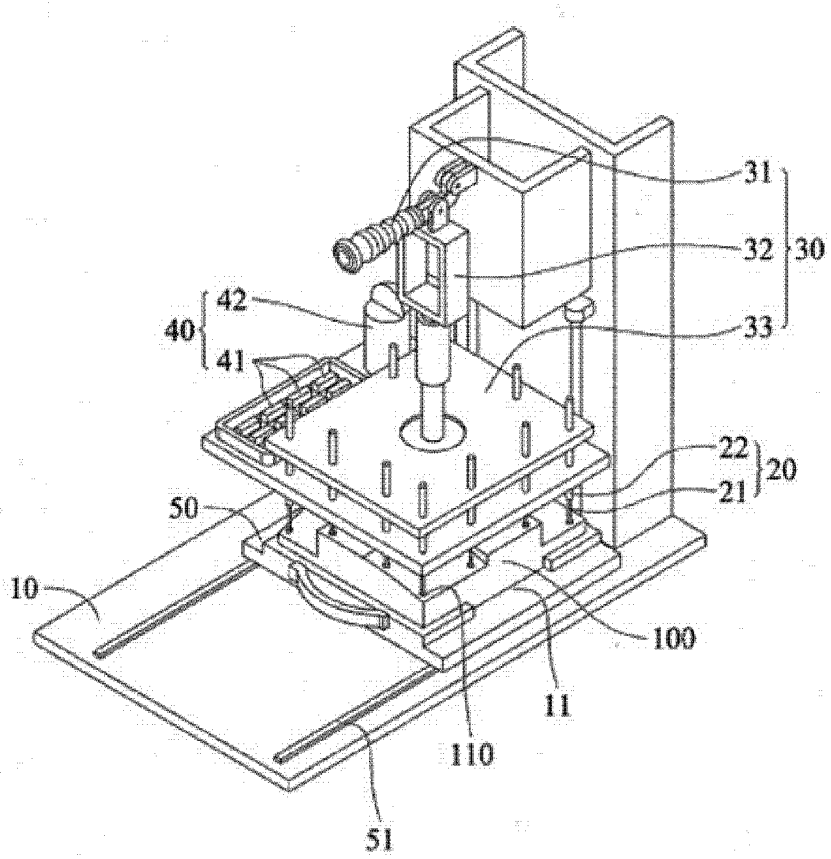


图 2

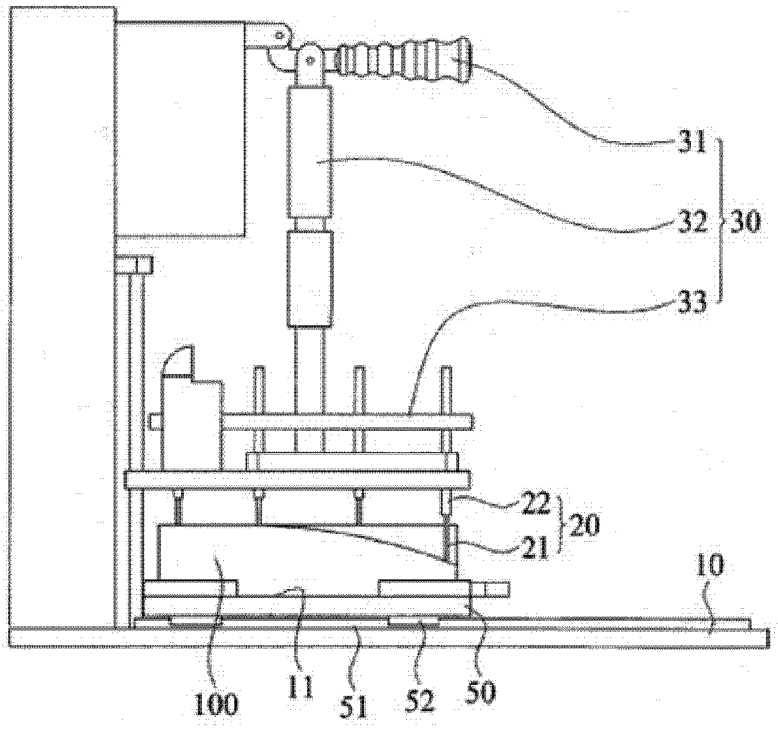


图 3

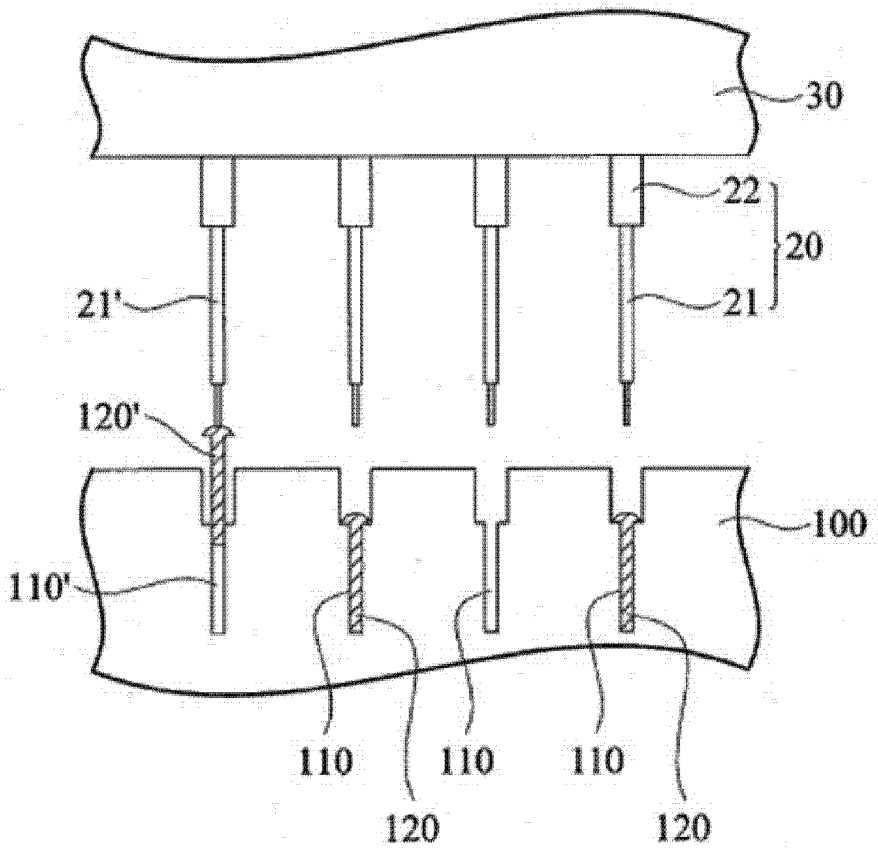


图 4

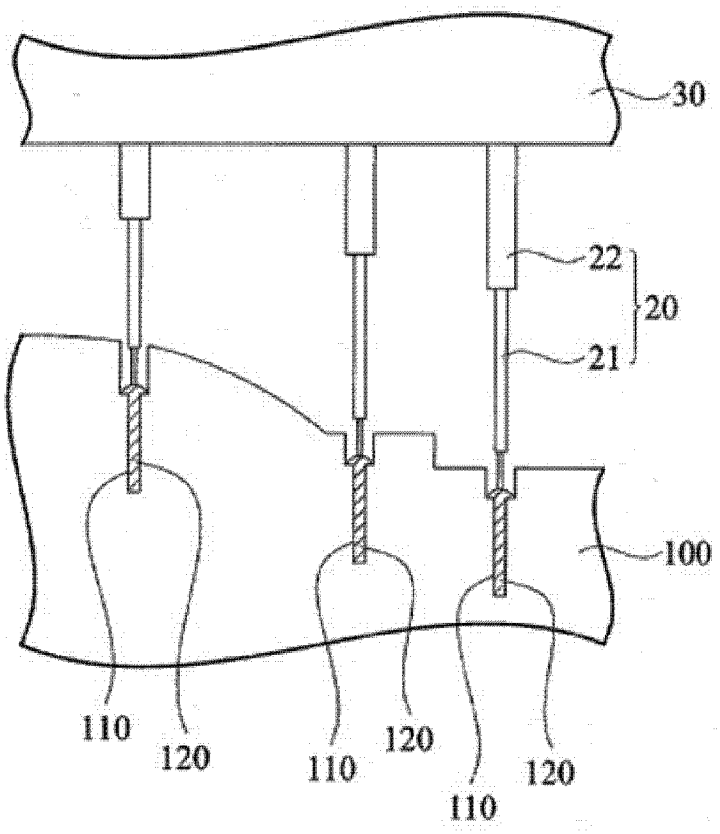


图 5

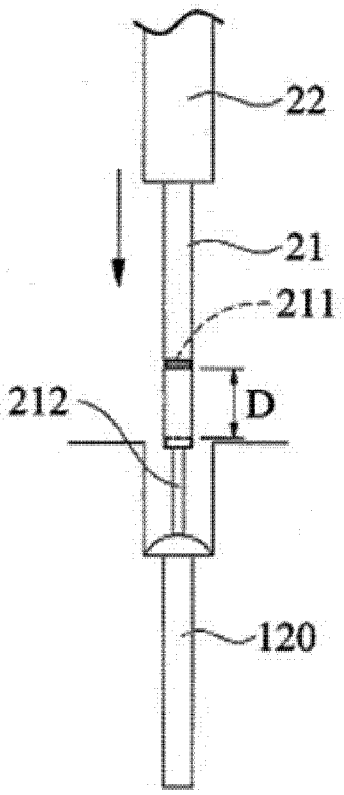


图 6A

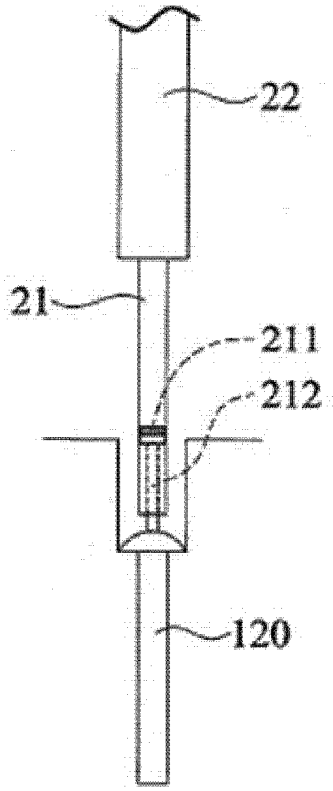


图 6B

Espacenet

Bibliographic data: CN104219741 (A) — 2014-12-17

Method for monitoring a vehicle for 90 days by using the own battery of a vehicle terminal

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Classification: **- international:** ***H04W52/02***
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Application number: CN201310214612 20130603 Global Dossier

Priority number(s): CN201310214612 20130603

Also published as: CN104219741 (B)

Abstract of CN104219741 (A)

The utility model discloses a method for monitoring a vehicle for 90 days by using the own battery of a vehicle terminal. The technology of the method relates to a method for effectively monitoring the vehicle for 90 days by using the own normal 2500mAH battery of a vehicle information terminal in a positioning manner through a deep dormant/automatic awaking function of the terminal and in combination with the base station technology when the vehicle is out of power supply.

(19)中华人民共和国国家知识产权局

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(51)Int.Cl.
H04W 52/02(2009.01)

权利要求书1页 说明书2页 附图1页

(54)发明名称

车载终端设备自带电池监控达90天的方法

(57)摘要

一种车载终端设备自带电池监控达90天的方法。该方法的技术涉及一种让车载信息终端在车辆不供电的情况下,利用深度休眠/自动唤醒功能,结合基站技术使自带普通2500mAH电池定位有效监控车辆达90天以上的方法。

CN 104219741 A

1. 一种车载终端设备自带电池监控达 90 天的方法，在系统平台管控下，使车载设备自带普通 2500mAll 电池定位有效监控车辆达 90 天以上，其特征是：车辆不供电的情况下，利用独立研发技术，使设备自动进入的深度休眠 / 自动唤醒状态，通过系统软件可以控制设备每天工作在 2 分钟以内，让电池电量保持饱满待工作状态。

2. 根据权利要求 1 所述的设备自带电池监控达 90 天的方法，其特征是：使用基站定位的方法，解决了普通车载设备是读取 GPS 信号，配合我公司研发的 RFID 防拆除技术，可快速有效监控车辆。

车载终端设备自带电池监控达 90 天的方法

所属技术领域

[0001] 本发明涉及一种车载信息终端带电池超长时监控的方法，尤其让车载信息终端在车辆不供电的情况下，达到 90 天的有效超长时监控的方法。

背景技术

[0002] 目前，市场上的车载设备在汽车不供电后不能持续长时间保持监控、定位工作，即使是设备有自带电池在有限的电量下也只能工作一小段时间（10 分钟到几个小时），这样的设备安装在不工作的车上（不供电）形同虚设，在系统平台管理并没有起到全程监控的作用。特别针对运营车队车辆或经销商库存车辆，断电一段时间后安装的车载设备因无电源提供无法工作而失去了监控作用。

发明内容

[0003] 为了克服现有的车载终端设备自带电池无法长时间工作的不足，本发明是利用系统平台管控，使终端设备可进入深度休眠 / 自动唤醒状态，达到超长 90 天监控车辆的方法。

[0004] 本发明解决其技术问题所采用的技术方案是：利用独立研发技术，通过系统平台管理使设备自动进入深度休眠 / 自动唤醒，可以控制设备每天工作在 2 分钟以内（让原来只能工作 1 小时的电池理论上可以工作达 30 天），使车载终端设备自带普通电池能够在不工作状态下的汽车上（不供电后）能够达到超长 90 天监控要求。设备启动时，通过 GPRS 注册到基站，并把基站信息发回到后台服务器，后台服务器收到设备发回信息后，比对当前基站地理和原有信息，即可发现是否存在信置偏移（可以配合我们公司研发的 RFID 防拆除技术保证设备自身工作的有效性）达到了有效监控车辆的目的。本发明解决了普通车载设备在车辆不供电时，无法有效监控车辆的弊端，低功耗模式时整机的工作电流非常低可有效延长车载终端的待机时间，实现掉电情况下车载终端在预警状态下工作时间超过 90 天。

[0005] 本发明的有益效果是：通过系统管理平台使设备自动进入深度休眠 / 自动唤醒状态，以达到超长 90 天监控，方便管理，操作简单。

附图说明

图 1 是本发明专利车载终端设备自带电池监控达 90 天的方法的结构框架图。

具体实施方式

[0006] 本专利提供一种具有超长时监控方法的车载智能监控终端，在广西盛源行电子信息有限公司独立研发车载设备的深度休眠 / 自动唤醒的方法技术的基础上，配合浪涌保护后备电源，解决车载智能终端超长延时监控的方法，实现超过 90 天预警监控功能。

[0007] 如图 1 所示，本发明专利包括控制模块、无线通讯模块、GPS 模块、存储器、电源管理模块、浪涌保护后备电源、RTC 定时器、汽车信息采集模块、按键、摄像头、喇叭、触控显示屏。所述控制模块、无线通讯模块、GPS 模块、存储器、电源管理模块、RTC 定时器、汽车信息

采集模块、按键、摄像头、喇叭、触控显示屏分别通过线路与控制模块相连。所述电源管理模块为控制模块、无线通讯模块、GPS 模块、存储器、RTC 定时器、汽车信息采集模块、按键、摄像头、喇叭、触控显示屏供电。电源管理模块还连接有浪涌保护后备电源。

[0008]

[0009] 使用时，终端设置在需要监控的车辆上，或者装置也可安装在其它需要监控的物体上。当车载智能终端处于无外部供电情况下，设备将自动进入深度休眠模式。此时启动瞬间电流峰值为 200m-250mA、主处理器的工作电流为 20mA、GPS 定位模块的工作电流为 30mA、无线通讯模块的工作电流为 20mA，整机本底电流为 0.8mA、GPRS 不回传数据时工作电流为 70mA-80mA、GPRS 回传数据时工作电流为 100mA-120mA。系统仅针对核心的数据进行采集，当检测到监控对象有明显位移等数据变化后，系统将自动进入唤醒模式，对监控对象进行全面的数据集。GPS 定位模块接收卫星信号，将被监控车辆的经纬度信息传递、拍照信息传递给控制模块；信息采集模块采集当前车辆状况并传送给控制模块；控制模块对以上模块传递的信息处理后通过无线通讯模块将信息传给监控中心。当数据量减少或停止后一段时间，系统再次进入深度休眠状态，周而复始，以此节约电能，达到长延时监控的目的。为了实现该技术，还在主处理器与汽车电源之间设计一个具有浪涌保护作用的后备电源，该电源可直接向设备供电，可有效延长 VDA 待机时间。同时，采用低功耗系统模块设计，减少设备对电源的需求量，在一定程度上大大延长待机时间。

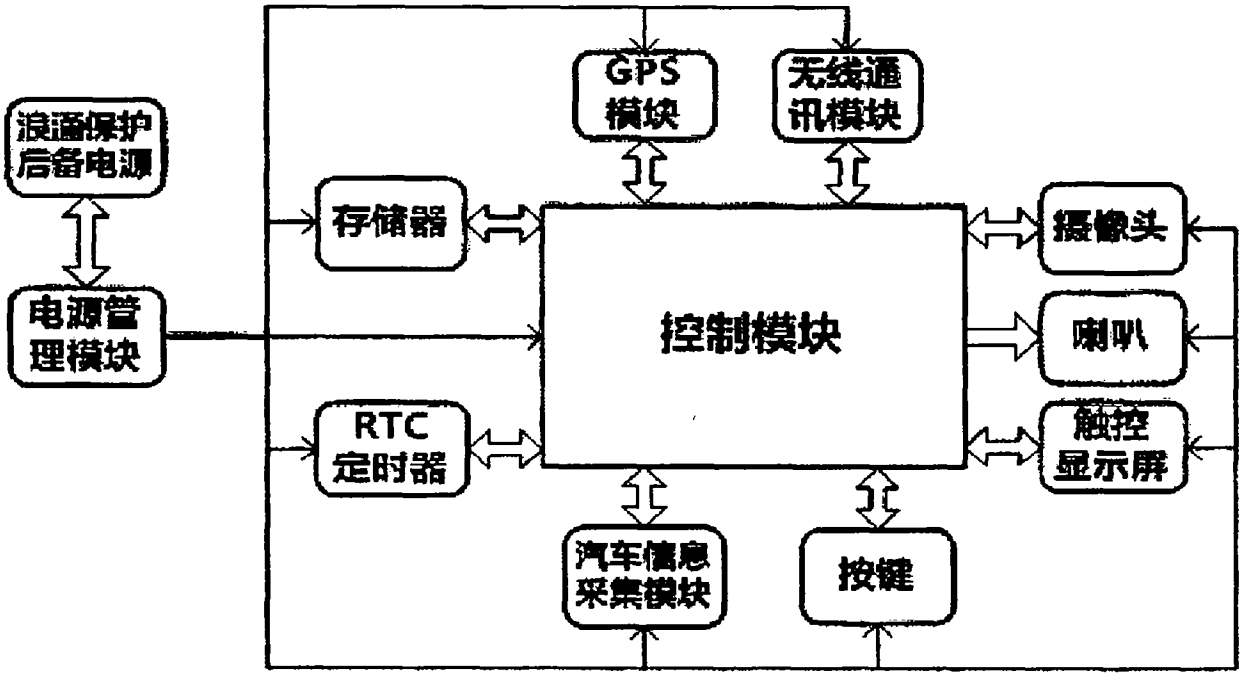

GPS
模块
无线通
讯模块
浪涌保护
后备电源
存储器
摄像头
控制模块
电源管
理模块
喇叭
RTC
定时器
触控
显示屏
汽车信息
采集模块
按键

图 1

Espacenet

Bibliographic data: CN107343259 (A) — 2017-11-10

Wireless electronic tag system and safety transmission method for multi-frequency-band low-power-consumption data of wireless electronic tag system

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Applicant(s): SUZHOU HALATION PHOTONICS CO LTD ± (苏州汉朗光电有限公司)

Classification: - international: *H04L9/32; H04W12/02; H04W28/06; H04W4/00; H04W52/02*
- cooperative: H04L9/3297 (CN); H04W12/02 (CN); H04W28/065 (CN); H04W4/80 (CN); H04W52/0248 (CN); Y02D30/70 (EP)

Application number: CN201710531839 20170703 Global Dossier

Priority number(s): CN201710531839 20170703

Also published as: CN107343259 (B)

Abstract of CN107343259 (A)

The invention discloses a wireless electronic tag system and a safety transmission method for the multi-frequency-band low-power-consumption data of the wireless electronic tag system. The wireless electronic tag system comprises a server, a wireless base station and a wireless electronic tag. The server is used for receiving an update operation instruction and sending the update operation instruction to the wireless base station. The wireless base station is used for receiving, caching and decrypting the data stream of the update operation instruction, acquiring the ID number of a to-be-updated wireless electronic tag, packing to generate a group awakening data packet, a tag ID number filter packet, a tag updating time timer packet and a tag updating data packet, and sending the above packets to each wireless electronic tag. The wireless electronic tag is used for receiving each information packet, and updating the display screen of the to-be-updated wireless electronic tag at an updating time point. According to the invention, the characteristics of multiple frequency band communication, mixed transmission and communication of dot matrix images and code word information, wireless price alternation, radio frequency information wireless encryption, ultralow power consumption, long service life and the like are realized.

(19)中华人民共和国国家知识产权局

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H04W 28/06(2009.01)
H04W 52/02(2009.01)
H04L 9/32(2006.01)

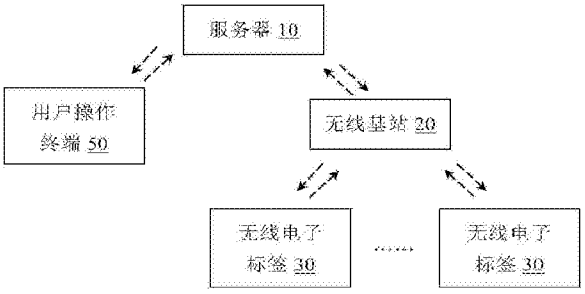
权利要求书2页 说明书4页 附图1页

(54)发明名称

一种无线电子标签系统及其多频段低功耗数据安全传输方法

(57)摘要

本发明公开了一种无线电子标签系统及其多频段低功耗数据安全传输方法。无线电子标签系统包括服务器、无线基站、无线电子标签：服务器用于接收更新操作指令并下发至无线基站；无线基站用于接收、缓存并解密更新操作指令数据流，获取需要更新的无线电子标签的ID号，打包生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向各无线电子标签下发；无线电子标签用于接收各信息包，对于需要更新的无线电子标签，则在更新时间点对自身显示屏进行更新。本发明具有多种频段通信、点阵图像和码字信息混发通信、无线变价、射频信息无线加密、超低功耗、长使用寿命等特点。



CN 107343259 A

1.一种无线电子标签系统，其特征在于：它包括服务器、无线基站、无线电子标签，其中：

服务器用于接收用户操作终端发出的更新操作指令，将更新操作指令以数据流形式下发至无线基站；

无线基站用于接收、缓存并解密服务器下发的更新操作指令数据流，获取需要更新的无线电子标签的ID号及更新内容信息，单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向每个无线电子标签下发；

无线电子标签用于接收无线基站下发的群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，以及在被群唤醒数据包唤醒后，通过解密标签ID号过滤包判断出是否需要更新：若不需要更新，则进入睡眠状态；若需要更新，则在通过解密标签更新时间计时器包获得的更新时间点，按照解密标签更新数据包获得的更新内容对自身显示屏进行更新，其中，在未到达更新时间点之前，无线电子标签进入睡眠状态，以及各无线电子标签的更新时间点不同。

2.如权利要求1所述的无线电子标签系统，其特征在于：

所述更新操作指令包括需要更新的无线电子标签的ID号以及需要更新的各所述无线电子标签的更新内容。

3.如权利要求1所述的无线电子标签系统，其特征在于：

所述群唤醒数据包用于快速唤醒所述无线电子标签；

所述标签ID号过滤包用于存储需要更新的每个所述无线电子标签的ID号，以便各所述无线电子标签辨别自己是否需要进行更新操作；

所述标签更新时间计时器包用于告知所述无线电子标签将进行更新操作的更新时间点；

所述标签更新数据包用于存储所述无线电子标签的显示屏需要显示的更新内容，其中，针对需要更新的各所述无线电子标签分别单独生成一个所述标签更新数据包。

4.如权利要求1所述的无线电子标签系统，其特征在于：

所述无线电子标签还用于在执行完显示屏更新操作后向所述无线基站反馈更新完毕应答；

所述无线基站还用于将所述无线电子标签反馈的更新完毕应答汇总打包上传给所述服务器。

5.如权利要求1至4中任一项所述的无线电子标签系统，其特征在于：

所述群唤醒数据包、所述标签ID号过滤包、所述标签更新时间计时器包、所述标签更新数据包允许在不同频段下进行传输。

6.一种基于权利要求1至5中任一项所述的无线电子标签系统实现的无线电子标签系统多频段低功耗数据安全传输方法，其特征在于，它包括步骤：

1)所述无线基站接收所述服务器下发的更新操作指令数据流，解密获取需要更新的所有所述无线电子标签的ID号及更新内容信息；

2)所述无线基站单独打包并进行数据加密处理而分别生成所述群唤醒数据包、所述标签ID号过滤包、所述标签更新时间计时器包和所述标签更新数据包，然后向每个所述无线

电子标签顺序下发所述群唤醒数据包、所述标签ID号过滤包、所述标签更新时间计时器包、所述标签更新数据包；

3)每个所述无线电子标签进行如下操作：

3-1)无线电子标签接收到所述群唤醒数据包后被唤醒，在设定的唤醒时间内，解密接收到的所述标签ID号过滤包来判断自身是否需要更新：若所述标签ID号过滤包内有此无线电子标签的ID号，则表示需要更新，进入3-2)；否则进入睡眠状态；

3-2)无线电子标签解密接收到的所述标签更新时间计时器包，获得更新时间点后进入睡眠状态；

3-3)无线电子标签在更新时间点到达时开始接收所述标签更新数据包，并基于解密所述标签更新数据包获得的更新内容来对显示屏进行更新；

3-4)无线电子标签更新完成后进入睡眠状态。

7.如权利要求6所述的无线电子标签系统多频段低功耗数据安全传输方法，其特征在于：

还包括步骤：

无线电子标签执行完更新操作后向所述无线基站反馈更新完毕应答；

所述无线基站将所接收到的所述无线电子标签反馈回来的更新完毕应答汇总打包上传给所述服务器。

8.如权利要求6所述的无线电子标签系统多频段低功耗数据安全传输方法，其特征在于：

在所述步骤3-1)中，如果所述无线电子标签被唤醒后，在预定的标签ID号过滤包接收时间内没有接收到所述标签ID号过滤包，则进入睡眠状态；

在所述步骤3-2)中，如果在预定的标签更新时间计时器包接收时间内没有接收到所述标签更新时间计时器包，则进入睡眠状态；

在所述步骤3-3)中，如果在预定的标签更新数据包接收时间内没有接收到所述标签更新数据包，则进入睡眠状态。

9.如权利要求6所述的无线电子标签系统多频段低功耗数据安全传输方法，其特征在于：

在所述步骤3-3)中，当无线电子标签解密所述标签更新数据包获得更新内容后，先对更新内容的数据合法性进行判断。

10.如权利要求6所述的无线电子标签系统多频段低功耗数据安全传输方法，其特征在于：

当所述无线基站针对需要更新的各所述无线电子标签分别单独生成一个所述标签更新数据包时，在所述步骤3-3)中，所述无线电子标签仅接收与其相对应的一个所述标签更新数据包而过滤掉其它所述标签更新数据包。

一种无线电子标签系统及其多频段低功耗数据安全传输方法

技术领域

[0001] 本发明涉及一种多频段低功耗无线电子标签系统及其多频段低功耗数据安全传输方法，属于电子标价签领域。

背景技术

[0002] 现有的无线电子标签系统主要采用了RFID技术(2.4G/433M/315M)、有线传输技术(RS285/RS422/UART)、蓝牙传输技术、红外传输技术、WIFI传输技术等，其中：有线传输技术因安装施工的问题正逐渐被无线技术所取代；红外传输技术因受阻挡的影响，应用也较少；蓝牙传输技术因设置节点少(小于32个)而不能大批量应用；RFID技术相对比较成熟，但由于无线电子标签系统的特殊性，其应用的环境中存在大量的金属货架、液体、化学物品、WIFI等，因而导致其对无线传输要求很苛刻。

[0003] 在现有的无线电子标签系统中，当电子标签采用被动式接收无线信号时，系统的基站发送更新信息(特别是点阵信息)时会存在多个节点长时间接收无效数据的问题，从而导致无线功耗过大、无线长时间处于接收状态而可能会发生无线“假死”现象。另外，由于无线频段会存在短时间干扰问题，故在通信时需要进行频段检测来实现多频段的通信。当前很多的射频IC都实现了兼容性，为保证空中射频信息的保密性，在发射前都会对无线信号进行加密，但这种加密措施并没有带来很好地抗干扰效果。

发明内容

[0004] 本发明的目的在于提供一种无线电子标签系统及其多频段低功耗数据安全传输方法，其具有多种频段通信、点阵图像和码字信息混发通信、无线变价、射频信息无线加密、超低功耗、长使用寿命等特点。

[0005] 为了实现上述目的，本发明采用了以下技术方案：

[0006] 一种无线电子标签系统，其特征在于：它包括服务器、无线基站、无线电子标签，其中：

[0007] 服务器用于接收用户操作终端发出的更新操作指令，将更新操作指令以数据流形式下发至无线基站；

[0008] 无线基站用于接收、缓存并解密服务器下发的更新操作指令数据流，获取需要更新的无线电子标签的ID号及更新内容信息，单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向每个无线电子标签下发；

[0009] 无线电子标签用于接收无线基站下发的群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，以及在被群唤醒数据包唤醒后，通过解密标签ID号过滤包判断出是否需要更新：若不需要更新，则进入睡眠状态；若需要更新，则在通过解密标签更新时间计时器包获得的更新时间点，按照解密标签更新数据包获得的更新内容对自身显示屏进行更新，其中，在未到达更新时间点之前，无线电子标签进入睡眠状态，以及各无

线电子标签的更新时间点不同。

[0010] 本发明的优点是：

[0011] 1)本发明无线电子标签系统支持多个频段的无线广播和数据的下发、更新显示内容的功能，支持在线检测无线频段干扰；

[0012] 2)本发明中的无线基站对每帧无线广播数据按照时间戳进行数据加密；

[0013] 3)本发明中的无线基站解析出无线电子标签的ID号后，打包成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并针对各数据包进行单独的数据加密，保证了空中的无线射频信息不被破解；

[0014] 4)标签ID号过滤包可保证误唤醒的无线电子标签快速进入睡眠状态；

[0015] 5)每个无线电子标签的标签更新时间计时器包可保证无线电子标签不会长时间处于接收无效数据的状态，从而避免发生无线功耗过大问题，以及避免因无线长时间接收而可能会发生无线“假死”现象。

附图说明

[0016] 图1是本发明无线电子标签系统的组成示意图。

具体实施方式

[0017] 如图1，本发明无线电子标签系统包括服务器10、无线基站20、无线电子标签30，其中：

[0018] 服务器10用于接收用户操作终端50发出的更新操作指令，通过诸如TCP/IP接口协议将更新操作指令以数据流形式下发至无线基站20；

[0019] 无线基站20用于接收、缓存并解密服务器10下发的更新操作指令数据流，获取需要更新的无线电子标签的ID号及更新内容信息，单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向每个无线电子标签30下发；

[0020] 无线电子标签30用于接收无线基站20下发的群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，以及在被群唤醒数据包唤醒后，通过解密标签ID号过滤包判断出是否需要更新：若不需要更新，则进入睡眠状态；若需要更新，则在通过解密标签更新时间计时器包获得的更新时间点，按照解密标签更新数据包获得的更新内容对自身显示屏进行更新，其中，在未到达更新时间点之前，无线电子标签30进入睡眠状态，以及各无线电子标签30的更新时间点不同。

[0021] 在本发明中，更新操作指令包括需要更新的无线电子标签30的ID号以及需要更新的各无线电子标签30的更新内容。

[0022] 在本发明中，无线基站20是一种将LAN网络通信、WIFI通信、广播式无线唤醒、电子标签之间无线数据通信、电子标签数据采集集成于一体的基站。

[0023] 在本发明中，群唤醒数据包用于快速唤醒无线电子标签30。标签ID号过滤包用于存储需要更新的每个无线电子标签30的ID号，以便各无线电子标签30辨别自己是否需要进行更新操作。标签更新时间计时器包用于告知无线电子标签30将进行更新操作的更新时间点。标签更新数据包用于存储无线电子标签30的显示屏需要显示的更新内容，其中，针对需

要更新的各无线电子标签30分别单独生成一个标签更新数据包。

[0024] 在实际设计中，群唤醒数据包可包括需要更新的无线电子标签ID号的偏移长度以及开始数据通信的时间点。

[0025] 在实际设计中，无线电子标签30还用于在执行完显示屏更新操作后向无线基站20反馈更新完毕应答。无线基站20还用于将无线电子标签30反馈的更新完毕应答汇总打包上传给服务器10。

[0026] 在本发明中，群唤醒数据包、标签ID号过滤包、标签更新时间计时器包、标签更新数据包允许在不同频段下进行传输，无线电子标签在唤醒过程中已经预设了三种频段(带宽1MHz)，无线基站的频段是根据周围频道自检测而自动跳转到指定频段或者由服务器指定频段。

[0027] 在本发明中，上述四种信息包，即群唤醒数据包、标签ID号过滤包、标签更新时间计时器包、标签更新数据包的加密处理可以保证无线传输中各无线射频信息不会被破解。

[0028] 在本发明中，上述四种信息包的加密算法为：根据广播的时间戳(例如10ms作为一个时间基准)，对每一个数据的每个位进行异或运算，其中：异或运算是将位的数据内容与其所属无线电子标签的ID号做异或处理。

[0029] 基于上述本发明无线电子标签系统，本发明还提出了一种无线电子标签系统多频段低功耗数据安全传输方法，包括如下步骤：

[0030] 1)无线基站20接收服务器10下发的更新操作指令数据流，解密获取需要更新的所有无线电子标签30的ID号及更新内容信息；

[0031] 2)无线基站20单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，然后向每个无线电子标签30顺序下发群唤醒数据包、标签ID号过滤包、标签更新时间计时器包、标签更新数据包；

[0032] 3)每个无线电子标签30进行如下操作：

[0033] 3-1)无线电子标签30初始化完成后，接收到群唤醒数据包后被唤醒，在设定的唤醒时间内，解密接收到的标签ID号过滤包来判断自身是否需要更新：若标签ID号过滤包内有此无线电子标签30的ID号，则表示需要更新，进入3-2)；否则进入睡眠状态；

[0034] 3-2)无线电子标签30解密接收到的标签更新时间计时器包，获得更新时间点后进入睡眠状态；

[0035] 3-3)无线电子标签30在更新时间点到达时开始接收标签更新数据包，并基于解密标签更新数据包获得的更新内容来对自己的显示屏进行更新，换句话说，在未到达更新时间点之前，此无线电子标签30是处于睡眠状态的；

[0036] 3-4)无线电子标签30更新完成后进入睡眠状态。

[0037] 在实际设计中，步骤3-4)后还包括步骤：

[0038] 无线电子标签30执行完更新操作后向无线基站20反馈更新完毕应答；

[0039] 无线基站20将所接收到的无线电子标签30反馈回来的更新完毕应答汇总打包上传给服务器10。

[0040] 在步骤3-1)中，如果无线电子标签30被唤醒后，在预定的标签ID号过滤包接收时间内没有接收到标签ID号过滤包，则进入睡眠状态；

[0041] 在步骤3-2)中，如果在预定的标签更新时间计时器包接收时间内没有接收到标签

更新时间计时器包，则进入睡眠状态；

[0042] 在步骤3-3)中，如果在预定的标签更新数据包接收时间内没有接收到标签更新数据包，则进入睡眠状态。

[0043] 在步骤3-3)中，当无线电子标签30解密标签更新数据包获得更新内容后，先对更新内容的数据合法性进行判断。

[0044] 另外，当无线基站20针对需要更新的各无线电子标签30分别单独生成一个标签更新数据包时，在步骤3-3)中，这个无线电子标签30仅接收与其相对应的那个标签更新数据包而过滤掉其它标签更新数据包。

[0045] 本发明的最大特点是，需要更新的各个无线电子标签30，特别是最后一个无线电子标签30不用一直处于等待接收信息(如更新内容等)的状态，而是睡眠一段时间后再接收，这样的设计很好地达到了降低功耗、节省时间的效果，从而可以实现一个无线基站20同时一次性对几百甚至几千个无线电子标签30进行下发任务，大大提高了工作效率，防止了无线电子标签长时间处于接收无效数据的状态，避免了因无线长时间接收而可能会发生无线“假死”的现象。

[0046] 本发明的优点是：

[0047] 本发明具有多种频段通信、点阵图像和码字信息混发通信、无线变价(改变显示内容)、射频信息无线加密、超低功耗、长使用寿命等特点，适于普遍推广。

[0048] 以上所述是本发明较佳实施例及其所运用的技术原理，对于本领域的技术人员来说，在不背离本发明的精神和范围的情况下，任何基于本发明技术方案基础上的等效变换、简单替换等显而易见的改变，均属于本发明保护范围之内。

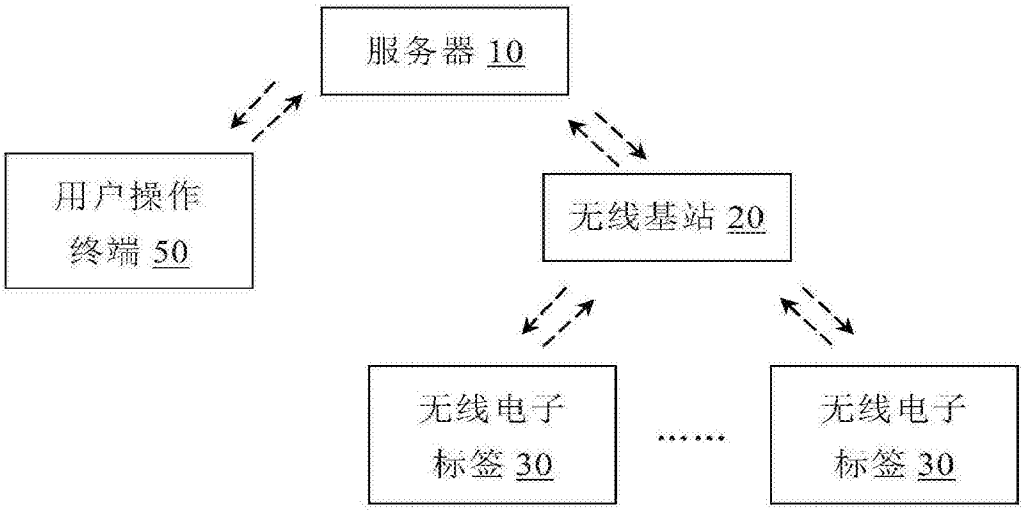


图1

Espacenet

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Interactive electronic tag equipment communication system and method

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The invention provides an interactive electronic tag equipment communication system and method. The interactive electronic tag equipment communication system comprises a background server, a base station, electronic tag equipment and external equipment. The external equipment sends the first data to the electronic tag equipment through a second communication path of the electronic tag equipment; the electronic tag equipment receives the first data, sends the first data to the base station through a first communication path in the electronic tag equipment, and enters a rapid monitoring mode; the base station receives the first data and sends the first data to a background server; the background server generates a control instruction and second data according to the first data and sends thecontrol instruction and the second data to the base station; the base station receives and sends the quick wake-up instruction, the control instruction and the second data to the electronic tag equipment through the first communication path; and the electronic tag equipment receives the quick wake-up instruction, the control instruction and the second data and then switches to a common monitoringmode after completing communication. According to the scheme, rapid electronic tag communication can be realized, and meanwhile, the service life of the battery is not obviously influenced.

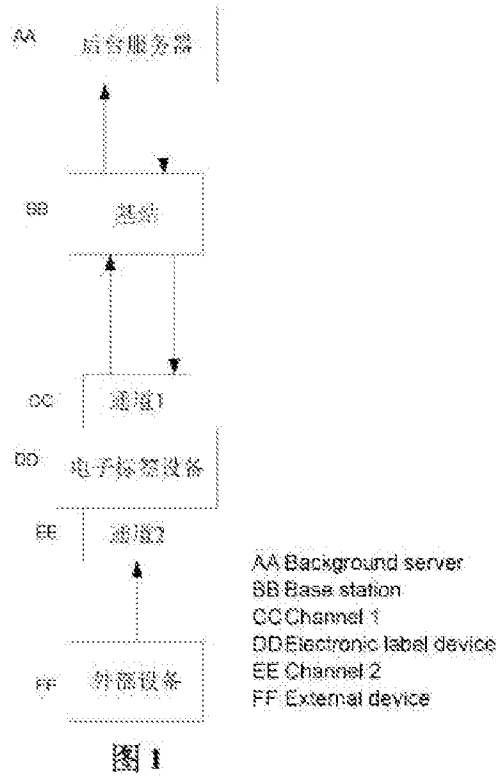


图 1

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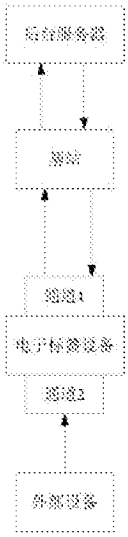
权利要求书2页 说明书5页 附图3页

(54)发明名称

交互式电子标签设备通信系统及方法

(57)摘要

本发明提供一种交互式电子标签设备通信系统及方法，包括：后台服务器、基站、电子标签设备和外部设备；外部设备通过电子标签设备的第二通信通路向电子标签设备发送第一数据；电子标签设备接收并通过其中的第一通信通路将第一数据发送至基站，并进入快速监听模式；基站接收并将第一数据发送至后台服务器；后台服务器根据第一数据生成控制指令和第二数据并将其发送至所述基站；基站接收并通过第一通信通路将快速唤醒指令、控制指令和第二数据发送至电子标签设备；电子标签设备接收快速唤醒指令、控制指令和第二数据完成通信后切换至普通监听模式。该方案可以实现快速的电子标签通信，同时不对电池寿命产生显著的影响。



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1.一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2.如权利要求1所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的ID。

3.如权利要求1所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4.如权利要求3所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5.如权利要求1所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6.如权利要求1所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7.一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8.如权利要求7所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的ID，将所述电子标签设备的ID和所述第一数据发送至基站。

9.如权利要求7所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至所述后台服务器。

10.如权利要求9所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11.如权利要求7所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12.如权利要求7所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

交互式电子标签设备通信系统及方法

技术领域

[0001] 本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

[0002] 基于2.4GHz的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段(以下称电子标签设备的“监听周期”，例如30s)自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间(以下称基站设备的“唤醒时长”，例如35s)对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期(例如20s)来减少功耗，以提升电池寿命。

[0003] 在实际使用场景中，例如当操作人员在电子标签设备面前操作(向电子标签设备发送指令，更改数据等)，希望电子标签设备可以即时反馈(一般3s以内)。为了提升电子标签设备的响应速度，需要缩短监听周期(例如1s)。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是20s，而现有监听周期是1s，在现有监听周期下，电池功耗是原来的20倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

[0004] 本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

[0005] 该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

[0006] 其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

[0007] 所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

[0008] 所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第

一数据发送至所述基站，并进入快速监听模式；

[0009] 所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

[0010] 所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

[0011] 所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

[0012] 所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

[0013] 该交互式电子标签设备通信方法包括：

[0014] 外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

[0015] 电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

[0016] 基站接收所述第一数据，并将所述第一数据发送至后台服务器；

[0017] 后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

[0018] 基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

[0019] 电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

[0020] 其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

[0021] 在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

[0022] 为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

[0023] 图1是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

[0024] 图2是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

[0025] 图3是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

[0026] 下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

[0027] 在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图1所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

[0028] 所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

[0029] 所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

[0030] 所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

[0031] 所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

[0032] 所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

[0033] 所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

[0034] 在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路(通道1)为2.4G RF(Radio Frequency，射频)通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路(通道2)为其他无线通信模块，例如磁开关，NFC开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据(包括屏幕更新、数据更新、设备控制、状态变更等)和接收数据(例如设备状态信息查询、读取公共区域数据、读取私有区域数据等)。

[0035] 在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

[0036] 在本发明实施例中，该电子标签设备拥有唯一的标签ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的ID，将附加了ID的第一数据发送至所述基站。

[0037] 在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设

备。

[0038] 在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

[0039] 基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

[0040] 图2是本发明实施例的交互式电子标签设备通信方法流程图，如图2所示，包括：

[0041] 步骤201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

[0042] 步骤202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

[0043] 步骤203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

[0044] 步骤204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

[0045] 步骤205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

[0046] 步骤206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

[0047] 其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

[0048] 在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图3所示：

[0049] 1.外部设备通过通道1发送第一数据至电子标签设备；

[0050] 2a.电子标签设备发送上行数据(第一数据)和标签ID至多个基站；

[0051] 2b.电子标签设备进入快速监听模式；

[0052] 3.多个基站转发第一数据和各自的能量值给后台服务器；

[0053] 4a.后台服务器对接收的多个第一数据进行去重处理；

[0054] 4b.后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

[0055] 4c.后台服务器选择最优基站下发相应的控制指令及第二数据；

[0056] 5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

[0057] 6.电子标签设备通过通道2接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

[0058] 综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

[0059] 本发明主要解决在大型的电子标签使用场景下(20000及以上电子标签)，实现快速的电子标签通信(3s以内)，同时不对电池寿命产生显著的影响。

[0060] 本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质(包括但不限于磁盘存储器、CD-ROM、光学存储器等)上实施的计算机程序产品的形式。

[0061] 本发明是参照根据本发明实施例的方法、设备(系统)、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的装置。

[0062] 这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

[0063] 这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

[0064] 以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

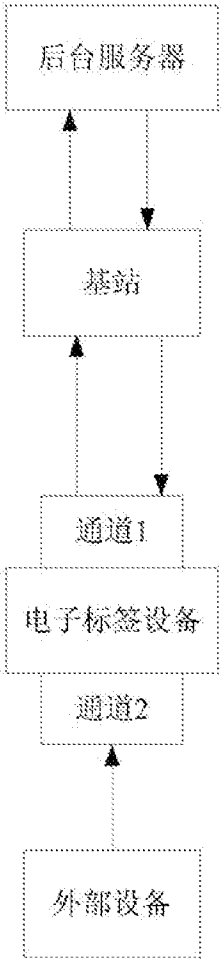


图1

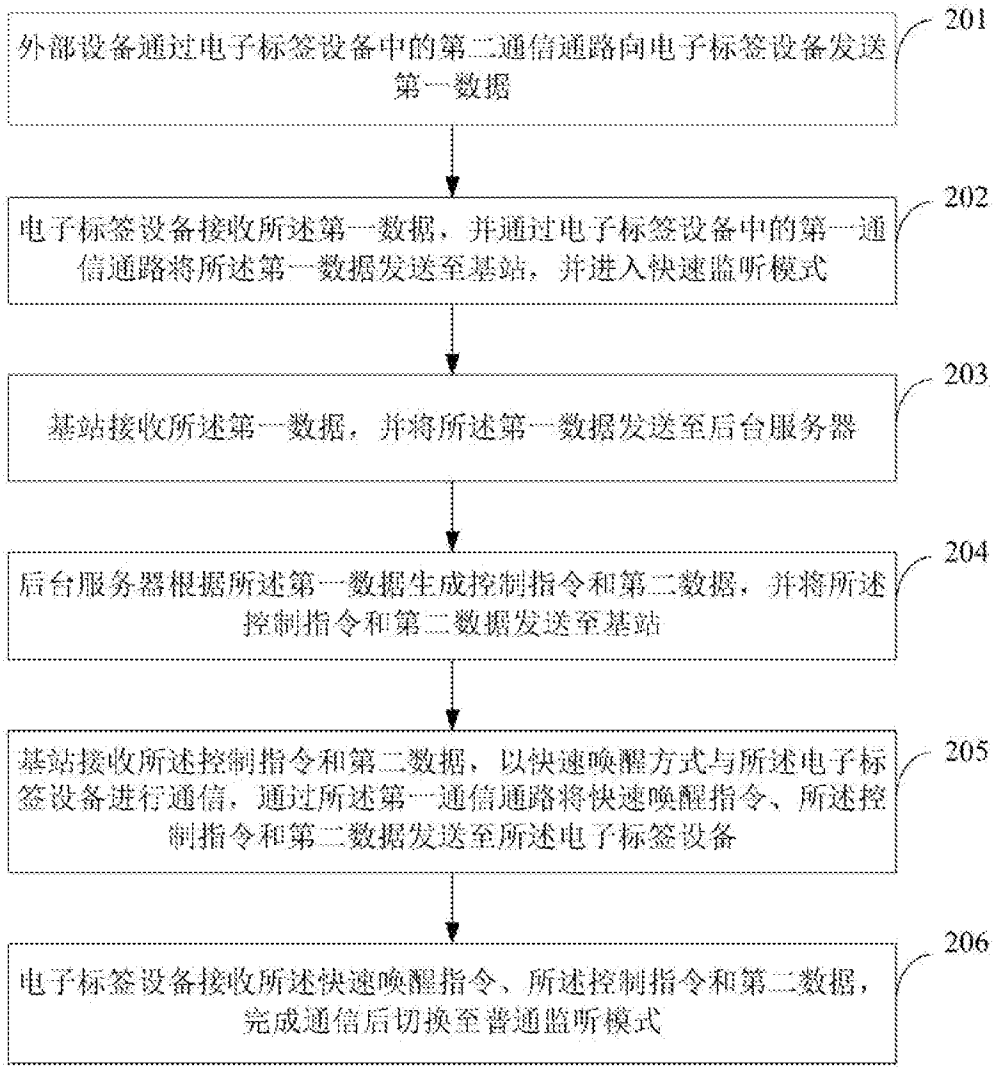

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据
201
电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式
202
基站接收所述第一数据，并将所述第一数据发送至后台服务器
203
后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站
204
基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备
205
电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式
206

图2

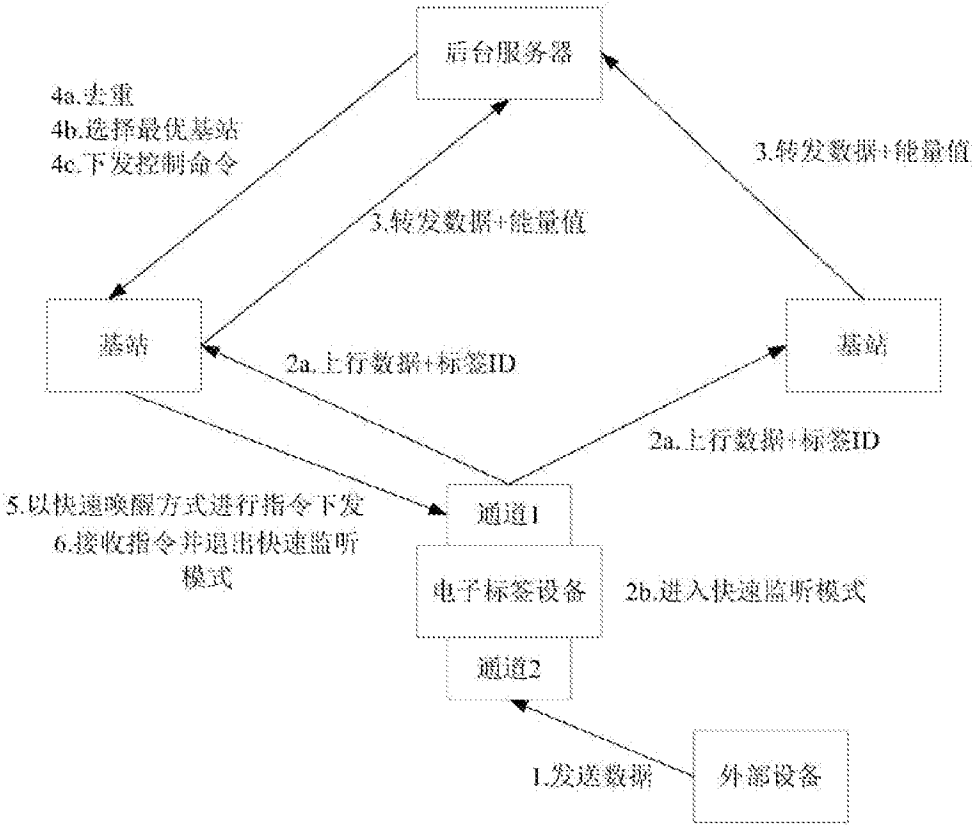

后台服务器
4a.去重
4b.选择最优基站
4c.下发控制命令
3.转发数据+能量值
3.转发数据+能量值
基站
基站
2a.上行数据+标签ID
2a.上行数据+标签ID
5.以快速唤醒方式进行指令下发
6.接收指令并退出快速监听模式
通道1
电子标签设备
2b.进入快速监听模式
通道2
1.发送数据
外部设备

图3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Min LIANG	§		
	§		
	§	Group Art Unit:	Not Yet Assigned
Serial No.: Herewith	§		
	§		
Confirmation No.: N/A	§	Examiner:	Not Yet Assigned
	§		
Filed: Concurrently Herewith	§		
	§		
For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD			

INFORMATION DISCLOSURE STATEMENT (IDS)

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: 01/02/2021
Electronic Signature for Chih Huai Chiu: /CHIH HUAI CHIU/

Dear Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98, the attention of the United States Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of the above-identified application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed within three months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. § 1.53(d) (37 C.F.R. § 1.97(b)(1)).

Submitted herewith are copies of non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed as a representation that a search has been made. In

accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that the information cited in this Information Disclosure Statement is, or is considered to be, material to the patentability as defined in 37 C.F.R. § 1.56(b).

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98, and the Examiner is respectfully requested to consider the listed references.

January 2, 2021

Respectfully submitted,

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/CHIH HUAI CHIU/

Chih Huai Chiu
Reg. No. 75,299

Electronic Patent Application Fee Transmittal

Application Number:	
Filing Date:	
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Filer:	Chih Huai Chiu
Attorney Docket Number:	SANU/0004USP

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
BASIC NATIONAL STAGE FEE	2631	1	160	160
NATL STAGE SEARCH FEE - REPORT PROVIDED	2642	1	270	270
NATL STAGE EXAM FEE - ALL OTHER CASES	2633	1	400	400
Pages:				
Claims:				
Miscellaneous-Filing:				
OATH/DECL > 30 MOS FROM 371 COMMENCEMENT	2617	1	80	80
Petition:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**910**

Electronic Acknowledgement Receipt

EFS ID:	41536760
Application Number:	17257570
International Application Number:	PCT/CN2019/070431
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU/0004USP
Receipt Date:	02-JAN-2021
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Application Type:	U.S. National Stage under 35 USC 371

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Payment was successfully received in RAM	$910
RAM confirmation Number	E202112D24096011
Deposit Account	602953
Authorized User	Chih-Huai Chiu

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37 CFR 1.492 (National application filing, search, and examination fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	SANU_0004USP_ADS.pdf	1256317 94d1ca85432d8c554c169676a4848ac1848898a7	no	10
Warnings:					
Information:					
2	Abstract	SANU_0004USP_ABSTRACT.pdf	95870 d59e21fb607ec51e6aa5fa0f55a5ae00810ba962	no	1
Warnings:					
Information:					
3	Claims	SANU_0004USP_CLAIMS.pdf	105684 898a20bcbddfa5b0727371561b89296dcc8fc120	no	3
Warnings:					
Information:					
4	Drawings-only black and white line drawings	SANU_0004USP_DRAWINGS.pdf	52692 9e641ca6c371cfc7f9345298f9c33388f1a4da50	no	3
Warnings:					
Information:					
5	Other Reference-Patent/App/Search documents	SANU_0004USP_ISR_English_Translation.pdf	70712 fb8610859ae49085e16b52aaacbc89cad4792a95	no	2
Warnings:					
Information:					
6	Documents submitted with 371 Applications	SANU_0004USP_PCT_PUBLICATION.pdf	835260 b29766d29205c2279f87f9e9ab1448a9b00b6ea1	no	19
Warnings:					
Information:					

7	Miscellaneous Incoming Letter	SANU_0004USP_PCT_Request_form.pdf	121614 197743a49d49f93d9836bd893c71c9ea70ccae77	no	4
Warnings:					
Information:					
8	Power of Attorney	SANU_0004USP_POA.pdf	239582 55d1479ef7ee428cdbaa9e4df04ad257cfc8bb76	no	2
Warnings:					
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9	Preliminary Amendment	SANU_0004USP_Prelimiary_Amendments.pdf	197747 3fd89a17a2daf5927c315476c2862861ed31b067	no	9
Warnings:					
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10	Interim Copy of the Foreign Priority Document	SANU_0004USP_Priority_Document.pdf	614350 32b27b10e75a6e10628798fe8d3e8c801a3a6793	no	15
Warnings:					
Information:					
11	Specification	SANU_0004USP_SPEC.pdf	152248 24a13948405e23f5781927e89b2ba75e1baa60bc	no	9
Warnings:					
Information:					
12	Specification - Not in English	SANU_0004USP_Specification_not_in_English.pdf	622188 cc8b8b909767c555d0fe091d7ac9ab3370eb08e5	no	14
Warnings:					
Information:					
13	Miscellaneous Incoming Letter	SANU_0004USP_Transmittal_for_priority_documents.pdf	108948 3027187a6fa5ea63f4db6a27844d2717a6a2e498	no	1
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Information:					

14	Information Disclosure Statement (IDS) Form (SB08)	SANU_0004USP_PTOSB08a.pdf	1034508 18fec8845b0ad5f2e2c27d6e12532647c869a45b	no	4
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Information:					
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15	Other Reference-Patent/App/Search documents	ISR.pdf	74456 db3f054dfb643fbf7d8f587f908a8ef8b8342c96	no	2
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17	Other Reference-Patent/App/Search documents	CN104219741A_1.pdf	560631 162b2b14a3c7be0a05a6118cf4e8cf3571a7acaf	no	6
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20	Transmittal Letter	SANU_0004USP_IDS_Transmittal.pdf	113589 c635556c6c10e7e42e57e951f40a340df51efa7d	no	2

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21	Fee Worksheet (SB06)	fee-info.pdf	36436 7a78488c9bdcc25cabbc30bec62784db55cdad8c	no	2
Warnings:					
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			Total Files Size (in bytes):	12394617	

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New Applications Under 35 U.S.C. 111

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

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

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☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

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State/Province	
Postal Code	314000
Country [i]	CN

Inventor 3 Remove

Legal Name

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Prefix	Given Name	Middle Name	Family Name	Suffix
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Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country [i]	CN

Inventor 5 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yang		ZHAO	

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

City	Jiaxing, Zhejiang	Country of Residence [i]	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country [i]	CN

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
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Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	162130		
Email Address	docketing@carrpllc.com	Add Email	Remove Email
Email Address	nan.carr@carrpllc.com	Add Email	Remove Email

Application Information:

Title of the Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD		
Attorney Docket Number	SANU_0004USP	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	3	**Suggested Figure for Publication (if any)**	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

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

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	● Customer Number	US Patent Practitioner	◯ Limited Recognition (37 CFR 11.9)
Customer Number	162130		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	a 371 of international	PCT/CN2019/070431	2019-01-04

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Remove

Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
201810706496.2	CN	2018-07-02	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. Add

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1 — Remove

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

● Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
Person to whom the inventor is obligated to assign.	Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	Zhejiang Hanshow Technology Co. Ltd		
Mailing Address Information For Applicant:			
Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Country	CN	Postal Code	314000
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button. Add

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

Remove

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button. Add

Signature:

Remove

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/CHIH HUAI CHIU/			Date (YYYY-MM-DD)	2021-01-02
First Name	CHIH HUAI	Last Name	CHIU	Registration Number	75299

Additional Signature may be generated within this form by selecting the Add button. Add

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 the Freedom of Information Act requires disclosure of these records.

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 CooperationTreaty.

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 inspections 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.

ABSTRACT

This disclosure provides an interactive electronic tag device communication system and method, including: a background server, a base station, an electronic tag device and an external device; the external device transmits first data to an electronic tag device through a second communication path in the electronic tag device; the electronic tag device receives the first data and transmits the first data to a base station through a first communication path in the electronic tag device, and enters a fast monitoring mode; the base station receives the first data and transmits the first data to a background server; the background server generates a control instruction and second data according to the first data, and transmits the control instruction and the second data to the base station; the base station receives a fast wake-up instruction, the control instruction and the second data and transmits the fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; the electronic tag device receives the fast wake-up instruction, the control instruction and the second data, and switches to the normal monitoring mode after completing the communication. This solution can realize the fast electronic tag communication without having a significant impact on battery life.

WHAT IS CLAIMED IS:

1. An interactive electronic tag device communication system, comprising: a background server, a base station, an electronic tag device and an external device;

wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path; the first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode; and the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode;

the external device is configured to transmit first data to the electronic tag device through the second communication path;

the electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode;

the base station is configured to receive the first data and transmit the first data to the background server;

the background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station;

the base station is further configured to receive the control instruction and the second data, communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

the electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.

2. The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is specifically configured to attach an ID of the electronic tag device to the first data when transmitting the first data to the base station.

3. The interactive electronic tag device communication system according to claim 1, wherein when the first data is received by a plurality of base stations, the plurality of base stations are configured to attach respective energy value information of the plurality of base stations to the first data when transmitting the first data to the background server;

the background server is specifically configured to determine an optimal base station among the plurality of base stations according to the respective energy value information of the plurality of base stations, and transmit the control instruction and the second data to the electronic tag device

through the optimal base station.

4. The interactive electronic tag device communication system according to claim 3, wherein the background server is further configured to perform deduplication processing on the first data uploaded by the plurality of base stations.

5. The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

6. The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

7. An interactive electronic tag device communication method, comprising:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

8. The interactive electronic tag device communication method according to claim 7, wherein transmitting, by the electronic tag device, the first data to the base station comprises:

attaching an ID of the electronic tag device to the first data, and transmitting the ID of the

electronic tag device and the first data to the base station.

9. The interactive electronic tag device communication method according to claim 7, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises:

attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.

10. The interactive electronic tag device communication method according to claim 9, further comprising: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.

11. The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

12. The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

13. A computer device comprising a memory, a processor and a computer program stored on the memory and executable by the processor, wherein the processor implements, when executing the computer program, the method according to any one of claims 7 to 12.

14. A computer-readable storage medium storing therein a computer program for executing the method according to any one of claims 7 to 12.

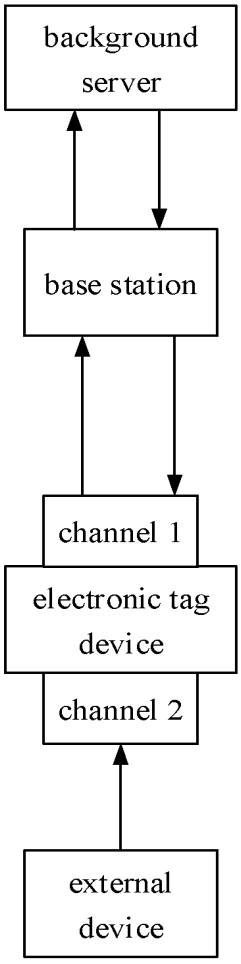

background server
base station
channel 1
electronic tag device
channel 2
external device

FIG. 1

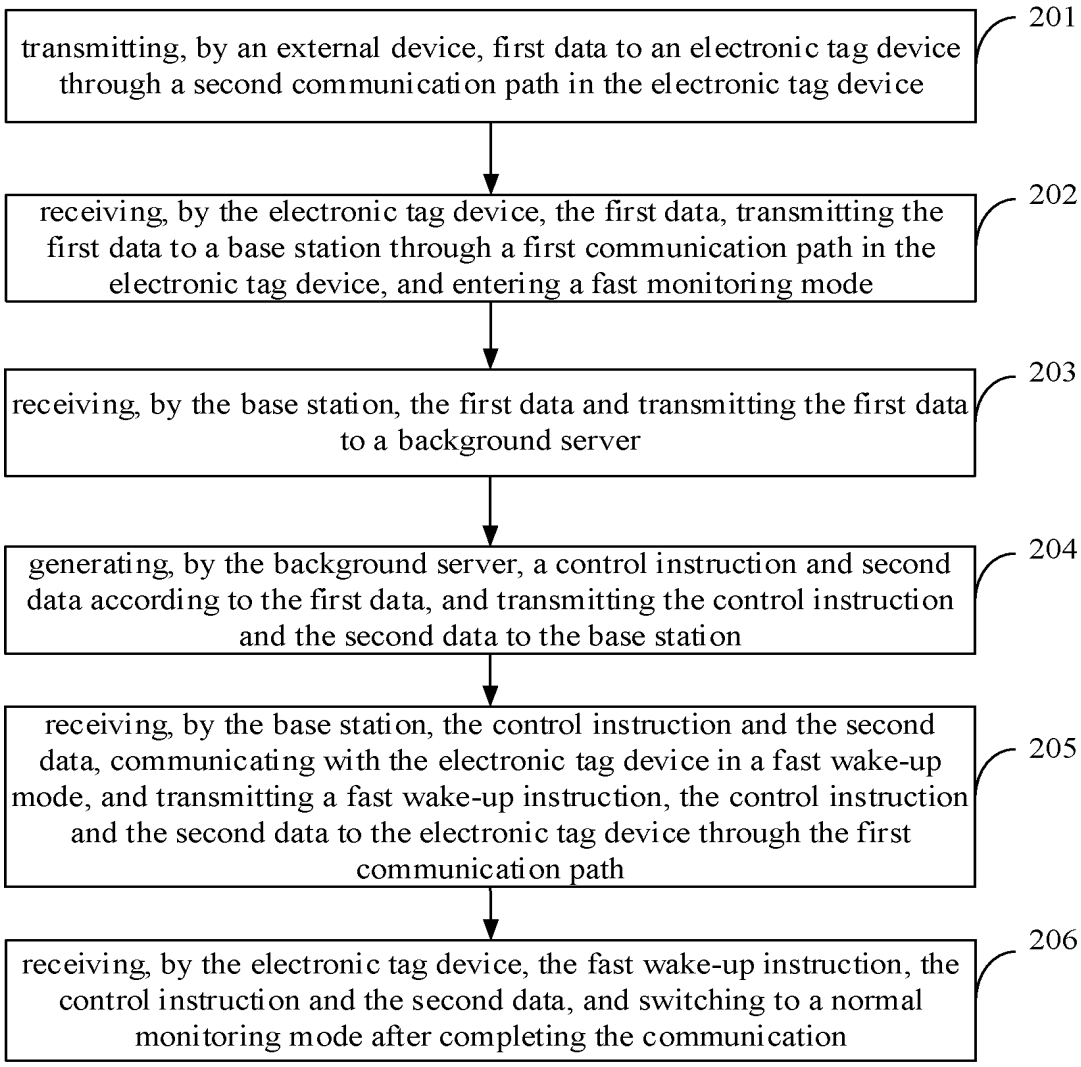

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device
201
receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode
202
receiving, by the base station, the first data and transmitting the first data to a background server
203
generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station
204
receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path
205
receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication
206

FIG. 2

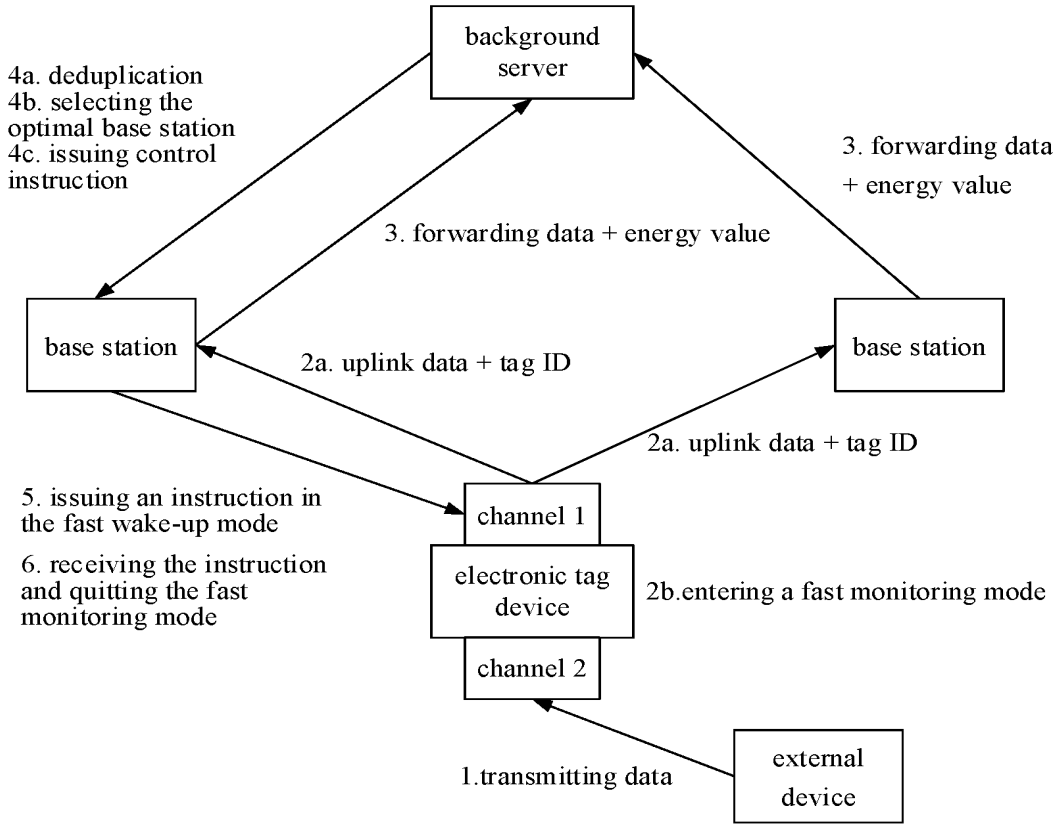

background server
4a. deduplication
4b. selecting the optimal base station
4c. issuing control instruction
3. forwarding data + energy value
3. forwarding data + energy value
base station
2a. uplink data + tag ID
base station
2a. uplink data + tag ID
5. issuing an instruction in the fast wake-up mode
6. receiving the instruction and quitting the fast monitoring mode
channel 1
electronic tag device
2b.entering a fast monitoring mode
channel 2
1.transmitting data
external device

FIG. 3

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/070431

A. CLASSIFICATION OF SUBJECT MATTER

H04W 52/02(2009.01)i

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)

H04W

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 practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; USTXT; WOTXT; EPTXT; 3GPP; IEEE; IETF: 电子标签, 服务器, 基站, 接入点, 触发, 唤醒, 叫醒, 快速, 周期, 频率, 监听, RFID, server, base station, BS, access point, AP, trigger, active, wake up, quick, fast, period, frequency, monitor, listen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107343259 A (SUZHOU HALATION PHOTONICS CO., LTD.) 10 November 2017 (2017-11-10) description, paragraphs [0005]-[0009]	1-14
A	CN 104219741 A (GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO., LTD.) 17 December 2014 (2014-12-17) entire document	1-14
A	CN 101305625 A (SYMBOL TECHNOLOGIES, INC.) 12 November 2008 (2008-11-12) entire document	1-14

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

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2019	**22 March 2019**

Name and mailing address of the ISA/CN	Authorized officer
National Intellectual Property Administration, PRC (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/070431

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 107343259 A	10 November 2017	None	
CN 104219741 A	17 December 2014	None	
CN 101305625 A	12 November 2008	EP 1955560 A1	13 August 2008
		US 2007082714 A1	12 April 2007
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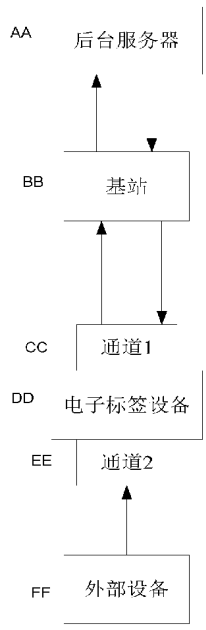
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(54) **Title:** INTERACTIVE ELECTRONIC LABEL DEVICE COMMUNICATION SYSTEM AND METHOD

(54) **发明名称**: 交互式电子标签设备通信系统及方法



AA Background server
BB Base station
CC Channel 1
DD Electronic label device
EE Channel 2
FF External device

图 1

(57) **Abstract:** The present invention provides an interactive electronic label device communication system and method, comprising: a background server, a base station, an electronic label device, and an external device. The external device sends first data to the electronic label device by means of a second communication channel of the electronic label device; the electronic label device receives the first data and sends same to the base station by means of a first communication channel therein, and enters a fast listening mode; the base station receives the first data and sends same to the background server; the background server generates a control instruction and second data according to the first data and sends same to the base station; the base station receives a fast wake-up instruction, the control instruction, and the second data and sends same to the electronic label device by means of the first communication channel; and after receiving the fast wake-up instruction, the control instruction, and the second data and completing communication, the electronic label device switches to a normal listening mode. The solution can implement fast electronic label communication without significant influence on battery life.

(57) **摘要**: 本发明提供一种交互式电子标签设备通信系统及方法，包括：后台服务器、基站、电子标签设备和外部设备；外部设备通过电子标签设备的第二通信通路向电子标签设备发送第一数据；电子标签设备接收并通过其中的第一通信通路将第一数据发送至基站，并进入快速监听模式；基站接收并将第一数据发送至后台服务器；后台服务器根据第一数据生成控制指令和第二数据并将其发送至所述基站；基站接收并通过第一通信通路将快速唤醒指令、控制指令和第二数据发送至电子标签设备；电子标签设备接收快速唤醒指令、控制指令和第二数据完成通信后切换至普通监听模式。该方案可以实现快速的电子标签通信，同时不对电池寿命产生显著的影响。

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交互式电子标签设备通信系统及方法

本申请要求 2018 年 07 月 02 日递交的申请号为 201810706496.2、发明名称为“交互式电子标签设备通信系统及方法”的中国专利申请的优先权，其全部内容通过引用结合在本申请中。

技术领域

本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

基于 2.4GHz 的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段（以下称电子标签设备的“监听周期”，例如 30s）自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间（以下称基站设备的“唤醒时长”，例如 35s）对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期（例如 20s）来减少功耗，以提升电池寿命。

在实际使用场景中，例如当操作人员在电子标签设备面前操作（向电子标签设备发送指令，更改数据等），希望电子标签设备可以即时反馈（一般 3s 以内）。为了提升电子标签设备的响应速度，需要缩短监听周期（例如 1s）。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是 20s，而现有监听周期是 1s，在现有监听周期下，电池功耗是原来的 20 倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

该交互式电子标签设备通信方法包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

图 2 是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

图 3 是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于

本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图 1 所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路（通道 1）为 2.4G RF（Radio Frequency，射频）通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路（通道 2）为其他无线通信模块，例如磁开关，NFC 开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据（包括屏幕更新、数据更新、设备控制、状态变更等）和接收数据（例如设备状态信息查询、读取公共区域数据、读取私有区域数据等）。

在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

在本发明实施例中，该电子标签设备拥有唯一的标签 ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的 ID，将附加了 ID 的第一数据发送至所述基站。

在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

图 2 是本发明实施例的交互式电子标签设备通信方法流程图，如图 2 所示，包括：

步骤 201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

步骤 202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

步骤 203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

步骤 204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

步骤 205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

步骤 206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图 3 所示：

1.外部设备通过通道 1 发送第一数据至电子标签设备；

2a. 电子标签设备发送上行数据（第一数据）和标签 ID 至多个基站；

2b. 电子标签设备进入快速监听模式；

3. 多个基站转发第一数据和各自的能量值给后台服务器；

4a.后台服务器对接收的多个第一数据进行去重处理；

4b. 后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

4c. 后台服务器选择最优基站下发相应的控制指令及第二数据；

5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

6. 电子标签设备通过通道 2 接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

本发明主要解决在大型的电子标签使用场景下（20000 及以上电子标签），实现快速的电子标签通信（3s 以内），同时不对电池寿命产生显著的影响。

本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质（包括但不限于磁盘存储器、CD-ROM、光学存储器等）上实施的计算机程序产品的形式。

本发明是参照根据本发明实施例的方法、设备（系统）、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的装置。

这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

权利要求书

1. 一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的 ID。

3. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4. 如权利要求 3 所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7. 一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的 ID，将所述电子标签设备的 ID 和所述第一数据发送至基站。

9. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至所述后台服务器。

10. 如权利要求 9 所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

13. 一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，其特征在于，所述处理器执行所述计算机程序时实现权利要求 7 至 12 任一所述方法。

14. 一种计算机可读存储介质，其特征在于，所述计算机可读存储介质存储有执行权利要求 7 至 12 任一所述方法的计算机程序。

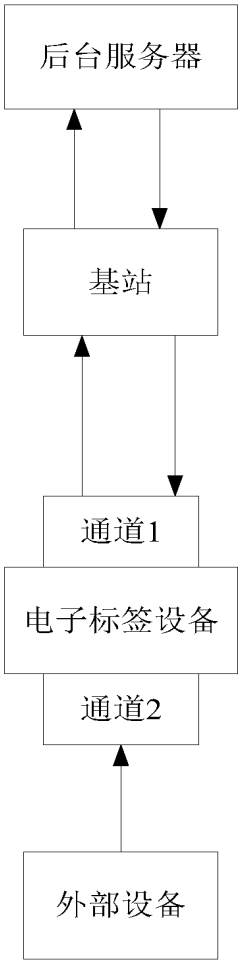


图 1

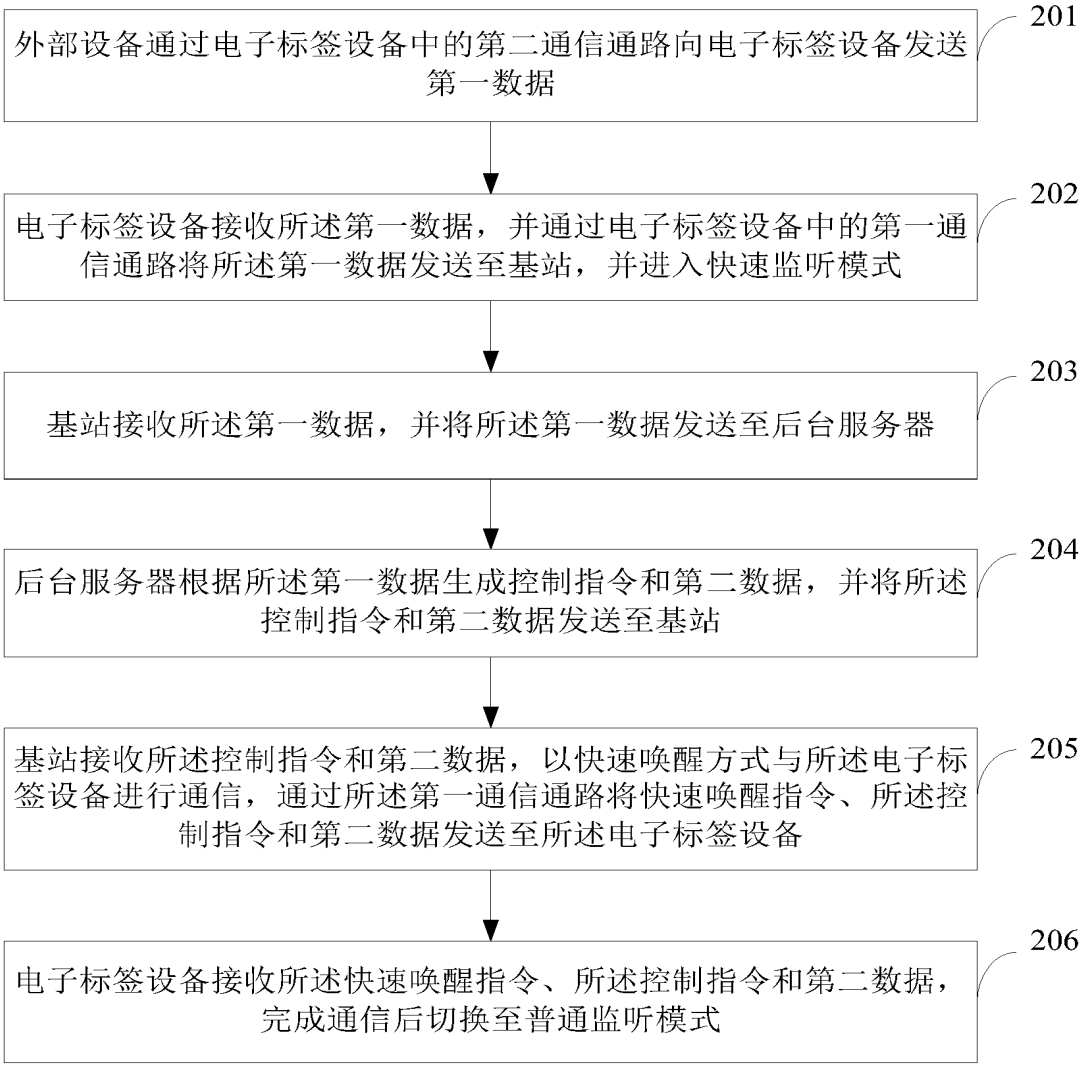

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据
201
电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式
202
基站接收所述第一数据，并将所述第一数据发送至后台服务器
203
后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站
204
基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备
205
电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式
206

图 2

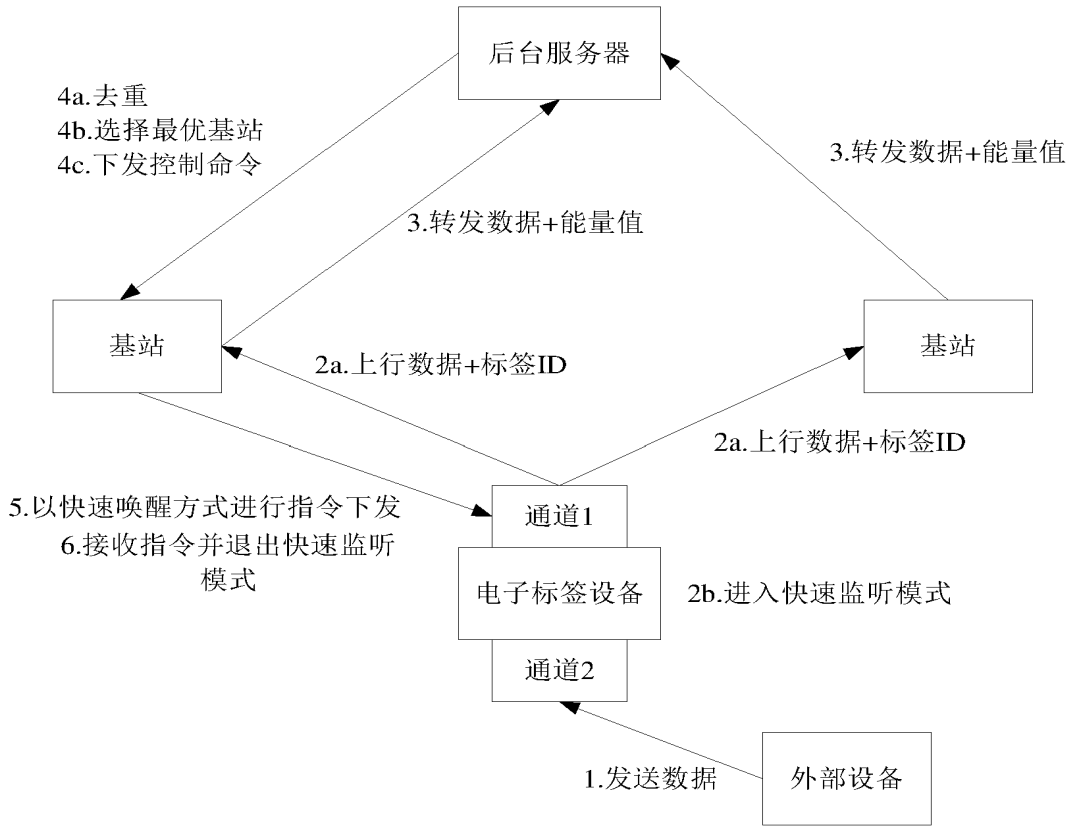

后台服务器
4a.去重
4b.选择最优基站
4c.下发控制命令
3.转发数据+能量值
3.转发数据+能量值
基站
2a.上行数据+标签ID
基站
2a.上行数据+标签ID
5.以快速唤醒方式进行指令下发
6.接收指令并退出快速监听模式
通道1
电子标签设备
2b.进入快速监听模式
通道2
1.发送数据
外部设备

图 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/070431

A. CLASSIFICATION OF SUBJECT MATTER

H04W 52/02(2009.01)i

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)

H04W

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 practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; USTXT; WOTXT; EPTXT; 3GPP; IEEE; IETF: 电子标签, 服务器, 基站, 接入点, 触发, 唤醒, 叫醒, 快速, 周期, 频率, 监听, RFID, server, base station, BS, access point, AP, trigger, active, wake up, quick, fast, period, frequency, monitor, listen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107343259 A (SUZHOU HALATION PHOTONICS CO., LTD.) 10 November 2017 (2017-11-10) description, paragraphs [0005]-[0009]	1-14
A	CN 104219741 A (GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO., LTD.) 17 December 2014 (2014-12-17) entire document	1-14
A	CN 101305625 A (SYMBOL TECHNOLOGIES, INC.) 12 November 2008 (2008-11-12) entire document	1-14

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

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2019	**22 March 2019**

Name and mailing address of the ISA/CN

National Intellectual Property Administration, PRC (ISA/CN)
No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088
China

Facsimile No. **(86-10)62019451**

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/070431

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	107343259	A	10 November 2017	None			
CN	104219741	A	17 December 2014	None			
CN	101305625	A	12 November 2008	EP	1955560	A1	13 August 2008
				US	2007082714	A1	12 April 2007
				US	7440781	B2	21 October 2008
				WO	2007044253	A1	19 April 2007
				CA	2625166	A1	19 April 2007

国际检索报告

国际申请号
PCT/CN2019/070431

A. 主题的分类

H04W 52/02(2009.01)i

按照国际专利分类(IPC)或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

H04W

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

CNABS;CNKI;CNTXT;VEN;USTXT;WOTXT;EPTXT;3GPP;IEEE;IETF：电子标签，服务器，基站，接入点，触发，唤醒，叫醒，快速，周期，频率，监听，RFID，server，base station，BS，access point，AP，trigger，active，wake up，quick，fast，period，frequency，monitor，listen

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
A	CN 107343259 A (苏州汉朗光电有限公司) 2017年 11月 10日 (2017 - 11 - 10) 说明书第[0005]段-第[0009]段	1-14
A	CN 104219741 A (广西盛源行电子信息有限公司) 2014年 12月 17日 (2014 - 12 - 17) 全文	1-14
A	CN 101305625 A (讯宝科技公司) 2008年 11月 12日 (2008 - 11 - 12) 全文	1-14

☐ 其余文件在C栏的续页中列出。

☑ 见同族专利附件。

* 引用文件的具体类型：

“A” 认为不特别相关的表示了现有技术一般状态的文件

“E” 在国际申请日的当天或之后公布的在先申请或专利

“L” 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

“O” 涉及口头公开、使用、展览或其他方式公开的文件

“P” 公布日先于国际申请日但迟于所要求的优先权日的文件

“T” 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

“X” 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

“Y” 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

“&” 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2019年 2月 18日	2019年 3月 22日
ISA/CN的名称和邮寄地址 中国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路6号 100088 传真号 (86-10)62019451	受权官员 陈晓霞 电话号码 (86-512) 88996090

表 PCT/ISA/210 (第2页) (2015年1月)

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2019/070431

检索报告引用的专利文件			公布日（年/月/日）	同族专利			公布日（年/月/日）
CN	107343259	A	2017年 11月 10日	无			
CN	104219741	A	2014年 12月 17日	无			
CN	101305625	A	2008年 11月 12日	EP	1955560	A1	2008年 8月 13日
				US	2007082714	A1	2007年 4月 12日
				US	7440781	B2	2008年 10月 21日
				WO	2007044253	A1	2007年 4月 19日
				CA	2625166	A1	2007年 4月 19日

表 PCT/ISA/210（同族专利附件）（2015年1月）

PCT请求书

打印件(原件为电子形式)

0	由受理局填写	
0-1	国际申请号	PCT/CN2019/070431
0-2	国际申请日	2019年 1月 04日 (04.01.2019)
0-3	受理局名称和“PCT国际申请”	RO/CN

0-4	PCT/RO/101表 PCT请求书	
0-4-1	软件版本	CEPCT 版本 10.20.31 MT/FOP 20140331/0.20.5.21
0-5	请求 下列签字人请求按照专利合作条约的规定处理本国际申请	
0-6	申请人指定的受理局	中华人民共和国国家知识产权局 (RO/CN)
0-7	申请人或代理人的档案号	GAI18CN2096P
I	发明名称	交互式电子标签设备通信系统及方法
II	申请人	
II-1	该人是	申请人 (applicant only)
II-2	是对下列国家的申请人	所有指定国 (all designated States)
II-4zh	名称	浙江汉朔电子科技有限公司
II-4en	Name:	ZHEJIANG HANSHOW TECHNOLOGY CO. LTD
II-5zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
II-5en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
II-6	国籍	中国 CN
II-7	居所	中国 CN
II-8	电话号码	
II-9	传真号码	
II-11	申请人在专利局的登记号	
III-1	申请人和/或发明人	
III-1-1	该人是	发明人 (inventor only)
III-1-3	对下列国家的发明人	
III-1-4zh	姓名:	梁 敏
III-1-4en	Name (LAST, First):	LIANG, Min
III-1-5zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
III-1-5en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China

PCT请求书

打印件(原件为电子形式)

III-2	申请人和/或发明人	
III-2-1	该人是	发明人 (inventor only)
III-2-3	对下列国家的发明人	
III-2-4 zh	姓名:	侯 世国
III-2-4 en	Name (LAST, First):	HOU, Shiguo
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III-2-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
III-3	申请人和/或发明人	
III-3-1	该人是	发明人 (inventor only)
III-3-3	对下列国家的发明人	
III-3-4 zh	姓名:	陈 骏
III-3-4 en	Name (LAST, First):	CHEN, Jun
III-3-5 zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
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III-4	申请人和/或发明人	
III-4-1	该人是	发明人 (inventor only)
III-4-3	对下列国家的发明人	
III-4-4 zh	姓名:	姜 起
III-4-4 en	Name (LAST, First):	JIANG, Qi
III-4-5 zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
III-4-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
III-5	申请人和/或发明人	
III-5-1	该人是	发明人 (inventor only)
III-5-3	对下列国家的发明人	
III-5-4 zh	姓名:	赵 洋
III-5-4 en	Name (LAST, First):	ZHAO, Yang
III-5-5 zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
III-5-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China

PCT请求书

打印件(原件为电子形式)

IV-1	代理人,共同代表或通信地址	
	下列人员被委托/已经被委托为代表申请人在主管国际单位办理事务的	代理人 (agent)
IV-1-1zh	名称	北京三友知识产权代理有限公司
IV-1-1en	Name:	BEIJING SANYOU INTELLECTUAL PROPERTY AGENCY LTD.
IV-1-2zh	地址	中国北京市 金融街35号国际企业大厦A座16层 100033
IV-1-2en	Address:	16th Fl.,Block A,Corporate Square,No.35 Jinrong Street Beijing 100033 China
IV-1-3	电话号码	86-10-88091921
IV-1-4	传真号码	86-10-88091920
IV-1-5	电子邮址	sy@sanyouip.com
IV-1-5(a)	电子邮件授权 授权受理局、国际检索单位、国际局和国际初步审查单位，如果其愿意，使用本电子邮件地址发送有关本国际申请的通知书：	作为随后纸件通知书的预送本
IV-1-6	代理人登记号	11127
V	国家的指定	
V-1	根据细则4.9(a)，提交本请求书即为，指定在国际申请日受PCT约束的所有成员国，以要求获得可以获得的所有保护类型，适用情况下，要求获得地区专利和国家专利。	
V-2	V-2栏只可用于（不可悔改地）排除对有关国家的指定，如果本国际申请在提交时或者在根据细则26之二.1的后续程序中，第VI栏包含有对在该有关国家提出的在先国家申请的优先权要求，以避免被要求优先权的该在先国家申请因国家法律而停止效力。	
VI-1	要求在先国家申请的优先权	
VI-1-1	申请日	2018年 7月 02日 (02.07.2018)
VI-1-2	号码	201810706496.2
VI-1-3	国家	中国 CN
VI-2	优先权文件请求 请受理局准备并向国际局送交上述在先申请中标号如下的在先申请的证明副本:	VI-1
VI-3	援引加入 : 如果条约11（1）(iii)（d）或（e）规定的国际申请的某一项目，或者细则20.5(a)规定的说明书，权利要求书或附图的某一部分不包含在本国际申请中，但是全部包含在一个在先申请中，并且在受理局首次收到条约11（1）(iii)规定的一个或多个项目之日要求了该在先申请的优先权，则该项目或该部分可以依据细则20.6确认，为细则20.6的目的援引加入到该国际申请中。	
VII-1	选定的国际检索单位	中华人民共和国国家知识产权局 (ISA/CN)

PCT请求书

打印件(原件为电子形式)

VIII	声明	声明数目	
VIII-1	关于发明人身份的声明	–	
VIII-2	关于申请人在国际申请日有权申请和被授予专利的声明	–	
VIII-3	关于申请人在国际申请日有权要求在先申请的优先权的说明	–	
VIII-4	发明人资格声明(仅为指定美国目的)	–	
VIII-5	关于不影响新颖性的公开或缺乏新颖性的例外的声明	–	
IX	清单	页数	附以电子文档
IX-1	请求书(包括声明页)	4	✓
IX-2	说明书	7	✓
IX-3	权利要求	3	✓
IX-4	摘要	1	✓
IX-5	附图	3	✓
IX-7	共计	18	
	附件	附以纸件	附以电子文档
IX-8	费用计算页	–	✓
IX-11	总委托书副本	–	✓
IX-18	PCT-SAFE 物理载体	–	–
IX-20	应与摘要一起公布的附图图号	1	
IX-21	国际申请所用语言	中文	
X-1	申请人，代理人或共同代表的签字	/sanyou/	
X-1-1	名称	北京三友知识产权代理有限公司	
X-1-2	签字人姓名	北京三友知识产权代理有限公司	
X-1-3	还要注明此人是以什么名义签字的	代理人	

由受理局填写

10-1	据称的国际申请文件的实际收到日期	2019年 1月 04日 (04.01.2019)
10-2	附图:	
10-2-1	收到	
10-2-2	未收到	
10-3	由于随后在期限内收到补充国际申请的文件或附图,更改的实际收到日期	
10-4	在期限内收到根据PCT第11(2)条所进行的改正的日期	
10-5	国际检索单位	ISA/CN
10-6	检索本的传送推迟到缴纳检索费后	

由国际局填写

11-1	国际局收到登记本的日期	

PTO/AIA/82A (07-13)
Approved for use through 11/30/2014. OMB 0651-0051
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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not Yet Assigned
Filing Date	Concurrently Herewith
First Named Inventor	Min LIANG
Title	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	SANU_0004USP

SIGNATURE of Applicant or Patent Practitioner

Signature	/CHIH HUAI CHIU/	Date (Optional)	2021-01-02
Name	CHIH HUAI CHIU	Registration Number	75299
Title (if Applicant is a juristic entity)	Authorized Signor by Applicant		
Applicant Name (if Applicant is a juristic entity)	Zhejiang Hanshow Technology Co. Ltd		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☑ *Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 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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Doc Code: PA..
Document Description: Power of Attorney

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POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☑ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above: 162130

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☑ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

☐ Firm or Individual Name					
Address					
City		State		Zip	
Country					
Telephone		Email			

I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Zhejiang Hanshow Technology Co. Ltd

☐ Inventor or Joint Inventor (title not required below)

☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)

☑ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)

☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature	Linli OUYANG	Date (Optional)	2020.9.30
Name	Linli OUYANG		
Title	Legal manager		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. 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 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zhejiang Hanshow Technology Co. Ltd	§		
	§	Group Art Unit:	Not Yet Assigned
Serial No.: Not Yet Assigned	§		
Confirmation No.: Not Yet Assigned	§	Examiner:	Not Yet Assigned
Filed: Concurrently herewith	§		

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: January 02, 2021
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

PRELIMINARY AMENDMENT

Prior to examination, please enter this amendment for the reasons discussed below. Although Applicant believes that no fees are due in connection with this response, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 602953/SANU_0004USP, for any fees, including extension of time fees or excess claim fees, required to make this response timely and acceptable to the Office.

Amendments to the Specification begin on page 2 of this paper. **Amendments to the Abstract** begin on page 3 of this paper. **Amendments to the Claims** begin on page 4 of this paper. **Remarks** begin on page 10 of this paper.

Amendments to the Specification

Please replace paragraph [0001] with the following amended paragraph:

[0001] This application is a National Stage Application of International Application No. PCT/CN2019/070431, filed on January 4, 2019, which claims priority to Chinese Patent Application No. 201810706496.2, filed on July 02, 2018, and entitled "Interactive Electronic tag device Communication System and Method", the entire contents of which are incorporated herein by reference.

Amendments to the Abstract

Please replace the Abstract with the following amended Abstract:

ABSTRACT

This disclosure provides an interactive electronic tag device communication system and method, including: a background server, a base station, an electronic tag device and an external device; the external device transmits first data to an electronic tag device through a second communication path ~~in the electronic tag device~~; the electronic tag device receives the first data and transmits the ~~first data~~ same to a base station through a first communication path ~~in the electronic tag device~~, and enters a fast monitoring mode; the base station receives the first data and transmits the ~~first data~~ same to [[a]] background server; the background server generates a control instruction and second data ~~according to the first data~~, and transmits the ~~control instruction and the second data~~ same to the base station; the base station receives a fast wake-up instruction, ~~the~~ control instruction and ~~the~~ second data and transmits the ~~fast wake-up instruction, the control instruction and the second data~~ same to ~~the~~ electronic tag device through ~~the~~ first communication path; the electronic tag device receives ~~the~~ fast wake-up instruction, ~~the~~ control instruction and ~~the~~ second data, and switches to the normal monitoring mode after completing ~~the~~ communication. ~~This solution can realize the fast electronic tag communication without having a significant impact on battery life.~~

Amendments to the Claims

Please amend the claims as follows:

1. (Original) An interactive electronic tag device communication system, comprising: a background server, a base station, an electronic tag device and an external device;

wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path; the first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode; and the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode;

the external device is configured to transmit first data to the electronic tag device through the second communication path;

the electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode;

the base station is configured to receive the first data and transmit the first data to the background server;

the background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station;

the base station is further configured to receive the control instruction and the second data, communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

the electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.

2. (Currently Amended) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is ~~specifically~~ configured to attach

an ID of the electronic tag device to the first data when transmitting the first data to the base station.

3. (Currently Amended) The interactive electronic tag device communication system according to claim 1, wherein when the first data is received by a plurality of base stations, the plurality of base stations are configured to attach respective energy value information of the plurality of base stations to the first data when transmitting the first data to the background server;

the background server is ~~specifically~~ configured to determine an optimal base station among the plurality of base stations according to the respective energy value information of the plurality of base stations, and transmit the control instruction and the second data to the electronic tag device through the optimal base station.

4. (Original) The interactive electronic tag device communication system according to claim 3, wherein the background server is further configured to perform deduplication processing on the first data uploaded by the plurality of base stations.

5. (Original) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

6. (Original) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

7. (Original) An interactive electronic tag device communication method, comprising:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

8. (Original) The interactive electronic tag device communication method according to claim 7, wherein transmitting, by the electronic tag device, the first data to the base station comprises:

attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.

9. (Original) The interactive electronic tag device communication method according to claim 7, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises:

attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.

10. (Original) The interactive electronic tag device communication method according to claim 9, further comprising: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.

11. (Original) The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

12. (Original) The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

13. (Currently Amended) A computer device comprising a memory, a processor and a computer program stored on the memory and executable by the processor, wherein the processor implements, when executing the computer program, the method according to ~~any one of claims 7 to 12~~ claim 7.

14. (Currently Amended) A computer-readable storage medium storing therein a computer program for executing ~~the method according to any one of claims 7 to 12~~ an interactive electronic tag device communication method comprising:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

15. (New) The computer-readable storage medium according to claim 14, wherein transmitting, by the electronic tag device, the first data to the base station comprises:

attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.

16. (New) The computer-readable storage medium according to claim 14, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises:

attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.

17. (New) The computer-readable storage medium according to claim 16, wherein the computer program further executes the act of: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.

18. (New) The computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

19. (New) The computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

Remarks

Applicant respectfully requests that the Examiner enter the amendments prior to examining the application. The specification has been amended to update the priority information. The abstract has been amended to conform to the formality requirement. Claims 2, 3, 13, and 14 have been amended to more clearly recite the claimed subject matter or correct the claim dependency. New claims 15-19 have been added. No new matter has been introduced.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
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Houston, TX 77042
USA
Phone: 1-281-704-7896

证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：201810706496.2

申　请　类　型：发明专利

发明 创造 名称：交互式电子标签设备通信系统及方法

申　　请　　日：2018.07.02

申　　请　　人：浙江汉朔电子科技有限公司

发明人或设计人：梁敏、侯世国、陈骏、姜起、赵洋

局长

申长雨

2019 年 01 月 31 日

2018107064962

权 利 要 求 书

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1. 一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的 ID。

3. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4. 如权利要求 3 所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7. 一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的 ID，将所述电子标签设备的 ID 和所述第一数据发送至基站。

9. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至

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所述后台服务器。

10. 如权利要求 9 所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

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说　　明　　书

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交互式电子标签设备通信系统及方法

技术领域

本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

基于 2.4GHz 的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段（以下称电子标签设备的“监听周期”，例如 30s）自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间（以下称基站设备的“唤醒时长”，例如 35s）对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期（例如 20s）来减少功耗，以提升电池寿命。

在实际使用场景中，例如当操作人员在电子标签设备面前操作（向电子标签设备发送指令，更改数据等），希望电子标签设备可以即时反馈（一般 3s 以内）。为了提升电子标签设备的响应速度，需要缩短监听周期（例如 1s）。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是 20s，而现有监听周期是 1s，在现有监听周期下，电池功耗是原来的 20 倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

该交互式电子标签设备通信方法包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通

信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

图 2 是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

图 3 是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图 1 所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第

一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路（通道 1）为 2.4G RF（Radio Frequency，射频）通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路（通道 2）为其他无线通信模块，例如磁开关，NFC 开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据（包括屏幕更新、数据更新、设备控制、状态变更等）和接收数据（例如设备状态信息查询、读取公共区域数据、读取私有区域数据等）。

在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

在本发明实施例中，该电子标签设备拥有唯一的标签 ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的 ID，将附加了 ID 的第一数据发送至所述基站。

在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台

服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

图 2 是本发明实施例的交互式电子标签设备通信方法流程图，如图 2 所示，包括：

步骤 201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

步骤 202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

步骤 203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

步骤 204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

步骤 205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

步骤 206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第

一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图 3 所示：

1.外部设备通过通道 1 发送第一数据至电子标签设备；

2a. 电子标签设备发送上行数据（第一数据）和标签 ID 至多个基站；

2b. 电子标签设备进入快速监听模式；

3. 多个基站转发第一数据和各自的能量值给后台服务器；

4a.后台服务器对接收的多个第一数据进行去重处理；

4b. 后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

4c. 后台服务器选择最优基站下发相应的控制指令及第二数据；

5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

6. 电子标签设备通过通道 2 接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

本发明主要解决在大型的电子标签使用场景下（20000 及以上电子标签），实现快速的电子标签通信（3s 以内），同时不对电池寿命产生显著的影响。

本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质（包括但不限于磁盘存储器、CD-ROM、光学存储器等）上实施的计算机程序产品的形式。

本发明是参照根据本发明实施例的方法、设备（系统）、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方

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框中指定的功能的装置。

这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

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说 明 书 附 图

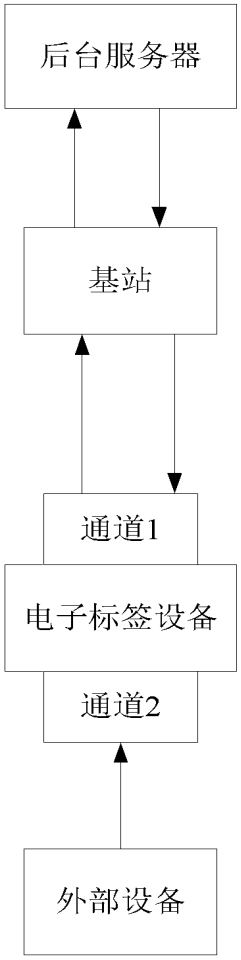


图 1

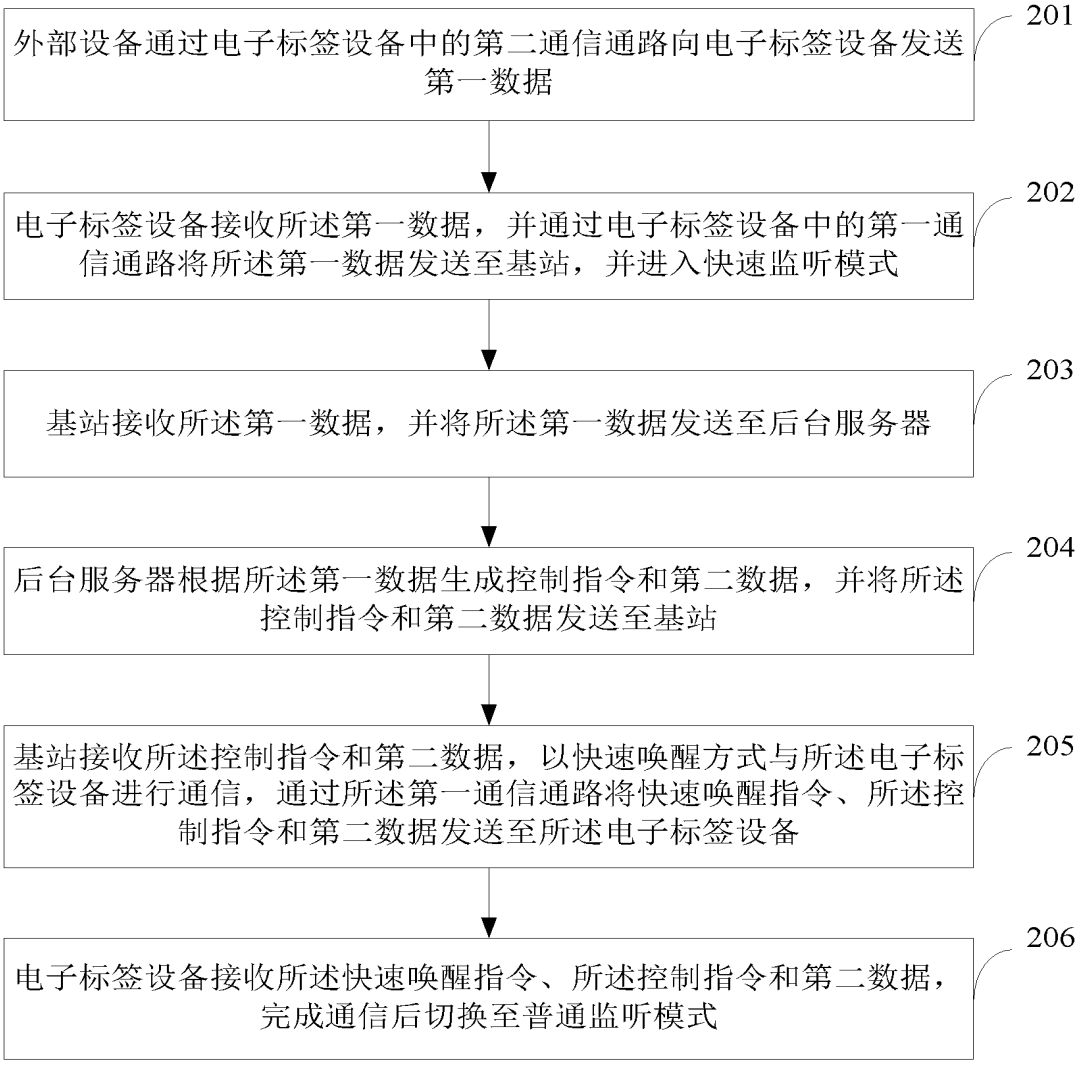

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据
201
电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式
202
基站接收所述第一数据，并将所述第一数据发送至后台服务器
203
后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站
204
基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备
205
电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式
206

图 2

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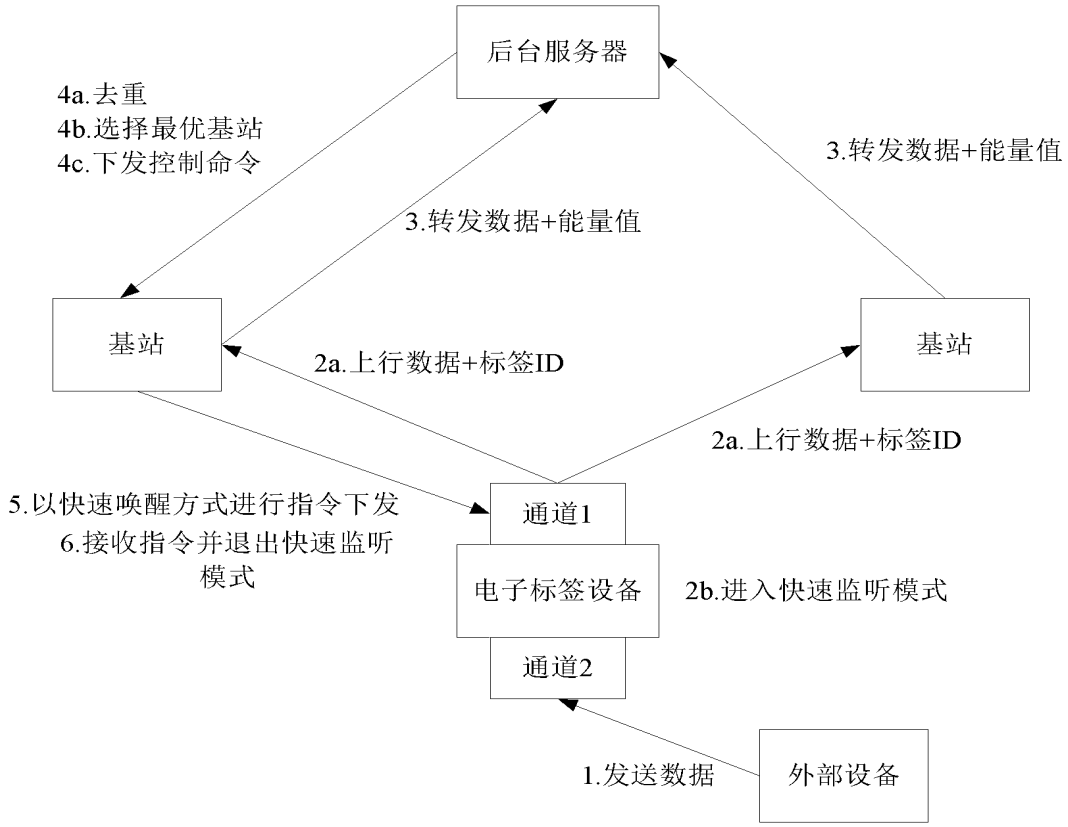


图 3

WIPO
WORLD
INTELLECTUAL PROPERTY
ORGANIZATION

DOCUMENT MADE AVAILABLE UNDER THE PATENT COOPERATION TREATY (PCT)

International application number:		**PCT/CN2019/070431**
International filing date:		**04 January 2019 (04.01.2019)**
Document type:		**Certified copy of priority document**
Document details:	Country/Office:	**CN**
	Number:	**201810706496.2**
	Filing date:	**02 July 2018 (02.07.2018)**
Date of receipt at the International Bureau:		**15 February 2019 (15.02.2019)**

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a),(b) or (b-*bis*)

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1211 Geneva 20, Switzerland
www.wipo.int

PCT请求书

打印件(原件为电子形式)

0	由受理局填写	
0-1	国际申请号	PCT/CN2019/070431
0-2	国际申请日	2019年 1月 04日 (04.01.2019)
0-3	受理局名称和“PCT国际申请”	RO/CN

0-4	PCT/RO/101表 PCT请求书	
0-4-1	软件版本	CEPCT 版本 10.20.31 MT/FOP 20140331/0.20.5.21
0-5	请求 下列签字人请求按照专利合作条约的规定处理本国际申请	
0-6	申请人指定的受理局	中华人民共和国国家知识产权局 (RO/CN)
0-7	申请人或代理人的档案号	GAI18CN2096P
I	发明名称	交互式电子标签设备通信系统及方法
II	申请人	
II-1	该人是	申请人 (applicant only)
II-2	是对下列国家的申请人	所有指定国 (all designated States)
II-4zh	名称	浙江汉朔电子科技有限公司
II-4en	Name:	ZHEJIANG HANSHOW TECHNOLOGY CO. LTD
II-5zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
II-5en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
II-6	国籍	中国 CN
II-7	居所	中国 CN
II-8	电话号码	
II-9	传真号码	
II-11	申请人在专利局的登记号	
III-1	申请人和/或发明人	
III-1-1	该人是	发明人 (inventor only)
III-1-3	对下列国家的发明人	
III-1-4zh	姓名:	梁 敏
III-1-4en	Name (LAST, First):	LIANG, Min
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III-2	申请人和/或发明人	
III-2-1	该人是	发明人 (inventor only)
III-2-3	对下列国家的发明人	
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III-2-4 en	Name (LAST, First):	HOU, Shiguo
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III-3	申请人和/或发明人	
III-3-1	该人是	发明人 (inventor only)
III-3-3	对下列国家的发明人	
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III-3-4 en	Name (LAST, First):	CHEN, Jun
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III-3-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
III-4	申请人和/或发明人	
III-4-1	该人是	发明人 (inventor only)
III-4-3	对下列国家的发明人	
III-4-4 zh	姓名:	姜 起
III-4-4 en	Name (LAST, First):	JIANG, Qi
III-4-5 zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
III-4-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China
III-5	申请人和/或发明人	
III-5-1	该人是	发明人 (inventor only)
III-5-3	对下列国家的发明人	
III-5-4 zh	姓名:	赵 洋
III-5-4 en	Name (LAST, First):	ZHAO, Yang
III-5-5 zh	地址	中国浙江省嘉兴市 秀洲区智富中心33幢 314000
III-5-5 en	Address	Building 33, Zhifuzhongxin, Xiuzhou District Jiaxing, Zhejiang 314000 China

PCT请求书

打印件(原件为电子形式)

IV-1	代理人,共同代表或通信地址	
	下列人员被委托/已经被委托为代表申请人在主管国际单位办理事务的	代理人 (agent)
IV-1-1zh	名称	北京三友知识产权代理有限公司
IV-1-1en	Name:	BEIJING SANYOU INTELLECTUAL PROPERTY AGENCY LTD.
IV-1-2zh	地址	中国北京市 金融街35号国际企业大厦A座16层 100033
IV-1-2en	Address:	16th Fl.,Block A,Corporate Square,No.35 Jinrong Street Beijing 100033 China
IV-1-3	电话号码	86-10-88091921
IV-1-4	传真号码	86-10-88091920
IV-1-5	电子邮址	sy@sanyouip.com
IV-1-5(a)	电子邮件授权 授权受理局、国际检索单位、国际局和国际初步审查单位，如果其愿意，使用本电子邮件地址发送有关本国际申请的通知书：	作为随后纸件通知书的预送本
IV-1-6	代理人登记号	11127
V	国家的指定	
V-1	根据细则4.9(a)，提交本请求书即为，指定在国际申请日受PCT约束的所有成员国，以要求获得可以获得的所有保护类型，适用情况下，要求获得地区专利和国家专利。	
V-2	V-2栏只可用于（不可悔改地）排除对有关国家的指定，如果本国际申请在提交时或者在根据细则26之二.1的后续程序中，第VI栏包含有对在该有关国家提出的在先国家申请的优先权要求，以避免被要求优先权的该在先国家申请因国家法律而停止效力。	
VI-1	要求在先国家申请的优先权	
VI-1-1	申请日	2018年 7月 02日 (02.07.2018)
VI-1-2	号码	201810706496.2
VI-1-3	国家	中国 CN
VI-2	优先权文件请求 请受理局准备并向国际局送交上述在先申请中标号如下的在先申请的证明副本:	VI-1
VI-3	援引加入 : 如果条约11（1）(iii)（d）或（e）规定的国际申请的某一项目，或者细则20.5(a)规定的说明书，权利要求书或附图的某一部分不包含在本国际申请中，但是全部包含在一个在先申请中，并且在受理局首次收到条约11（1）(iii)规定的一个或多个项目之日要求了该在先申请的优先权，则该项目或该部分可以依据细则20.6确认，为细则20.6的目的援引加入到该国际申请中。	
VII-1	选定的国际检索单位	中华人民共和国国家知识产权局 (ISA/CN)

PCT请求书

打印件(原件为电子形式)

VIII	声明	声明数目	
VIII-1	关于发明人身份的声明	–	
VIII-2	关于申请人在国际申请日有权申请和被授予专利的声明	–	
VIII-3	关于申请人在国际申请日有权要求在先申请的优先权的说明	–	
VIII-4	发明人资格声明(仅为指定美国目的)	–	
VIII-5	关于不影响新颖性的公开或缺乏新颖性的例外的声明	–	
IX	清单	页数	附以电子文档
IX-1	请求书(包括声明页)	4	✓
IX-2	说明书	7	✓
IX-3	权利要求	3	✓
IX-4	摘要	1	✓
IX-5	附图	3	✓
IX-7	共计	18	
	附件	附以纸件	附以电子文档
IX-8	费用计算页	–	✓
IX-11	总委托书副本	–	✓
IX-18	PCT-SAFE 物理载体	–	–
IX-20	应与摘要一起公布的附图图号	1	
IX-21	国际申请所用语言	中文	
X-1	申请人，代理人或共同代表的签字	/sanyou/	
X-1-1	名称	北京三友知识产权代理有限公司	
X-1-2	签字人姓名	北京三友知识产权代理有限公司	
X-1-3	还要注明此人是以什么名义签字的	代理人	

由受理局填写

10-1	据称的国际申请文件的实际收到日期	2019年 1月 04日 (04.01.2019)
10-2	附图:	
10-2-1	收到	
10-2-2	未收到	
10-3	由于随后在期限内收到补充国际申请的文件或附图,更改的实际收到日期	
10-4	在期限内收到根据PCT第11(2)条所进行的改正的日期	
10-5	国际检索单位	ISA/CN
10-6	检索本的传送推迟到缴纳检索费后	

由国际局填写

11-1	国际局收到登记本的日期	

PATENT COOPERATION TREATY **TRANSLATION**

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)*	**22 March 2019**
Applicant's or agent's file reference **GAI18CN2096P**	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CN2019/070431	**04 January 2019**	**02 July 2018**

International Patent Classification (IPC) or both national classification and IPC
H04W 52/02(2009.01)i

Applicant
ZHEJIANG HANSHOW TECHNOLOGY CO. LTD

1. This opinion contains indications relating to the following items:
   - ☑ Box No. I Basis of the opinion
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☑ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

   If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

   If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

   For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer

Form PCT/ISA/237 (Cover sheet) (January 2015)

TRANSLATION

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CN2019/070431

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
   - [✓] the international application in the language in which it was filed.
   - [ ] a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. [ ] This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).

3. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
   - a. [ ] forming part of the international application as filed:
     - [ ] in the form of an Annex C/ST.25 text file.
     - [ ] on paper or in the form of an image file.
   - b. [ ] furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
   - c. [ ] furnished subsequent to the international filing date for the purposes of international search only:
     - [ ] in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
     - [ ] on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. [ ] In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

TRANSLATION

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CN2019/070431

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-14	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims	None	NO

2. Citations and explanations :

[1] D1: CN 107343259 A

[2] D1 is the closest prior art document, and discloses (see description, paragraphs [0005]-[0009]): a wireless electronic tag system, characterized in that: the system comprises a server, a wireless base station, and a wireless electronic tag; wherein the server is used for receiving an update operation instruction sent by a user operation terminal and issuing the update operation instruction to the wireless base station in the form of a data stream; the wireless base station is used for receiving, caching, and decrypting the data stream of the update operation instruction issued by the sever, obtaining an ID number of the wireless electronic tag that needs to be updated and updated content information, packing separately and performing data encryption processing so as to respectively generate a group awakening data packet, a tag ID number filter packet, a tag updating time timer packet, and a tag updating data packet, and issuing same to each wireless electronic tag; the wireless electronic tag is used for receiving the group awakening data packet, the tag ID number filter packet, the tag updating time timer packet, and the tag updating data packet issued by the wireless base station, and determining whether the wireless electronic tag needs to be updated by decrypting the tag ID number filter packet after the wireless electronic tag is awakened by the group awakening data packet: if not, entering a sleep state; if yes, at an update time point obtained by decrypting the tag updating time timer packet, updating its own display screen according to updated content obtained by decrypting the tag updating data packet, wherein before the update time point is not reached, the wireless electronic tag enters the sleep state, and update time points of wireless electronic tags are different.

[3] Novelty

[4] Claims 1 and 7 at least differ from D1 in that: (1) an external device sends first data to an electronic tag device by means of a second communication path; the electronic tag device receives the first data, sends the first data to a base station by means of the first communication path, and enters a fast monitoring mode.

[5] D1 does not explicitly or implicitly disclose the technical solutions of independent claims 1 and 7. Therefore, claims 1 and 7 are novel in the sense of PCT Article 33(2). Accordingly, dependent claims 2-6 and 8-12 are also novel in the sense of PCT Article 33(2).

[6] Claims 13 and 14 refer to preceding claims which are novel. Therefore, claims 13 and 14 are also novel in the sense of PCT Article 33(2).

[7] Inventive step

[8] It would not be possible for a person skilled in the art to obviously arrive at the technical solutions of claims 1-12 from different combinations of D1 and common general knowledge. Therefore, claims 1-12 involve an inventive step in the sense of PCT Article 33(3).

[9] Claims 13 and 14 refer the preceding claims which involve an inventive step. Therefore, claims 13 and 14 also involve an inventive step in the sense of PCT Article 33(3).

[10] Industrial applicability

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

[11] The technical solutions of claims 1-14 can be made or used in industry, and therefore, claims 1-14 are industrially applicable in the sense of PCT Article 33(4).

专 利 合 作 条 约

发信人：国际检索单位

收信人：
100033
中国北京市金融街35号国际企业大厦A座16层

北京三友知识产权代理有限公司

PCT

国际检索单位书面意见

(PCT细则43之二 .1)

发文日 (年/月/日)	2019年 3月 22日
申请人或代理人的档案号	GAI18CN2096P
关于后续行为	见下面第2段
国际申请号	PCT/CN2019/070431
国际申请日 (年/月/日)	2019年 1月 4日
优先权日 (年/月/日)	2018年 7月 2日
国际专利分类（IPC）或国家分类及IPC	H04W 52/02(2009.01)i
申请人	浙江汉朔电子科技有限公司

1. 本意见包括关于下列各项标明的内容：

- [x] 第I栏 意见的基础
- [ ] 第II栏 优先权
- [ ] 第III栏 不做出关于新颖性、创造性和工业实用性的意见
- [ ] 第IV栏 缺乏发明的单一性
- [x] 第V栏 按照细则43之二.1(a)(i)关于新颖性、创造性或工业实用性的推断性声明；支持这种声明的引证和解释
- [ ] 第VI栏 某些引用的文件
- [ ] 第VII栏 国际申请中的某些缺陷
- [ ] 第VIII栏 对国际申请的某些意见

2. **后续行为**

如果提出初步审查要求书，本次意见将被视为国际初步审查单位(IPEA)的一次书面意见，除非申请人选择的国际初步审查单位非本机构，而且所选国际初步审查单位已按照细则66.1之二(b)通知国际局将不考虑国际检索单位的书面意见时例外。

如本书面意见被视为国际初步审查单位的书面意见，则请申请人在自PCT/ISA/220表发文日起3个月或自优先权日起22个月内（以后届满者为准）向国际初步审查单位提交书面答复并提交修改（如适用）。

进一步的选择参见PCT/ISA/220表。

ISA/CN的名称和邮寄地址	完成本意见的日期	受权官员
中国国家知识产权局 中国北京市海淀区蓟门桥西土城路6号 100088	2019年 3月 18日	陈晓霞
传真号 （86－10）62019451		电话号码 (86-512) 88996090

表 PCT/ISA/237 (扉页) (2015年1月)

国际检索单位书面意见

国际申请号
PCT/CN2019/070431

第I栏 意见的基础

1. 关于**语言**，本意见的制定基于：
   - [x] 国际申请提交时使用的语言。
   - [ ] 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则12.3(a)和23.1(b))。
2. [ ] 本意见的制定考虑了本单位许可或被通知的根据细则91所做出的**明显错误更正**（细则 43之二1（a））。
3. [ ] 关于在国际申请中公开的任何**核苷酸和/或氨基酸序列**，本意见是基于下列序列表做出的：
   a. [ ] 作为国际申请的一部分提交的：
      - [ ] 附件C/ST.25文本文件形式
      - [ ] 纸件或图形文件形式
   b. [ ] 根据细则13之三.1(a)仅为国际检索目的以附件C/ST.25文本文件形式与国际申请同时提交的：
   c. [ ] 仅为国际检索目的在国际申请日之后提交的：
      - [ ] 附件C/ST.25文本文件形式（细则13之三.1(a)）
      - [ ] 纸件或图形文件形式（细则13之三.1(b)和行政规程第713段）
4. [ ] 另外，在提交/提供了多个版本或副本的序列表的情况下，提供了关于随后提交的或附加的副本中的信息与申请时提交的作为申请一部分的序列表的信息相同或未超出申请时提交的申请中的信息范围（如适用）的所需声明。
5. 补充意见：

国际检索单位书面意见

国际申请号
PCT/CN2019/070431

第V栏 按细则43之二.1（a）（i）关于新颖性、创造性或工业实用性的推测性声明；支持这种声明的引证和解释

1. 声明

新颖性 (N)	权利要求	1-14	是
	权利要求	无	否
创造性 (IS)	权利要求	1-14	是
	权利要求	无	否
工业实用性 (IA)	权利要求	1-14	是
	权利要求	无	否

2. 引证和解释：

[1] D1:CN107343259A

[2] D1为最接近的现有技术，公开了（参见说明书第[0005]段-第[0009]段）：一种无线电子标签系统，其特征在于：它包括服务器、无线基站、无线电子标签，其中，服务器用于接收用户操作终端发出的更新操作指令，将更新操作指令以数据流形式下发至无线基站；无线基站用于接收、缓存并解密服务器下发的更新操作指令数据流，获取需要更新的无线电子标签的ID号及更新内容信息，单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向每个无线电子标签下发；无线电子标签用于接收无线基站下发的群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，以及在被群唤醒数据包唤醒后，通过解密标签ID号过滤包判断出是否需要更新，若不需要更新，则进入睡眠状态；若需要更新，则在通过解密标签更新时间计时器包获得的更新时间点，按照解密标签更新数据包获得的更新内容对自身显示屏进行更新，其中，在未到达更新时间点之前，无线电子标签进入睡眠状态，以及各无线电子标签的更新时间点不同。

[3] 新颖性

[4] 权利要求1、7与D1的区别至少在于：（1）外部设备通过第二通信通路向电子标签设备发送第一数据，电子标签设备接收第一数据，并通过第一通信通路将第一数据发送至基站，并进入快速监听模式。

[5] D1没有明确或隐含地公开独立权利要求1、7的技术方案，因此权利要求1、7具备PCT条约33（2）规定的新颖性。相应地，从属权利要求2-6、8-12也具备PCT条约33（2）规定的新颖性。

[6] 权利要求13、14引用了之前具备新颖性的权利要求，因此，也具备PCT条约33（2）规定的新颖性。

[7] 创造性

[8] 本领域技术人员从D1以及公知常识的不同组合都不能显而易见地得出权利要求1-12的技术方案。因此权利要求1-12具备PCT条约33（3）规定的创造性。

[9] 权利要求13、14引用了在前具备创造性的权利要求，因此也具备PCT条约33（3）规定的创造性。

[10] 工业实用性

[11] 权利要求1-14的技术方案可以在工业中制造或使用，因此权利要求1-14具备PCT条约33（4）规定的工业实用性。

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国 际 局

(43) 国际公布日
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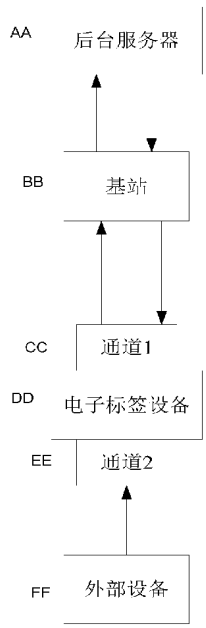
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(54) **Title:** INTERACTIVE ELECTRONIC LABEL DEVICE COMMUNICATION SYSTEM AND METHOD

(54) **发明名称**: 交互式电子标签设备通信系统及方法



AA Background server
BB Base station
CC Channel 1
DD Electronic label device
EE Channel 2
FF External device

图 1

(57) **Abstract:** The present invention provides an interactive electronic label device communication system and method, comprising: a background server, a base station, an electronic label device, and an external device. The external device sends first data to the electronic label device by means of a second communication channel of the electronic label device; the electronic label device receives the first data and sends same to the base station by means of a first communication channel therein, and enters a fast listening mode; the base station receives the first data and sends same to the background server; the background server generates a control instruction and second data according to the first data and sends same to the base station; the base station receives a fast wake-up instruction, the control instruction, and the second data and sends same to the electronic label device by means of the first communication channel; and after receiving the fast wake-up instruction, the control instruction, and the second data and completing communication, the electronic label device switches to a normal listening mode. The solution can implement fast electronic label communication without significant influence on battery life.

(57) **摘要**: 本发明提供一种交互式电子标签设备通信系统及方法，包括：后台服务器、基站、电子标签设备和外部设备；外部设备通过电子标签设备的第二通信通路向电子标签设备发送第一数据；电子标签设备接收并通过其中的第一通信通路将第一数据发送至基站，并进入快速监听模式；基站接收并将第一数据发送至后台服务器；后台服务器根据第一数据生成控制指令和第二数据并将其发送至所述基站；基站接收并通过第一通信通路将快速唤醒指令、控制指令和第二数据发送至电子标签设备；电子标签设备接收快速唤醒指令、控制指令和第二数据完成通信后切换至普通监听模式。该方案可以实现快速的电子标签通信，同时不对电池寿命产生显著的影响。

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[见续页]

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(81) 指定国(除另有指明，要求每一种可提供的国家保护)：AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW。

(84) 指定国(除另有指明，要求每一种可提供的地区保护)：ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), 欧亚 (AM, AZ, BY, KG, KZ, RU, TJ, TM), 欧洲 (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG)。

本国际公布:

— 包括国际检索报告(条约第21条(3))。

交互式电子标签设备通信系统及方法

本申请要求 2018 年 07 月 02 日递交的申请号为 201810706496.2、发明名称为“交互式电子标签设备通信系统及方法”的中国专利申请的优先权，其全部内容通过引用结合在本申请中。

技术领域

本发明涉及数据通信技术领域，特别涉及一种交互式电子标签设备通信系统及方法。

背景技术

基于 2.4GHz 的电子标签设备的无线通信协议，常规的做法是电子标签设备的射频模块每隔一个时间段（以下称电子标签设备的“监听周期”，例如 30s）自动醒来，监听是否有通信请求，如果有通信请求，则进入数据传输模式进行数据接收，进而执行或存储接收到的指令及数据。而与之通信的基站设备，如果要与某一个电子标签设备进行通信，需要首先以超过电子标签设备的监听周期的时间（以下称基站设备的“唤醒时长”，例如 35s）对该电子标签设备进行唤醒，然后进行指令和数据传输。在这种情况下，向一个电子标签设备发送指令，需要至少大于“唤醒时长”的时间范围，才能完成与该设备的通信。由于电子标签设备在实际应用中的体积、重量、成本等限制，其可容纳的电池及电量是有限的，而电子标签设备频繁的监听会导致功耗的增加。为了兼顾通信速度与电池寿命，往往会采用较长的监听周期（例如 20s）来减少功耗，以提升电池寿命。

在实际使用场景中，例如当操作人员在电子标签设备面前操作（向电子标签设备发送指令，更改数据等），希望电子标签设备可以即时反馈（一般 3s 以内）。为了提升电子标签设备的响应速度，需要缩短监听周期（例如 1s）。在大型电子标签设备的使用场景下，由于不确定需要交互的是哪些电子标签设备，所以只能把所有的电子标签设备的监听周期均缩短，以满足客户体验要求。而通过这种方式会导致电子标签设备监听唤醒信号的功耗大幅增加，例如原有监听周期是 20s，而现有监听周期是 1s，在现有监听周期下，电池功耗是原来的 20 倍，这种情况会对电池寿命有很大的影响。对于大型的电子标签设备使用场景，会导致较为频繁的更换，提高人力成本。

发明内容

本发明实施例提供了一种交互式电子标签设备通信系统及方法，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

该交互式电子标签设备通信方法包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

在本发明实施例中，只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

附图说明

为了更清楚地说明本发明实施例或现有技术中的技术方案，下面将对实施例或现有技术描述中所需要使用的附图作简单地介绍，显而易见地，下面描述中的附图仅仅是本发明的一些实施例，对于本领域普通技术人员来讲，在不付出创造性劳动的前提下，还可以根据这些附图获得其他的附图。

图 1 是本发明实施例提供的一种交互式电子标签设备通信系统结构图；

图 2 是本发明实施例提供的一种交互式电子标签设备通信方法流程图；

图 3 是本发明实施例提供的一种交互式电子标签设备通信系统结构及数据交互图。

具体实施方式

下面将结合本发明实施例中的附图，对本发明实施例中的技术方案进行清楚、完整地描述，显然，所描述的实施例仅是本发明一部分实施例，而不是全部的实施例。基于

本发明中的实施例，本领域普通技术人员在没有做出创造性劳动前提下所获得的所有其他实施例，都属于本发明保护的范围。

在本发明实施例中，提供了一种交互式电子标签设备通信系统及方法，如图 1 所示，该交互式电子标签设备通信系统包括：后台服务器、基站、电子标签设备和外部设备；其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

在本发明实施例中，该电子标签设备拥有拥有两个通信通路，第一通信通路（通道 1）为 2.4G RF（Radio Frequency，射频）通路，电子标签设备通过该第一通信通路与基站和后台服务器进行数据交互，用于后台服务器、基站向电子标签设备发送控制指令及数据，包括屏幕更新、数据更新、设备控制、状态变更、设备状态信息查询等。第二通信通路（通道 2）为其他无线通信模块，例如磁开关，NFC 开关，红外开关等，电子标签设备通过该第二通信通路与外部设备进行数据交互，用于外部设备向电子标签设备发送数据（包括屏幕更新、数据更新、设备控制、状态变更等）和接收数据（例如设备状态信息查询、读取公共区域数据、读取私有区域数据等）。

在默认情况下，电子标签设备以第一通信通路支持的普通监听模式进行监听。基站以普通唤醒方式与电子标签设备通信。

在本发明实施例中，该电子标签设备拥有唯一的标签 ID，因此，电子标签设备在将所述第一数据发送至所述基站时，还会在所述第一数据上附加所述电子标签设备的 ID，将附加了 ID 的第一数据发送至所述基站。

在本发明实施例中，外部设备通过第二通信通路向电子标签发送的数据，可以由电子标签设备通过第一通信通路进行转发，以实现交互。在实际数据转发时，第一数据可能会被多个基站接收到，此时，所述多个基站在将所述第一数据发送至所述后台服务器时，会在所述第一数据上附加上所述多个基站各自的能量值信息。后台服务器会对多个基站上传的所述第一数据进行解析和去重处理，然后根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

在本发明实施例中，电子标签设备不可能无时无刻处于快速唤醒模式，当在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则所述电子标签设备会切换至普通监听模式。或者是，在预设时间范围内接收到了所述快速唤醒指令，但未接收到所述控制指令和第二数据，则所述电子标签设备会切换至普通监听模式。

基于同一发明构思，本发明实施例中还提供了一种交互式电子标签设备通信方法，如下面的实施例所述。由于交互式电子标签设备通信方法解决问题的原理与交互式电子标签设备通信装置相似，因此交互式电子标签设备通信方法的实施可以参见交互式电子标签设备通信装置的实施，重复之处不再赘述。

图 2 是本发明实施例的交互式电子标签设备通信方法流程图，如图 2 所示，包括：

步骤 201：外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

步骤 202：电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

步骤 203：基站接收所述第一数据，并将所述第一数据发送至后台服务器；

步骤 204：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

步骤 205：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

步骤 206：电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

在本发明实施例中，上述方法只是提到有一个基站接收到电子标签设备发送的第一数据时的方法流程，在实际数据发送时，第一数据可能会被多个基站接收到，此时该方法的过程如图 3 所示：

1.外部设备通过通道 1 发送第一数据至电子标签设备；

2a. 电子标签设备发送上行数据（第一数据）和标签 ID 至多个基站；

2b. 电子标签设备进入快速监听模式；

3. 多个基站转发第一数据和各自的能量值给后台服务器；

4a.后台服务器对接收的多个第一数据进行去重处理；

4b. 后台服务器根据多个基站各自的能量值从多个基站选择出最优基站；

4c. 后台服务器选择最优基站下发相应的控制指令及第二数据；

5.被选择的最优基站接收控制指令及第二数据后，以快速唤醒模式与电子标签设备进行通信，进行指令下发；

6. 电子标签设备通过通道 2 接收控制指令及第二数据，完成快速通信，并退回到正常监听模式。

本发明实施例还提供了一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，所述处理器执行所述计算机程序时实现上述所述交互式电子标签设备通信方法。

本发明实施例还提供了一种计算机可读存储介质，所述计算机可读存储介质存储有执行上述所述交互式电子标签设备通信方法的计算机程序。

综上所述，本发明只需要通过在电子标签设备中设定普通监听模式和快速监听模式，在基站内设定普通唤醒方式和快速唤醒方式，就能满足客户体验要求，无需把所有的电子标签设备的监听周期缩短，不会增加电池功耗，不会提高人力成本。

本发明主要解决在大型的电子标签使用场景下（20000 及以上电子标签），实现快速的电子标签通信（3s 以内），同时不对电池寿命产生显著的影响。

本领域内的技术人员应明白，本发明的实施例可提供为方法、系统、或计算机程序产品。因此，本发明可采用完全硬件实施例、完全软件实施例、或结合软件和硬件方面的实施例的形式。而且，本发明可采用在一个或多个其中包含有计算机可用程序代码的计算机可用存储介质（包括但不限于磁盘存储器、CD-ROM、光学存储器等）上实施的计算机程序产品的形式。

本发明是参照根据本发明实施例的方法、设备（系统）、和计算机程序产品的流程图和/或方框图来描述的。应理解可由计算机程序指令实现流程图和/或方框图中的每一流程和/或方框、以及流程图和/或方框图中的流程和/或方框的结合。可提供这些计算机程序指令到通用计算机、专用计算机、嵌入式处理机或其他可编程数据处理设备的处理器以产生一个机器，使得通过计算机或其他可编程数据处理设备的处理器执行的指令产生用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的装置。

这些计算机程序指令也可存储在能引导计算机或其他可编程数据处理设备以特定方式工作的计算机可读存储器中，使得存储在该计算机可读存储器中的指令产生包括指令装置的制造品，该指令装置实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能。

这些计算机程序指令也可装载到计算机或其他可编程数据处理设备上，使得在计算机或其他可编程设备上执行一系列操作步骤以产生计算机实现的处理，从而在计算机或其他可编程设备上执行的指令提供用于实现在流程图一个流程或多个流程和/或方框图一个方框或多个方框中指定的功能的步骤。

以上所述仅为本发明的优选实施例而已，并不用于限制本发明，对于本领域的技术人员来说，本发明实施例可以有各种更改和变化。凡在本发明的精神和原则之内，所作的任何修改、等同替换、改进等，均应包含在本发明的保护范围之内。

权利要求书

1. 一种交互式电子标签设备通信系统，其特征在于，包括：后台服务器、基站、电子标签设备和外部设备；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式；

所述外部设备用于：通过第二通信通路向电子标签设备发送第一数据；

所述电子标签设备用于：接收所述第一数据，并通过所述第一通信通路将所述第一数据发送至所述基站，并进入快速监听模式；

所述基站用于：接收所述第一数据，并将所述第一数据发送至所述后台服务器；

所述后台服务器用于：根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至所述基站；

所述基站还用于：接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

所述电子标签设备还用于：接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式。

2. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备具体用于：在将所述第一数据发送至所述基站时，在所述第一数据上附加所述电子标签设备的 ID。

3. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，当所述第一数据被多个基站接收到时，所述多个基站用于：在将所述第一数据发送至所述后台服务器时，在所述第一数据上附加上所述多个基站各自的能量值信息；

所述后台服务器具体用于：根据所述多个基站各自的能量值信息确定多个基站中的最优基站，将所述控制指令和第二数据通过所述最优基站发送至所述电子标签设备。

4. 如权利要求 3 所述的交互式电子标签设备通信系统，其特征在于，所述后台服务器还用于：对多个基站上传的所述第一数据进行去重处理。

5. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

6. 如权利要求 1 所述的交互式电子标签设备通信系统，其特征在于，所述电子标签设备还用于：在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

7. 一种交互式电子标签设备通信方法，其特征在于，包括：

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；

电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式；

基站接收所述第一数据，并将所述第一数据发送至后台服务器；

后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站；

基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备；

电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式；

其中，电子标签设备包括两个通信通路：第一通信通路和第二通信通路，第一通信通路支持两种监听模式：普通监听模式和快速监听模式；基站包括两种唤醒方式：普通唤醒方式和快速唤醒方式。

8. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，电子标签设备将所述第一数据发送至基站，包括：

在所述第一数据上附加所述电子标签设备的 ID，将所述电子标签设备的 ID 和所述第一数据发送至基站。

9. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，基站接收所述第一数据，并将所述第一数据发送至后台服务器，包括：

当所述第一数据被多个基站接收到时，在所述第一数据上附加上所述多个基站各自的能量值信息，多个基站将所述第一数据和所述多个基站各自的能量值信息发送至所述后台服务器。

10. 如权利要求 9 所述的交互式电子标签设备通信方法，其特征在于，还包括：后台服务器对多个基站上传的所述第一数据进行去重处理。

11. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内未接收到所述基站发送的所述快速唤醒指令，则切换至普通监听模式。

12. 如权利要求 7 所述的交互式电子标签设备通信方法，其特征在于，还包括：电子标签设备在预设时间范围内接收到所述快速唤醒指令，但未接收到所述控制指令和第二数据，则切换至普通监听模式。

13. 一种计算机设备，包括存储器、处理器及存储在存储器上并可在处理器上运行的计算机程序，其特征在于，所述处理器执行所述计算机程序时实现权利要求 7 至 12 任一所述方法。

14. 一种计算机可读存储介质，其特征在于，所述计算机可读存储介质存储有执行权利要求 7 至 12 任一所述方法的计算机程序。

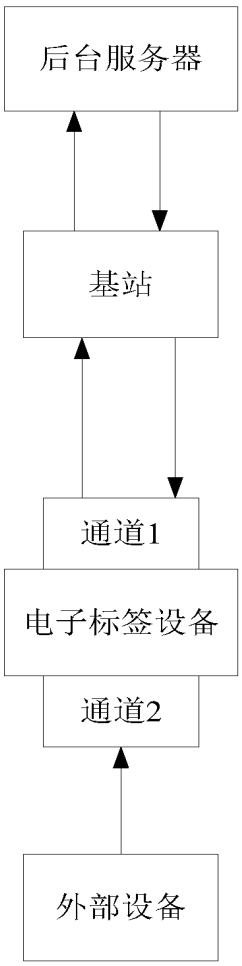


图 1

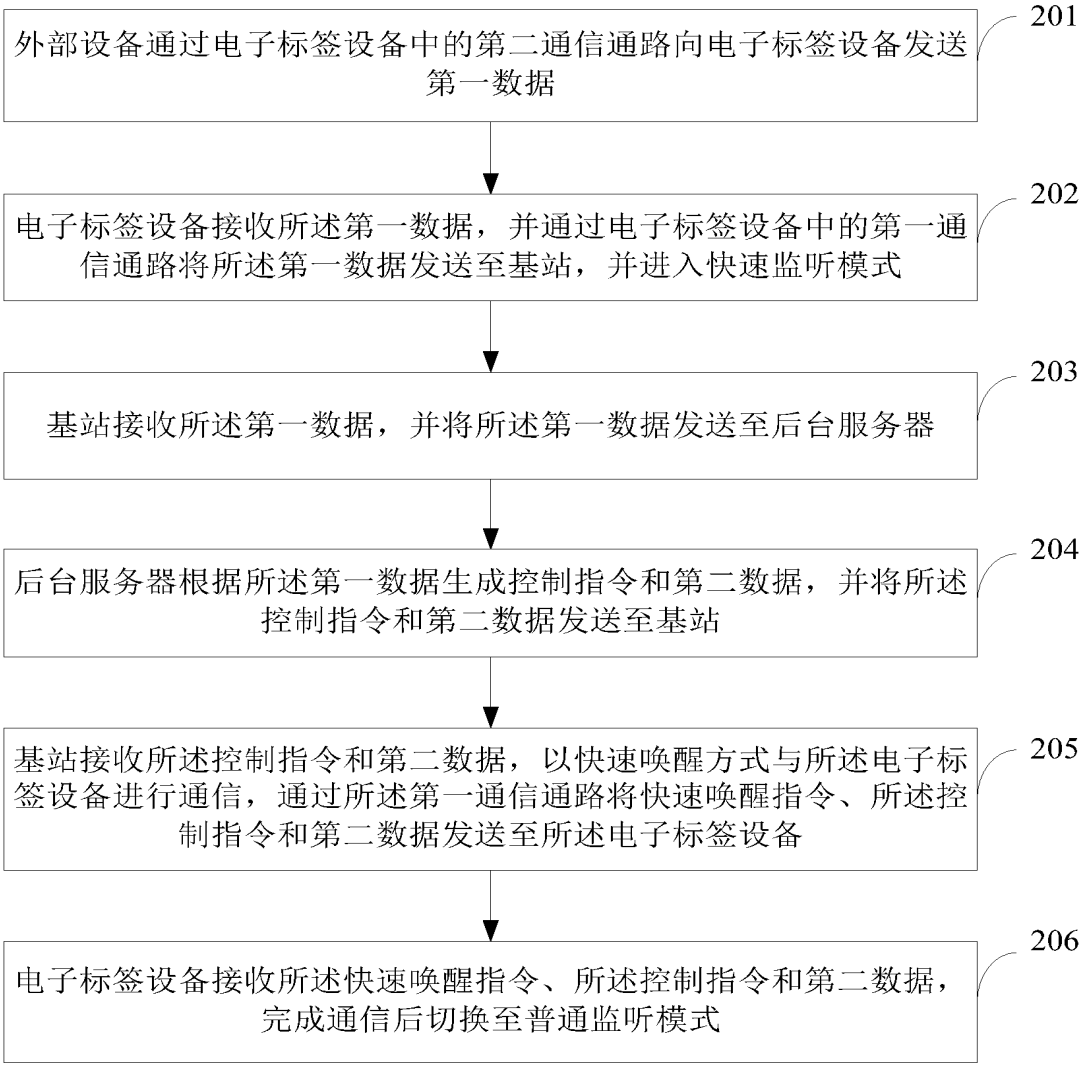

外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据
201
电子标签设备接收所述第一数据，并通过电子标签设备中的第一通信通路将所述第一数据发送至基站，并进入快速监听模式
202
基站接收所述第一数据，并将所述第一数据发送至后台服务器
203
后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站
204
基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信，通过所述第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备
205
电子标签设备接收所述快速唤醒指令、所述控制指令和第二数据，完成通信后切换至普通监听模式
206

图 2

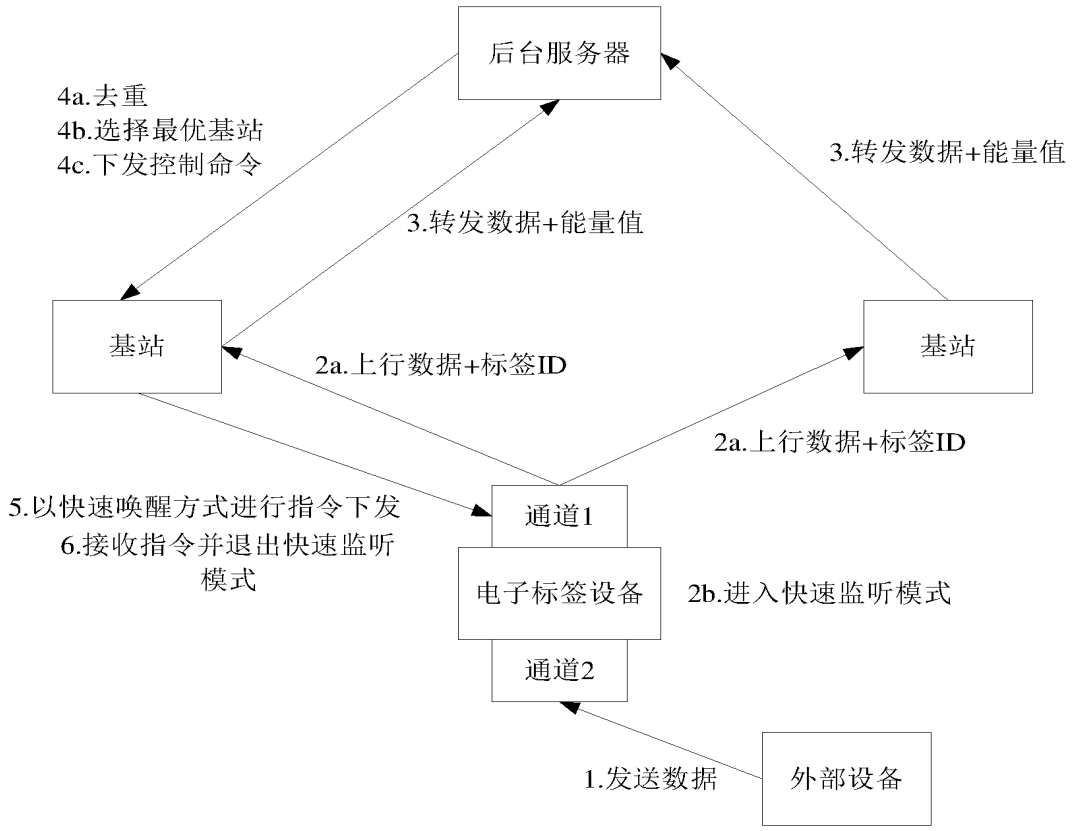

后台服务器
4a.去重
4b.选择最优基站
4c.下发控制命令
3.转发数据+能量值
3.转发数据+能量值
基站
2a.上行数据+标签ID
基站
2a.上行数据+标签ID
5.以快速唤醒方式进行指令下发
6.接收指令并退出快速监听模式
通道1
电子标签设备
2b.进入快速监听模式
通道2
1.发送数据
外部设备

图 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/070431

A. CLASSIFICATION OF SUBJECT MATTER

H04W 52/02(2009.01)i

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)

H04W

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 practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; USTXT; WOTXT; EPTXT; 3GPP; IEEE; IETF: 电子标签, 服务器, 基站, 接入点, 触发, 唤醒, 叫醒, 快速, 周期, 频率, 监听, RFID, server, base station, BS, access point, AP, trigger, active, wake up, quick, fast, period, frequency, monitor, listen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107343259 A (SUZHOU HALATION PHOTONICS CO., LTD.) 10 November 2017 (2017-11-10) description, paragraphs [0005]-[0009]	1-14
A	CN 104219741 A (GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO., LTD.) 17 December 2014 (2014-12-17) entire document	1-14
A	CN 101305625 A (SYMBOL TECHNOLOGIES, INC.) 12 November 2008 (2008-11-12) entire document	1-14

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

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2019	**22 March 2019**

Name and mailing address of the ISA/CN	Authorized officer
National Intellectual Property Administration, PRC (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/070431

Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)			Publication date (day/month/year)
CN	107343259	A	10 November 2017	None			
CN	104219741	A	17 December 2014	None			
CN	101305625	A	12 November 2008	EP	1955560	A1	13 August 2008
				US	2007082714	A1	12 April 2007
				US	7440781	B2	21 October 2008
				WO	2007044253	A1	19 April 2007
				CA	2625166	A1	19 April 2007

国际检索报告

国际申请号
PCT/CN2019/070431

A. 主题的分类

H04W 52/02(2009.01)i

按照国际专利分类(IPC)或者同时按照国家分类和IPC两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

H04W

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用））

CNABS;CNKI;CNTXT;VEN;USTXT;WOTXT;EPTXT;3GPP;IEEE;IETF：电子标签，服务器，基站，接入点，触发，唤醒，叫醒，快速，周期，频率，监听，RFID，server，base station，BS，access point，AP，trigger，active，wake up，quick，fast，period，frequency，monitor，listen

C. 相关文件

类 型*	引用文件，必要时，指明相关段落	相关的权利要求
A	CN 107343259 A (苏州汉朗光电有限公司) 2017年 11月 10日 (2017 - 11 - 10) 说明书第[0005]段-第[0009]段	1-14
A	CN 104219741 A (广西盛源行电子信息有限公司) 2014年 12月 17日 (2014 - 12 - 17) 全文	1-14
A	CN 101305625 A (讯宝科技公司) 2008年 11月 12日 (2008 - 11 - 12) 全文	1-14

☐ 其余文件在C栏的续页中列出。

☑ 见同族专利附件。

* 引用文件的具体类型：

“A” 认为不特别相关的表示了现有技术一般状态的文件

“E” 在国际申请日的当天或之后公布的在先申请或专利

“L” 可能对优先权要求构成怀疑的文件，或为确定另一篇引用文件的公布日而引用的或者因其他特殊理由而引用的文件（如具体说明的）

“O” 涉及口头公开、使用、展览或其他方式公开的文件

“P” 公布日先于国际申请日但迟于所要求的优先权日的文件

“T” 在申请日或优先权日之后公布，与申请不相抵触，但为了理解发明之理论或原理的在后文件

“X” 特别相关的文件，单独考虑该文件，认定要求保护的发明不是新颖的或不具有创造性

“Y” 特别相关的文件，当该文件与另一篇或者多篇该类文件结合并且这种结合对于本领域技术人员为显而易见时，要求保护的发明不具有创造性

“&” 同族专利的文件

国际检索实际完成的日期	国际检索报告邮寄日期
2019年 2月 18日	2019年 3月 22日
ISA/CN的名称和邮寄地址 中国国家知识产权局(ISA/CN) 中国北京市海淀区蓟门桥西土城路6号 100088 传真号 (86-10)62019451	受权官员 陈晓霞 电话号码 (86-512) 88996090

表 PCT/ISA/210 (第2页) (2015年1月)

国际检索报告
关于同族专利的信息

国际申请号
PCT/CN2019/070431

检索报告引用的专利文件			公布日（年/月/日）	同族专利			公布日（年/月/日）
CN	107343259	A	2017年 11月 10日	无			
CN	104219741	A	2014年 12月 17日	无			
CN	101305625	A	2008年 11月 12日	EP	1955560	A1	2008年 8月 13日
				US	2007082714	A1	2007年 4月 12日
				US	7440781	B2	2008年 10月 21日
				WO	2007044253	A1	2007年 4月 19日
				CA	2625166	A1	2007年 4月 19日

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zhejiang Hanshow Technology Co. Ltd	§	
	§	Group Art Unit: Not Yet Assigned
Serial No.: 17/257,570	§	
Confirmation No.: 6950	§	Examiner: Not Yet Assigned
Filed: January 2, 2021	§	

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: January 30, 2021
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

Pursuant to 37 C.F.R. §§ 1.63, Applicants hereby submits properly executed oath or declaration for the following inventor:

1. Min LIANG
2. Shiguo HOU
3. Jun CHEN
4. Qi JIANG
5. Yang ZHAO

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
2101 CityWest Blvd, STE 100
Houston, TX 77042, USA
Phone: 1-281-704-7896

PTO/AIA/01 (06-12)
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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 17/257,570

filed on January 2, 2021

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Jun CHEN Date (Optional): JAN. 10, 17

Signature: Jun CHEN

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ▩ United States application or PCT international application number 17/257,570 filed on January 2, 2021

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Shiguo HOU Date (Optional): 2021.1.2

Signature: Shiguo HOU

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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☐ The attached application, or

☒ United States application or PCT international application number 17/257,570 filed on January 2, 2021.

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LEGAL NAME OF INVENTOR

Inventor: Qi JIANG Date (Optional): 1.1.21

Signature: Qi JIANG

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

As the below named inventor, I hereby declare that:

This declaration is directed to:

☐ The attached application, or

☒ United States application or PCT international application number 17/257,570 filed on January 2, 2021.

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Min LIANG Date (Optional): JAN. 1. 21

Signature: Min LIANG

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. 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 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

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.

PTO/AIA/01 (06-12)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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LEGAL NAME OF INVENTOR

Inventor: Yang ZHAO Date (Optional): Jan. 1, 21

Signature: Yang Zhao

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.

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Electronic Acknowledgement Receipt

EFS ID:	41793377
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	30-JAN-2021
Filing Date:	
Time Stamp:	14:06:20
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	SANU_0004USP_Transmittal_for_declaration.pdf	79993 4c28bfa558a0a67a68253a2a5a8cb4651dc46d01	no	1

Warnings:

Information:					
2	Oath or Declaration filed	SANU_0004USP_Declaration_Chen.pdf	154281 8b2918bf3adfb3bee85f687626d1eed8571473ca	no	2
Warnings:					
Information:					
3	Oath or Declaration filed	SANU_0004USP_Declaration_Hou.pdf	155980 61030f1023379be19f48d530729edbb76c1f4258	no	2
Warnings:					
Information:					
4	Oath or Declaration filed	SANU_0004USP_Declaration_Jiang.pdf	156768 3cf9e272868c31191f3c8943dae97fd78c4105cd	no	2
Warnings:					
Information:					
5	Oath or Declaration filed	SANU_0004USP_Declaration_Liang.pdf	153192 176bb19224dbe61d71c8e9950bee5b58fed9b581	no	2
Warnings:					
Information:					
6	Oath or Declaration filed	SANU_0004USP_Declaration_Zhao.pdf	156477 6eb1ea2449b9184868263ae26aa2280c944eb856	no	2
Warnings:					
Information:					
			Total Files Size (in bytes):	856691	

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

New Applications Under 35 U.S.C. 111

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

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zhejiang Hanshow Technology Co. Ltd	§	
	§	Group Art Unit: Not Yet Assigned
Serial No.: 17/257,570	§	
Confirmation No.: 6950	§	Examiner: Not Yet Assigned
Filed: January 2, 2021	§	

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: February 7, 2021
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

Applicant hereby submits copies of the search and examination related documents and translation thereof for the PCT application PCT/CN2019/070431. It is respectfully requested the Office to consider the attached certified copies of the search and examination related documents.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
2101 CityWest Blvd, STE 100
Houston, TX 77042, USA
Phone: 1-281-704-7896

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44*bis*)

Applicant's or agent's file reference GAI18CN2096P	**FOR FURTHER ACTION**	See item 4 below
International application No. PCT/CN2019/070431	International filing date *(day/month/year)* 04 January 2019 (04.01.2019)	Priority date *(day/month/year)* 02 July 2018 (02.07.2018)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant ZHEJIANG HANSHOW TECHNOLOGY CO. LTD		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 *bis*.1(a).

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

☒	Box No. I	Basis of the report
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44*bis*.3(c) and 93*bis*.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44*bis* .2).

	Date of issuance of this report 05 January 2021 (05.01.2021)
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. +41 22 338 82 70	Authorized officer Xiaofan Tang e-mail: pct.team2@wipo.int

Form PCT/IB/373 (January 2004)

专 利 合 作 条 约

发信人：国际检索单位

收信人：
100033
中国北京市金融街35号国际企业大厦A座16层

北京三友知识产权代理有限公司

PCT

国际检索单位书面意见

(PCT细则43之二 .1)

发文日 (年/月/日)	2019年 3月 22日
申请人或代理人的档案号 GAI18CN2096P	关于后续行为 见下面第2段

国际申请号	国际申请日	优先权日
PCT/CN2019/070431	(年/月/日) 2019年 1月 4日	(年/月/日) 2018年 7月 2日

国际专利分类（IPC）或国家分类及IPC
H04W 52/02(2009.01)i

申请人
浙江汉朔电子科技有限公司

1. 本意见包括关于下列各项标明的内容：

- [x] 第I栏 意见的基础
- [ ] 第II栏 优先权
- [ ] 第III栏 不做出关于新颖性、创造性和工业实用性的意见
- [ ] 第IV栏 缺乏发明的单一性
- [x] 第V栏 按照细则43之二.1(a)(i)关于新颖性、创造性或工业实用性的推断性声明；支持这种声明的引证和解释
- [ ] 第VI栏 某些引用的文件
- [ ] 第VII栏 国际申请中的某些缺陷
- [ ] 第VIII栏 对国际申请的某些意见

2. **后续行为**

如果提出初步审查要求书，本次意见将被视为国际初步审查单位(IPEA)的一次书面意见，除非申请人选择的国际初步审查单位非本机构，而且所选国际初步审查单位已按照细则66.1之二(b)通知国际局将不考虑国际检索单位的书面意见时例外。

如本书面意见被视为国际初步审查单位的书面意见，则请申请人在自PCT/ISA/220表发文日起3个月或自优先权日起22个月内（以后届满者为准）向国际初步审查单位提交书面答复并提交修改（如适用）。

进一步的选择参见PCT/ISA/220表。

ISA/CN的名称和邮寄地址	完成本意见的日期	受权官员
中国国家知识产权局 中国北京市海淀区蓟门桥西土城路6号 100088 传真号 （86－10）62019451	2019年 3月 18日	陈晓霞 电话号码 (86-512) 88996090

表 PCT/ISA/237 (扉页) (2015年1月)

国际检索单位书面意见

国际申请号
PCT/CN2019/070431

第I栏 意见的基础

1. 关于**语言**，本意见的制定基于：
   - [x] 国际申请提交时使用的语言。
   - [ ] 该国际申请的_____语言译文，为了国际检索的目的提供该种语言的译文(细则12.3(a)和23.1(b))。
2. [ ] 本意见的制定考虑了本单位许可或被通知的根据细则91所做出的**明显错误更正**（细则 43之二1（a））。
3. [ ] 关于在国际申请中公开的任何**核苷酸和/或氨基酸序列**，本意见是基于下列序列表做出的：
   a. [ ] 作为国际申请的一部分提交的：
      - [ ] 附件C/ST.25文本文件形式
      - [ ] 纸件或图形文件形式
   b. [ ] 根据细则13之三.1(a)仅为国际检索目的以附件C/ST.25文本文件形式与国际申请同时提交的：
   c. [ ] 仅为国际检索目的在国际申请日之后提交的：
      - [ ] 附件C/ST.25文本文件形式（细则13之三.1(a)）
      - [ ] 纸件或图形文件形式（细则13之三.1(b)和行政规程第713段）
4. [ ] 另外，在提交/提供了多个版本或副本的序列表的情况下，提供了关于随后提交的或附加的副本中的信息与申请时提交的作为申请一部分的序列表的信息相同或未超出申请时提交的申请中的信息范围（如适用）的所需声明。
5. 补充意见：

国际检索单位书面意见

国际申请号
PCT/CN2019/070431

第V栏 按细则43之二.1（a）（i）关于新颖性、创造性或工业实用性的推测性声明；支持这种声明的引证和解释

1. 声明

新颖性 (N)	权利要求	1-14	是
	权利要求	无	否
创造性 (IS)	权利要求	1-14	是
	权利要求	无	否
工业实用性 (IA)	权利要求	1-14	是
	权利要求	无	否

2. 引证和解释：

[1] D1:CN107343259A

[2] D1为最接近的现有技术，公开了（参见说明书第[0005]段-第[0009]段）：一种无线电子标签系统，其特征在于：它包括服务器、无线基站、无线电子标签，其中，服务器用于接收用户操作终端发出的更新操作指令，将更新操作指令以数据流形式下发至无线基站；无线基站用于接收、缓存并解密服务器下发的更新操作指令数据流，获取需要更新的无线电子标签的ID号及更新内容信息，单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，并向每个无线电子标签下发；无线电子标签用于接收无线基站下发的群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，以及在被群唤醒数据包唤醒后，通过解密标签ID号过滤包判断出是否需要更新，若不需要更新，则进入睡眠状态；若需要更新，则在通过解密标签更新时间计时器包获得的更新时间点，按照解密标签更新数据包获得的更新内容对自身显示屏进行更新，其中，在未到达更新时间点之前，无线电子标签进入睡眠状态，以及各无线电子标签的更新时间点不同。

[3] 新颖性

[4] 权利要求1、7与D1的区别至少在于：（1）外部设备通过第二通信通路向电子标签设备发送第一数据，电子标签设备接收第一数据，并通过第一通信通路将第一数据发送至基站，并进入快速监听模式。

[5] D1没有明确或隐含地公开独立权利要求1、7的技术方案，因此权利要求1、7具备PCT条约33（2）规定的新颖性。相应地，从属权利要求2-6、8-12也具备PCT条约33（2）规定的新颖性。

[6] 权利要求13、14引用了之前具备新颖性的权利要求，因此，也具备PCT条约33（2）规定的新颖性。

[7] 创造性

[8] 本领域技术人员从D1以及公知常识的不同组合都不能显而易见地得出权利要求1-12的技术方案。因此权利要求1-12具备PCT条约33（3）规定的创造性。

[9] 权利要求13、14引用了在前具备创造性的权利要求，因此也具备PCT条约33（3）规定的创造性。

[10] 工业实用性

[11] 权利要求1-14的技术方案可以在工业中制造或使用，因此权利要求1-14具备PCT条约33（4）规定的工业实用性。

TRANSLATION

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/070431

A. CLASSIFICATION OF SUBJECT MATTER

H04W 52/02(2009.01)i

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)

H04W

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 practicable, search terms used)

CNABS; CNKI; CNTXT; VEN; USTXT; WOTXT; EPTXT; 3GPP; IEEE; IETF: 电子标签, 服务器, 基站, 接入点, 触发, 唤醒, 叫醒, 快速, 周期, 频率, 监听, RFID, server, base station, BS, access point, AP, trigger, active, wake up, quick, fast, period, frequency, monitor, listen

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 107343259 A (SUZHOU HALATION PHOTONICS CO., LTD.) 10 November 2017 (2017-11-10) description, paragraphs [0005]-[0009]	1-14
A	CN 104219741 A (GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO., LTD.) 17 December 2014 (2014-12-17) entire document	1-14
A	CN 101305625 A (SYMBOL TECHNOLOGIES, INC.) 12 November 2008 (2008-11-12) entire document	1-14

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

☑ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
18 February 2019	**22 March 2019**

Name and mailing address of the ISA/CN	Authorized officer
National Intellectual Property Administration, PRC (ISA/CN) **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	
Facsimile No. **(86-10)62019451**	Telephone No.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/070431

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 107343259 A	10 November 2017	None	
CN 104219741 A	17 December 2014	None	
CN 101305625 A	12 November 2008	EP 1955560 A1	13 August 2008
		US 2007082714 A1	12 April 2007
		US 7440781 B2	21 October 2008
		WO 2007044253 A1	19 April 2007
		CA 2625166 A1	19 April 2007

PATENT COOPERATION TREATY **TRANSLATION**

From the INTERNATIONAL SEARCHING AUTHORITY

To:

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

	Date of mailing *(day/month/year)* **22 March 2019**
Applicant's or agent's file reference **GAI18CN2096P**	**FOR FURTHER ACTION** See paragraph 2 below

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/CN2019/070431	**04 January 2019**	**02 July 2018**

International Patent Classification (IPC) or both national classification and IPC
H04W 52/02(2009.01)i

Applicant
ZHEJIANG HANSHOW TECHNOLOGY CO. LTD

1. This opinion contains indications relating to the following items:
   - ☑ Box No. I Basis of the opinion
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☑ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

   If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

   If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

   For further options, see Form PCT/ISA/220.

Name and mailing address of the ISA/	Date of completion of this opinion	Authorized officer

Form PCT/ISA/237 (Cover sheet) (January 2015)

TRANSLATION

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CN2019/070431

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of:
   - [✓] the international application in the language in which it was filed.
   - [ ] a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. [ ] This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(a)).

3. [ ] With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:
   - a. [ ] forming part of the international application as filed:
     - [ ] in the form of an Annex C/ST.25 text file.
     - [ ] on paper or in the form of an image file.
   - b. [ ] furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.
   - c. [ ] furnished subsequent to the international filing date for the purposes of international search only:
     - [ ] in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).
     - [ ] on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. [ ] In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

TRANSLATION

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/CN2019/070431

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims	None	NO
Inventive step (IS)	Claims	1-14	YES
	Claims	None	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims	None	NO

2. Citations and explanations :

[1] D1: CN 107343259 A

[2] D1 is the closest prior art document, and discloses (see description, paragraphs [0005]-[0009]): a wireless electronic tag system, characterized in that: the system comprises a server, a wireless base station, and a wireless electronic tag; wherein the server is used for receiving an update operation instruction sent by a user operation terminal and issuing the update operation instruction to the wireless base station in the form of a data stream; the wireless base station is used for receiving, caching, and decrypting the data stream of the update operation instruction issued by the sever, obtaining an ID number of the wireless electronic tag that needs to be updated and updated content information, packing separately and performing data encryption processing so as to respectively generate a group awakening data packet, a tag ID number filter packet, a tag updating time timer packet, and a tag updating data packet, and issuing same to each wireless electronic tag; the wireless electronic tag is used for receiving the group awakening data packet, the tag ID number filter packet, the tag updating time timer packet, and the tag updating data packet issued by the wireless base station, and determining whether the wireless electronic tag needs to be updated by decrypting the tag ID number filter packet after the wireless electronic tag is awakened by the group awakening data packet: if not, entering a sleep state; if yes, at an update time point obtained by decrypting the tag updating time timer packet, updating its own display screen according to updated content obtained by decrypting the tag updating data packet, wherein before the update time point is not reached, the wireless electronic tag enters the sleep state, and update time points of wireless electronic tags are different.

[3] Novelty

[4] Claims 1 and 7 at least differ from D1 in that: (1) an external device sends first data to an electronic tag device by means of a second communication path; the electronic tag device receives the first data, sends the first data to a base station by means of the first communication path, and enters a fast monitoring mode.

[5] D1 does not explicitly or implicitly disclose the technical solutions of independent claims 1 and 7. Therefore, claims 1 and 7 are novel in the sense of PCT Article 33(2). Accordingly, dependent claims 2-6 and 8-12 are also novel in the sense of PCT Article 33(2).

[6] Claims 13 and 14 refer to preceding claims which are novel. Therefore, claims 13 and 14 are also novel in the sense of PCT Article 33(2).

[7] Inventive step

[8] It would not be possible for a person skilled in the art to obviously arrive at the technical solutions of claims 1-12 from different combinations of D1 and common general knowledge. Therefore, claims 1-12 involve an inventive step in the sense of PCT Article 33(3).

[9] Claims 13 and 14 refer the preceding claims which involve an inventive step. Therefore, claims 13 and 14 also involve an inventive step in the sense of PCT Article 33(3).

[10] Industrial applicability

Box No. V **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

[11] The technical solutions of claims 1-14 can be made or used in industry, and therefore, claims 1-14 are industrially applicable in the sense of PCT Article 33(4).

Electronic Acknowledgement Receipt

EFS ID:	41857243
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	07-FEB-2021
Filing Date:	
Time Stamp:	10:31:36
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	SANU_0004USP_Transmittal_for_ISR.pdf	108706 0a8e3974900342f5ade374893c1b5f35b049bf21	no	1

Warnings:

Information:					
2	Other Reference-Patent/App/Search documents	SANU_0004USP_Preliminary_report_on_patentability.pdf	160773 85a4507fc370187415f048733427b31231e61b51	no	4
Warnings:					
Information:					
3	Other Reference-Patent/App/Search documents	SANU_0004USP_translation_of_Search_report.pdf	70712 ad0b4d6b5b0a951a742a2b7576eca5eecbc6056f	no	2
Warnings:					
Information:					
4	Other Reference-Patent/App/Search documents	SANU_0004USP_translation_of_written_opinion.pdf	151103 552b5863d0ca884c3c8bfc42ed0394656c1bd8c6	no	4
Warnings:					
Information:					
		Total Files Size (in bytes):	491294		

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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Zhejiang Hanshow Technology Co. Ltd	§		
	§	Group Art Unit:	Not Yet Assigned
Serial No.: 17/257,570	§		
	§		
Confirmation No.: 6950	§	Examiner:	Not Yet Assigned
	§		
Filed: January 2, 2021	§		
	§		

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: March 4, 2021
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

Applicant submits herewith a Corrected Application Data Sheet to update the name of the Applicant from to "Hanshow Technology Co., Ltd." in the applicant information section. The address of the Applicant has also been updated to "Floor 4, Building 1 and Floor 7, Building 5, Jiaxing Guangfu Innovation Park, No.1288 Kanghe Road, Xiuzhou District, Jiaxing, Zhejiang 314031 China". Applicant respectfully submits that the above request to update the name of the Applicant is made in accordance with 37 C.F.R. 1.46 (c)(1).

Although Applicant believes that no additional fees are due in connection with this response, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 6029531/SANU_0004USP, for any additional fees required to make this response timely and acceptable to the Office.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
2101 CityWest Blvd, STE 100
Houston, TX 77042, USA
Phone: 1-281-704-7896

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Min		LIANG	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country	CN

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Shiguo		HOU	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country	CN

Inventor 3 Remove

Legal Name

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jun		CHEN	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Qi		JIANG	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

Inventor 5 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yang		ZHAO	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	162130		
Email Address	docketing@carrpllc.com	Add Email	Remove Email
Email Address	nan.carr@carrpllc.com	Add Email	Remove Email

Application Information:

Title of the Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD		
Attorney Docket Number	SANU_0004USP	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	3	**Suggested Figure for Publication (if any)**	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

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

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	162130		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	a 371 of international	PCT/CN2019/070431	2019-01-04

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
201810706496.2	CN	2018-07-02	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	~~Zhejiang Hanshow Technology Co. Ltd~~ Hanshow Technology Co., Ltd.		
Mailing Address Information For Applicant:			
Address 1	~~Building 33, Zhifuzhongxin, Xiuzhou District~~ Floor 4, Building 1 and Floor 7, Building 5		
Address 2	Jiaxing Guangfu Innovation Park, No.1288 Kanghe Road, Xiuzhou District		
City	Jiaxing, Zhejiang	**State/Province**	
Country	CN	Postal Code	~~314000~~ 314031
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. 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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/CHIH HUAI CHIU/			Date (YYYY-MM-DD)	2021-03-04
First Name	CHIH HUAI	Last Name	CHIU	Registration Number	75299

Additional Signature may be generated within this form by selecting the Add button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

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 the Freedom of Information Act requires disclosure of these records.

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 CooperationTreaty.

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 inspections 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.

Electronic Acknowledgement Receipt

EFS ID:	42087770
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	04-MAR-2021
Filing Date:	
Time Stamp:	12:30:54
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	SANU_0004USP_Transmittal_for_CADS.pdf	171190 1647d92d448a688872d51a6ca562041fa7310fdf	no	1

Warnings:

Information:					
2	Application Data Sheet	SANU_0004USP_CADS_2.pdf	2202913 367cb1a0838c3d62c70b232fc491823e82ae7d40	no	10
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
			Total Files Size (in bytes):	2374103	

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

New Applications Under 35 U.S.C. 111

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

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

MULTIPLE DEPENDENT CLAIM FEE CALCULATION SHEET

Substitute for Form PTO-1360
(For use with Form PTO/SB/06)

Application Number	Filing Date
17257570	

Applicant(s) Min LIANG

* May be used for additional claims or amendments

CLAIMS	AS FILED		AFTER FIRST AMENDMENT		AFTER SECOND AMENDMENT	
	Indep	Depend	Indep	Depend	Indep	Depend
1	1		1			
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Total Indep	2		3		0	
Total Depend	22	↵	16	↵	0	↵
Total Claims	24		19		0	

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	Indep	Depend	Indep	Depend	Indep	Depend
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UNITED STATES PATENT AND TRADEMARK OFFICE

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

U.S. APPLICATION NO.	FIRST NAMED INVENTOR	ATTY. DOCKET NO.
17/257,570	Min LIANG	SANU_0004USP

162130
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

INTERNATIONAL APPLICATION NO.	
PCT/CN2019/070431	
I.A. FILING DATE	PRIORITY DATE
01/04/2019	07/02/2018

CONFIRMATION NO. 6950
371 ACCEPTANCE LETTER

OC000000126787871

Date Mailed: 07/08/2021

NOTICE OF ACCEPTANCE OF APPLICATION UNDER 35 U.S.C 371 AND 37 CFR 1.495

The applicant is hereby advised that the United States Patent and Trademark Office, in its capacity as a Designated / Elected Office (37 CFR 1.495), has ACCEPTED the above identified international application for national patentability examination in the United States Patent and Trademark Office.

The United States Application Number assigned to the application is shown above. A Filing Receipt will be issued for the present application in due course. **THE DATE APPEARING ON THE FILING RECEIPT AS THE "FILING DATE or 371(c) DATE" IS THE DATE ON WHICH THE LAST OF THE 35 U.S.C. 371 (c)(1) and (c)(2) REQUIREMENTS HAS BEEN RECEIVED IN THE OFFICE. THIS DATE IS SHOWN BELOW.** The filing date of the above identified application is the international filing date of the international application (Article 11(3) and 35 U.S.C. 363)

01/02/2021
DATE OF RECEIPT OF 35 U.S.C.
371(c)(1) and (c)(2) REQUIREMENTS

The following items have been received:

- Indication of Small Entity Status
- Copy of the International Application filed on 01/02/2021
- English Translation of the IA filed on 01/02/2021
- Copy of the International Search Report filed on 01/02/2021
- Preliminary Amendments filed on 01/02/2021
- Information Disclosure Statements filed on 01/02/2021
- Inventor's Oath or Declaration filed on 01/30/2021
- U.S. Basic National Fees filed on 01/02/2021
- Authorize Access to Search Results filed on 01/02/2021
- Priority Documents filed on 01/02/2021
- Power of Attorney filed on 01/02/2021
- Authorization to Permit Access filed on 01/02/2021
- Application Data Sheet (37 CFR 1.76) filed on 01/02/2021

Applicant is reminded that any communications to the United States Patent and Trademark Office must be mailed to the address given in the heading and include the U.S. application no. shown above (37 CFR 1.5)

LESLIE R CHASE

Telephone: (703) 756-1026

PATENT APPLICATION FEE DETERMINATION RECORD

Substitute for Form PTO-875

Application or Docket Number: 17/257,570

APPLICATION AS FILED - PART I

FOR	(Column 1) NUMBER FILED	(Column 2) NUMBER EXTRA	SMALL ENTITY RATE($)	SMALL ENTITY FEE($)	OR	OTHER THAN SMALL ENTITY RATE($)	OTHER THAN SMALL ENTITY FEE($)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	160		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	400		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	19 minus 20 =	*	x 50 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	*	x 240 =	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			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	830		TOTAL	

APPLICATION AS AMENDED - PART II

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

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
17/257,570	01/02/2021		910	SANU_0004USP	19	3

CONFIRMATION NO. 6950

FILING RECEIPT

162130
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

OC000000128787870

Date Mailed: 07/08/2021

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)

Min LIANG, Jiaxing, Zhejiang, CHINA;
Shiguo HOU, Jiaxing, Zhejiang, CHINA;
Jun CHEN, Jiaxing, Zhejiang, CHINA;
Qi JIANG, Jiaxing, Zhejiang, CHINA;
Yang ZHAO, Jiaxing, Zhejiang, CHINA;

Applicant(s)

Zhejiang Hanshow Technology Co. Ltd, Jiaxing, Zhejiang, CHINA;

Power of Attorney: The patent practitioners associated with Customer Number 162130

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/CN2019/070431 01/04/2019

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see http://www.uspto.gov for more information.)
CHINA 201810706496.2 07/02/2018

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: 07/06/2021

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/257,570**

Projected Publication Date: 10/14/2021

Non-Publication Request: No

Early Publication Request: No
**** SMALL ENTITY ****
Title

INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

Preliminary Class

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 AssetsControl, 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).

SelectUSA

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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit http://www.SelectUSA.gov or call +1-202-482-6800.

To: docketing@carrpllc.com,uspto@dockettrak.com,randy.chiu@carrpllc.com
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 162130

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	M903	07/08/2021	SANU_0004USP
	APP.FILE.REC	07/08/2021	SANU_0004USP
	APP.FILE.REC	07/08/2021	SANU_0004USP
	APP.FILE.REC	07/08/2021	SANU_0004USP

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
17/257,570	01/02/2021	Min LIANG	SANU_0004USP

CONFIRMATION NO. 6950

162130
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

PUBLICATION NOTICE

OC00000129106737

Title:INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

Publication No.US-2021-0321332-A1
Publication Date:10/14/2021

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.

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Oct 15, 2021 05:06:29 AM

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Application	Document	Mailroom Date	Attorney Docket No.
17257570	NTC.PUB	10/14/2021	SANU_0004USP

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

162130 7590 01/06/2022

NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

EXAMINER	
HTUN, SAN A	

ART UNIT	PAPER NUMBER
2643	

NOTIFICATION DATE	DELIVERY MODE
01/06/2022	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):

docketing@carrpllc.com
randy.chiu@carrpllc.com
uspto@dockettrak.com

Office Action Summary	Application No. 17/257,570	Applicant(s) LIANG et al.	
	Examiner SAN HTUN	Art Unit 2643	AIA (FITF) Status Yes

-- 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 01/02/2021.

☐ 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) 1-19 is/are pending in the application.

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

6) ☑ Claim(s) 1-13 is/are allowed.

7) ☑ Claim(s) 14-19 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 01/02/2021 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)

2) ☑ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date _____.

3) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

4) ☐ Other: _____.

Detailed Action

1. This Office Action is in response to the Applicant's communication filed on 01/02/2021. In virtue of this communication, claims 1-19 are currently pending in this Office Action.

Notice of Pre-AIA or AIA Status

2. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 14-19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claim(s) does/do not fall within at least one of the four categories of patent eligible subject matter by the following reasons.

In the state of the art, transitory signals are commonplace as a medium for transmitting computer instructions. "A computer-readable storage medium" in the claims do not exclude a medium for transmitting signals or computer instructions. In specification (par. 0061 in PG PUB of instant application), one or more computer usable storage medium is not limited to a disk, memory, a CD-ROM and an optical memory but includes computer-readable program codes. The statement "not limited to ... and including computer-usable program codes" not only considers the medium to a disk memory, i.e.,

non-transitory, for one disclosed embodiment but also possibly other embodiments for computer-usage program codes or transitory medium. Since the specification is open ended in terms of the definition of computer-readable storage medium, one ordinary skilled in the art could have reasonable interpreted the medium, in light of the specification, to include a transitory medium for other embodiments not defined.

Therefore, a reasonable interpretation in light of the specification leads to the conclusion that the scope of "a computer-readable storage medium" covers a signal per se or does not exclude a signal. A transitory signal does not fall within the definition of a process, machine, manufacture, or composition of matters and thus the claims are rejected as ineligible subject matter under 35 U.S.C. 101. See Official Gazette Notice, 1351 OG 212. 02/23/2010.

Allowable Subject Matter

5. Claims 1-13 are allowed.

It's to note that reasons for allowance is preserved. Because, in this instant application, claims 14-19 are still rejected.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yi et al. Pub. No.: US 2009/0102655 A1 discuss an electronic tag with proxy device for communication to home server (fig. 5) and wakeup password and a kill password for sleep state of the electronic tag (fig. 7).

Seto Pub. No.: US 2014/0006827 A1 explains sleep return processing with sleep return instruction command (fig. 7-9).

Sengstaken, **JR**. Pub. No.: US 2015/0002274 A1 describes access tag in Idle state for monitoring event to be Ready state (fig. 5) and activating processor from a sleep state upon receipt of wake-up signal (fig. 6).

Shvarzberg et al. Pub. No.: US 2016/0197736 A1 teaches Sleep command for both upstream device and downstream device (fig. 4-5, herein, power off, i.e, normal monitoring, and selected components power on, i.e., fast monitoring).

Nedelcu Pub. No.: US 2016/0350564 A1 teaches tag for monitoring wake up message in every N seconds (fig. 2C, standby, i.e., normal wakeup, and awake, i.e., fast wakeup), active mode and sleep state (fig. 112 and par. 0047, 0049 & 0077).

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAN A HTUN whose telephone number is (571)270-3190. The examiner can normally be reached on Monday - Thursday 7 AM - 5 PM.

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, Jinsong Hu can be reached on 5712723965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/SAN HTUN/

Primary Examiner, Art Unit 2643

Notice of References Cited	Application/Control No. 17/257,570	Applicant(s)/Patent Under Reexamination LIANG et al.	
	Examiner SAN HTUN	Art Unit 2643	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20090102655-A1	04-2009	YI; Jeong Hyun	H04W12/02	340/572.1
*	B	US-20140006827-A1	01-2014	SETO; Hidekazu	G06F1/3284	713/323
*	C	US-20150002274-A1	01-2015	Sengstaken, JR.; Robert W.	G06K7/10009	340/10.34
*	D	US-20160197736-A1	07-2016	Shvarzberg; Leonid	H04L12/12	713/310
*	E	US-20160350564-A1	12-2016	Nedelcu; Bogdan R.	G16H40/67	1/1
	F					
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FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

CPC - Searched*		
Symbol	Date	Examiner
H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$	12/31/2021	/S.H./

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
Searched in PE2E search.	12/31/2021	/S.H./
Explored NPL datatbase attached.	01/01/2022	/S.H./
Conducted assignee and inventor search in PE2E search.	12/31/2021	/S.H./

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

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

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

CLAIMS										
☐ Claims renumbered in the same order as presented by applicant			☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE								
Final	Original	01/01/2022								
	1	=								
	2	=								
	3	=								
	4	=								
	5	=								
	6	=								
	7	=								
	8	=								
	9	=								
	10	=								
	11	=								
	12	=								
	13	=								
	14	✓								
	15	✓								
	16	✓								
	17	✓								
	18	✓								
	19	✓								

Bibliographic Data

Application No: 17/257,570

Foreign Priority claimed: (•) Yes ( ) No

35 USC 119 (a-d) conditions met: [✓] Yes [ ] No [ ] Met After Allowance

Verified and Acknowledged: /SAN HTUN/ Examiner's Signature | Initials

Title: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
01/02/2021	370	2643	SANU_0004USP
RULE			

APPLICANTS

Zhejiang Hanshow Technology Co. Ltd, Jiaxing, Zhejiang, CHINA

INVENTORS

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Shiguo HOU, Jiaxing, Zhejiang, CHINA

Jun CHEN, Jiaxing, Zhejiang, CHINA

Qi JIANG, Jiaxing, Zhejiang, CHINA

Yang ZHAO, Jiaxing, Zhejiang, CHINA

CONTINUING DATA

This application is a 371 of PCT/CN2019/070431 01/04/2019

FOREIGN APPLICATIONS

CHINA CN201810706496.2 07/02/2018

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07/06/2021

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Characterization of wake- up delay versus sleep mode power consumption and sleep/active mode transition energy overhead tradeoffs in MTCMOS circuits
Zhiyu Liu; Volkan Kursun
2008 51st Midwest Symposium on Circuits and Systems
Year: 2008 | Conference Paper |
Publisher: IEEE
Cited by: Papers (4)

Abstract HTML

Optimal Wake- up Scheduling for PSM elay Minimization in Mobile Wireless etworks
Abhishek Agarwal; Aditya K. Jagannatham
IEEE Wireless Communications Letters

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Publication Topics

Year: 2013 | Volume: 2, Issue: 4 |
Journal Article | Publisher: IEEE
Cited by: Papers (4)

Abstract HTML

Research on Node Sleep/ Wake- Up Mechanism in WSN Based on Fuzzy Energy Control
Hongsheng Li; Sumin Liu; Bing Hu
2009 Second International Conference on Intelligent Networks and Intelligent Systems
Year: 2009 | Conference Paper |
Publisher: IEEE
Cited by: Papers (1)

Abstract HTML

Early wake- up decision algorithm for ONUs in TDM-PONs with sleep mode
Alaeldin Fuad Yousif Mohammed; S. H. Shah Newaz; Mohammad Rakib Uddin; Gyu Myoung Lee; Jun Kyun Choi
Journal of Optical Communications and Networking
Year: 2016 | Volume: 8, Issue: 5 |
Journal Article | Publisher: IEEE
Cited by: Papers (4)

Abstract

Ultra-Low Power Pulse Width Detector for RF Wake- Up Receivers
A. A. Benbuk; N. Kouzayha; F. A. Asadallah; J. Costantine; Z. Dawy
2019 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting
Year: 2019 | Conference Paper |
Publisher: IEEE
Cited by: Papers (3)

Abstract HTML

Impact of transponders and regenerators wake- up time on



Standards Dictionary Terms

- 1-Event class signature
- 1-Event classification
- 10 Gigabit Attachment Unit Interface (XAUI)
- 10 Gigabit Media Independent Interface (XGMII)
- 10 Gigabit Sixteen-Bit Interface (XSBI)
- 10/10G-EPON
- 10/1G-EPON
- 10/1GBASE-PRX
- 100 Gb/s Attachment Unit Interface (CAUI-n)

Browse

sleep- mode enabled translucent optical networks
Albert Pagès; Massimo Tornatore; Jordi Perelló; Salvatore Spadaro; Annalisa Morea
OFC 2014
Year: 2014 | Conference Paper | Publisher: IEEE
Cited by: Papers (1)

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A Delay-Based Wake- Up Receiver for Wireless Sensor Networks
Arian Nowbahari; Luca Marchetti; Mehdi Azadmehr
2021 International Conference on Electrical, Communication, and Computer Engineering (ICECCE)
Year: 2021 | Conference Paper | Publisher: IEEE

Abstract HTML

The effect of variable wake up time on the utilization of sleep modes in femtocell mobile access networks
Willem Vereecken; Ivaylo Haraicherev; Margot Deruyck; Wout Joseph; Mario Pickavet; Luc Martens; Piet Demeester
2012 9th Annual Conference on Wireless On-Demand Network Systems and Services (WONS)
Year: 2012 | Conference Paper | Publisher: IEEE
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Abstract HTML

4.4 A 1.3TOPS/W @ 32GOPS Fully Integrated 10-Core SoC for IoT End-Nodes with 1.7µW Cognitive Wake- Up From MRAM-Based State-Retentive Sleep Mode
Davide Rossi; Francesco Conti; Manuel Eggiman; Stefan Mach; Alfio Di Mauro; Marco Guermandi; Giuseppe Tagliavini; Antonio Pullini; Igor Loi; Jie Chen; Eric Flamand; Luca Benini
2021 IEEE International Solid- State Circuits Conference (ISSCC)
Year: 2021 | Volume: 64 | Conference Paper | Publisher: IEEE

Abstract HTML

Research on a Virtual Machine Mode Transfer Method Supporting Energy Consumption Optimization
Jun Guo; Yi Li; Chen Liu; Zixuan Zhao; Bin Zhang
2021 23rd International Conference on Advanced Communication Technology (ICACT)
Year: 2021 | Conference Paper | Publisher: IEEE

Abstract HTML

Low power consumption wireless wake- up module controlling AC power supply at household appliances
Tsuyoshi Kogawa; Takeshi Ishihara; Koji Ogura; Toshiyuki Umeda; Takafumi Sakamoto
2011 IEEE 15th International Symposium on Consumer Electronics (ISCE)
Year: 2011 | Conference Paper | Publisher: IEEE
Cited by: Papers (3)

Abstract HTML

A Self-Adaptive Sleep/ Wake- Up Scheduling Approach for Wireless Sensor Networks
Dayong Ye; Minjie Zhang
IEEE Transactions on Cybernetics
Year: 2018 | Volume: 48, Issue: 3 | Journal Article | Publisher: IEEE
Cited by: Papers (27)

Abstract HTML Media

Wake up MEMS for inertial sensors
Chris Stoeckel; Detlef Billep; Stefan Konietzka; Sven Zimmermann; Thomas Otto
2015 IEEE International Symposium on Inertial Sensors and Systems (ISISS) Proceedings
Year: 2015 | Conference Paper | Publisher: IEEE
Cited by: Papers (2)

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Demo Abstract: Abating LPL-Induced Latency with Wake- Up Radio Technology
Stefano Basagni; Federico

Ceccarelli; Fabrizio Gattuso; Chiara Petrioli
2017 IEEE/ACM Second International Conference on Internet-of-Things Design and Implementation (IoTDI)
Year: 2017 | Conference Paper | Publisher: IEEE

Abstract HTML

UAV-Enabled RF Sensor Wake- up
S. Saab; A. Eid; N. Kouzayha; J. Costantine; Z. Dawy; G. Virone; F. Paonessa
2018 IEEE Conference on Antenna Measurements & Applications (CAMA)
Year: 2018 | Conference Paper | Publisher: IEEE
Cited by: Papers (1)

Abstract HTML

Dual-switch power gating technique with small energy loss, low area, short crossover time, and fast wake- up time for fine-grain leakage controlled VLSIs
Minh-Huan Vo; Ai-Quoc Dao
2015 International Conference on Advanced Technologies for Communications (ATC)
Year: 2015 | Conference Paper | Publisher: IEEE

Abstract HTML

Optimal wake- up mechanism for single base station with sleep mode
Xueying Guo; Sheng Zhou; Zhisheng Niu; P.R. Kumar
Proceedings of the 2013 25th International Teletraffic Congress (ITC)
Year: 2013 | Conference Paper | Publisher: IEEE
Cited by: Papers (18)

Abstract HTML

Diode based multi mode MTCMOS 8T adder for wake up noise minimization in 90nm CMOS technology
Preeti Agrawal; Anjan Kumar; Manisha Pattanaik
2017 8th International Conference on Computing, Communication and Networking Technologies (ICCCNT)
Year: 2017 | Conference Paper |

Publisher: IEEE

Abstract HTML

13.4 A 7ns-access-time 25μW/MHz 128kb SRAM for low-power fast wake-up MCU in 65nm CMOS with 27fA/b retention current

Toshikazu Fukuda; Koji Kohara; Toshiaki Dozaka; Yasuhisa Takeyama; Tsuyoshi Midorikawa; Kenji Hashimoto; Ichiro Wakiyama; Shinji Miyano; Takehiko Hojo

2014 IEEE International Solid-State Circuits Conference Digest of Technical Papers (ISSCC)

Year: 2014 | Conference Paper | Publisher: IEEE

Cited by: Papers (11) | Patents (2)

Abstract HTML

Exploiting frame length of 802.15.4g signals for wake-up control in sensor networks

Suhua Tang; Hiroyuki Yomo; Shinji Yamaguchi; Akio Hasegawa; Sadao Obana

2015 IEEE Wireless Communications and Networking Conference (WCNC)

Year: 2015 | Conference Paper | Publisher: IEEE

Abstract HTML

An efficient wake-up schedule during power mode transition considering spurious glitches phenomenon

Yu-Ting Chen; Da-Cheng Juan; Ming-Chao Lee; Shih-Chieh Chang

2007 IEEE/ACM International Conference on Computer-Aided Design

Year: 2007 | Conference Paper | Publisher: IEEE

Cited by: Papers (9)

Abstract HTML

19.6 A 40-to-80MHz Sub-4μW/MHz ULV Cortex-M0 MCU SoC in 28nm FDSOI With Dual-Loop Adaptive Back-Bias Generator for 20μs Wake-Up From Deep Fully Retentive Sleep Mode

David Bol; Maxime Schramme; Ludovic Moreau; Thomas Haine; Pengcheng Xu; Charlotte Frenkel; Rémi Dekimpe; François Stas; Denis Flandre

2019 IEEE International Solid- State Circuits Conference - (ISSCC)
Year: 2019 | Conference Paper |
Publisher: IEEE
Cited by: Papers (1)

Abstract HTML

A 2.5 µWatts two stage wake- up receiver for Wireless Sensor Networks
Salma Shabayek; Alaa Medra; Rafik Guindi
2013 25th International Conference on Microelectronics (ICM)
Year: 2013 | Conference Paper |
Publisher: IEEE

Abstract HTML

Range extension of passive wake- up radio systems through energy harvesting
Li Chen; Stephen Cool; He Ba; Wendi Heinzelman; Ilker Demirkol; Ufuk Muncuk; Kaushik Chowdhury; Stefano Basagni
2013 IEEE International Conference on Communications (ICC)
Year: 2013 | Conference Paper |
Publisher: IEEE
Cited by: Papers (28) | Patents (1)

Abstract HTML

Power gating with multiple sleep modes
K. Agarwal; H. Deogun; D. Sylvester; K. Nowka
7th International Symposium on Quality Electronic Design (ISQED'06)
Year: 2006 | Conference Paper |
Publisher: IEEE
Cited by: Papers (82) | Patents (4)

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PTO/SB/08a (02-18)
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Receipt date: 01/02/2021

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17/257,570 - GAU: 2643
Filing Date	
First Named Inventor	Min LIANG
Art Unit	
Examiner Name	
Attorney Docket Number	SANU_0004USP

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	1	107343259	CN	A	2017-11-10	SUZHOU HALATION PHOTONICS CO LTD		
	2	104219741	CN	A	2014-12-17	GUANGXI SHENGYUANXING ELECTRONIC INFORMATION CO LT		
	3	103105625	CN	A	2013-05-15	ASKEY TECHNOLOGY JIANGSU LTD; ASKEY COMP CO LTD		

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Receipt date: 01/02/2021	Application Number	17/257,570 - GAU: 2643
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	
(Not for submission under 37 CFR 1.99)	First Named Inventor	Min LIANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	SANU_0004USP

	4	110677898	CN	A	2020-01-10	ZHEJIANG HANSHOW TECH CO LTD		

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	1	International search report issued for counterpart Chinese patent application No. PCT/CN2019/070431 mailed on 22 Mar. 2019	

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Examiner Signature	/SAN HTUN/	Date Considered	12/31/2021

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PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2	"20210321332"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:51 PM
L2	103734945	Zhejiang Hanshow Technology Co. Ltd	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L3	42328739	LIANG, Min; HOU, Shiguo; CHEN, Jun; JIANG, Qi; ZHAO, Yang	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L5	1003494	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/12/31 11:55 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L6	19914	(wireless OR mobile OR cell$4) AND (normal OR fast) AND sleep$3 AND (wake?up OR wak$4up) AND (path OR link) AND (bs OR (base station) OR eNB OR gNB) AND server AND (device OR station OR terminal OR equipment OR telephone OR phone)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L7	116244414	L1 OR L3 OR L5 OR L2	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L8	18748	L6 AND L7	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	ADJ	ON	ON	2021/12/31 11:58 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L9	14812	L8 AND (control AND (instruction OR command) AND monitor$3)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:28 AM
L10	977	L9 AND (sleep$3 AND (wake-up OR wake$4up OR wake?up)).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L11	182	L10 AND (path OR link).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L12	1	US-20070103296-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	ADJ	ON	ON	2022/01/01 01:30 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L13	1	US-20090135000-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 01:32 AM
L14	741	(wireless OR mobile OR cell$4) SAME (tag OR asset) SAME (sleep$3 OR wake-up OR wak$4up OR wake?up) SAME (mode OR normal OR low OR high OR fast) SAME server SAME (station OR device OR equipment OR terminal)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 02:28 AM
L15	210	L14 AND (sleep$3 OR wake-up OR wak$4up OR wake?up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	ADJ	ON	ON	2022/01/01 02:29 AM

			IBM_TDB)				
L16	2	us-20150002274-a1.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:52 AM
L17	1	L16 AND tag AND server AND sleep$3 AND wake?up	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:53 AM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	167700	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:45 AM
N2	0	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3) AND monitor$3).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:54 AM

N3	0	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:55 AM
N4	22	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast) AND (data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:56 AM
N5	43	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N6	21	N5 NOT N4	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N7	111	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND server AND (sleep$3 OR wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM

		command$3 OR monitor$3)).clm.					
N8	16	N1 AND N7	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM
N9	95	N7 NOT N8	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:10 AM

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17257570	CTNF	01/06/2022	SANU_0004USP
	892	01/06/2022	SANU_0004USP
	1449	01/06/2022	SANU_0004USP

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In re Application of: Zhejiang Hanshow Technology Co. Ltd	§		
	§	Group Art Unit:	2643
Serial No.: 17/257,570	§		
Confirmation No.: 6950	§	Examiner:	HTUN SAN A
Filed: January 2, 2021	§		

For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

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

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Dated: January 28, 2022
Electronic Signature for Chih Huai Chiu: /Chih Huai Chiu/

Dear Sir:

Applicant submits herewith a Corrected Application Data Sheet to change the name of the Applicant from "ZHEJIANG HANSHOW TECHNOLOGY CO. LTD" to "HANSHOW TECHNOLOGY CO., LTD." in the applicant information section. The address of the Applicant has also been updated. Applicant respectfully submits that the above request to update the name of the Applicant is made in accordance with 37 C.F.R. 1.46 (c)(2). A request to change the applicant under 37 CFR 1.46(c)(2) and a statement under 37 CFR 3.73(c) showing the chain of title are also attached.

Although Applicant believes that no additional fees are due in connection with this response, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 6029531/SANU_0004USP, for any additional fees required to make this response timely and acceptable to the Office.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office, PLLC
2101 CityWest Blvd, STE 100
Houston, TX 77042, USA
Phone: 1-281-704-7896

Doc Code: R46C.REQ
Document Description: Request under 37 CFR 1.46(c) to correct, update or change the applicant.

PTO/AIA/41 (04-15)
Approved for use through 11/30/2020. OMB 0651-0031
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REQUEST TO CORRECT OR UPDATE THE NAME OF THE APPLICANT UNDER 37 CFR 1.46(c)(1), OR CHANGE THE APPLICANT UNDER 37 CFR 1.46(c)(2)
(FOR USE ONLY IN APPLICATIONS FILED ON OR AFTER SEPTEMBER 16, 2012)

Application Number	17/257,570
Filing Date	01-02-2021
First Named Inventor	Min LIANG
Art Unit	2643
Examiner Name	HTUN, SAN A
Practitioner Docket Number	SANU_0004USP

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

Applicant hereby **requests that the name of the applicant be corrected or updated under 37 CFR 1.46(c)(1), or that the applicant be changed under 37 CFR 1.46(c)(2),** in the above-identified application. **Requests under 37 CFR 1.46(c)(1) or (c)(2) cannot be submitted after payment of the issue fee or if the application has been patented.**

Please check the applicable box(es) below.

☐ 1. This request is to **correct or update the name of the applicant** (**under 37 CFR 1.46(c)(1)**) and includes:

☐ An application data sheet (ADS) in accordance with 37 CFR 1.76(c) with the corrected or updated information shown with markings (*e.g.*, underlining for insertions, strikethrough for deletions). A Corrected Web-based ADS may be used.

Note: Requests under 37 CFR 1.46(c)(1) may be filed to correct typographical errors in the name of the § 1.46 applicant, or for updating the name of the § 1.46 applicant (*i.e.*, where there is no change in the applicant itself but just in the applicant's name). See the Manual of Patent Examining Procedure (MPEP) section 605.01.

■ 2. This request is to **change the applicant** (**under 37 CFR 1.46(c)(2)**) and includes:

■ An application data sheet (ADS) in accordance with 37 CFR 1.76(c) that identifies the changes with proper markings (underlining for insertions and strikethrough for deletions). A Corrected Web-based ADS may be used.

■ A Statement Under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent). See MPEP 325.

I am the

☐ applicant* ■ attorney or agent of record Registration number 75299 ☐ attorney or agent acting under 37 CFR 1.34 Registration number _____

Signature /CHIH HUAI CHIU/
Typed or printed name CHIH HUAI CHIU
Date 01-28-2022

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. *Juristic entities must be represented by a patent practitioner (See 37 CFR 1.31, applicable to any paper filed on or after September 16, 2012 that is presented on behalf of a juristic entity, regardless of application filing date). Submit multiple forms if more than one signature is required, see below**.

■ ** Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.36. 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.**

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

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.

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. 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 displays a valid OMB control number.

STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: HANSHOW TECHNOLOGY CO., LTD.

Application No./Patent No.: 17/257,570 Filed/Issue Date: 01-02-2021

Titled: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

HANSHOW TECHNOLOGY CO., LTD., 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 _____, Frame _____, 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: MIN LIANG, SHIGUO HOU, JUN CHEN, QI JIANG, YANG ZHAO To: ZHEJIANG HANSHOW TECHNOLOGY CO. LTD

   The document was recorded in the United States Patent and Trademark Office at
   Reel 055088, Frame 0746, or for which a copy thereof is attached.

2. From: ZHEJIANG HANSHOW TECHNOLOGY CO. LTD To: HANSHOW TECHNOLOGY CO., LTD.

   The document was recorded in the United States Patent and Trademark Office at
   Reel 058769, Frame 0517, or for which a copy thereof is attached.

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.**

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

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: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

5. 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.

6. 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.

☐ 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.

/CHIH HUAI CHIU/	01-28-2022
Signature	Date
CHIH HUAI CHIU	75299
Printed or Typed Name	Title or Registration Number

[Page 2 of 2]

Privacy Act Statement

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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.

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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76.
This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Min		LIANG	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country	CN

Inventor 2 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Shiguo		HOU	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	State/Province	
Postal Code	314000	Country	CN

Inventor 3 Remove

Legal Name

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Prefix	Given Name	Middle Name	Family Name	Suffix
	Jun		CHEN	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

Inventor 4 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Qi		JIANG	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

Inventor 5 Remove

Legal Name

Prefix	Given Name	Middle Name	Family Name	Suffix
	Yang		ZHAO	

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

City	Jiaxing, Zhejiang	Country of Residence	CN

Mailing Address of Inventor:

Address 1	Building 33, Zhifuzhongxin, Xiuzhou District		
Address 2			
City	Jiaxing, Zhejiang	**State/Province**	
Postal Code	314000	**Country**	CN

PTO/AIA/14 (02-18)
Approved for use through 11/30/2020. OMB 0651-0032
U.S. 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.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the **Add** button. Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

☐ **An Address is being provided for the correspondence Information of this application.**

Customer Number	162130		
Email Address	docketing@carrpllc.com	Add Email	Remove Email
Email Address	nan.carr@carrpllc.com	Add Email	Remove Email

Application Information:

Title of the Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD		
Attorney Docket Number	SANU_0004USP	**Small Entity Status Claimed**	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	3	**Suggested Figure for Publication (if any)**	1

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

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

☐ **Request Not to Publish.** I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32).
Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	◉ Customer Number	○ US Patent Practitioner	○ Limited Recognition (37 CFR 11.9)
Customer Number	162130		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.
When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending		Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	a 371 of international	PCT/CN2019/070431	2019-01-04

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)[i] the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

			Remove
Application Number	Country[i]	Filing Date (YYYY-MM-DD)	Access Code[i] (if applicable)
201810706496.2	CN	2018-07-02	

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.
NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

Clear

◉ Assignee	○ Legal Representative under 35 U.S.C. 117	○ Joint Inventor
○ Person to whom the inventor is obligated to assign.	○ Person who shows sufficient proprietary interest	

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here. ☒

Organization Name	~~Zhejiang Hanshow Technology Co. Ltd~~ Hanshow Technology Co., Ltd.		
Mailing Address Information For Applicant:			
Address 1	~~Building 33, Zhifuzhongxin, Xiuzhou District~~ Floor 4, Building 1 and Floor 7, Building 5		
Address 2	Jiaxing Guangfu Innovation Park, No.1288 Kanghe Road, Xiuzhou District		
City	Jiaxing, Zhejiang	**State/Province**	
Country CN		Postal Code	~~314000~~ 314031
Phone Number		Fax Number	
Email Address			

Additional Applicant Data may be generated within this form by selecting the Add button.

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. ☐

Prefix	**Given Name**	Middle Name	**Family Name**	Suffix

Mailing Address Information For Assignee including Non-Applicant Assignee:

Address 1			
Address 2			
City		**State/Province**	
Country i		Postal Code	
Phone Number		Fax Number	
Email Address			

Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/CHIH HUAI CHIU/			Date (YYYY-MM-DD)	2022-01-28
First Name	CHIH HUAI	Last Name	CHIU	Registration Number	75299

Additional Signature may be generated within this form by selecting the Add button.

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	SANU_0004USP
	Application Number	17257570
Title of Invention	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	

This collection of information is required by 37 CFR 1.76. 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 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet 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.**

Privacy Act Statement

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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 the Freedom of Information Act requires disclosure of these records.

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.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent CooperationTreaty.

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.

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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.

Electronic Acknowledgement Receipt

EFS ID:	44866102
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	28-JAN-2022
Filing Date:	02-JAN-2021
Time Stamp:	15:51:34
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	no

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	SANU_0004USP_Transmittal_for_CADS.pdf	170915 e48dcd28c25f5a75f97a34ae9b913f6e4a1a119d	no	1

Warnings:

Information:					
2	Req to correct/update/change appl name until pay issue fee	aia0041_Request_to_change_Applicant.pdf	205380 d517d3b3d5d5aafad76feb97d7847ef3fa6d5415	no	2
Warnings:					
Information:					
3	Assignee showing of ownership per 37 CFR 3.73	373_Statement_aia0096.pdf	119796 bc514461dba60ed59ded9b79b5293140f5ef5ba6	no	3
Warnings:					
Information:					
4	Application Data Sheet	SANU_0004USP_CADS_012820 22_1.pdf	2484005 6e25a0d741a6aa8e79a3b568a6d3166e7637ac4c	no	10
Warnings:					
Information:					
This is not an USPTO supplied ADS fillable form					
			Total Files Size (in bytes):	2980096	

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New Applications Under 35 U.S.C. 111

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

National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

Electronic Patent Application Fee Transmittal

Application Number:	17257570
Filing Date:	02-Jan-2021
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Filer:	Chih Huai Chiu
Attorney Docket Number:	SANU_0004USP

Filed as Small Entity

Filing Fees for U.S. National Stage under 35 USC 371

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:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension - 2 months with $0 paid	2252	1	320	320
Miscellaneous:				
			Total in USD ($)	**320**

Electronic Acknowledgement Receipt

EFS ID:	45880557
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	06-JUN-2022
Filing Date:	02-JAN-2021
Time Stamp:	11:44:49
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$320
RAM confirmation Number	E202266B45141914
Deposit Account	602953
Authorized User	Chih-Huai Chiu

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

37 CFR 1.21 (Miscellaneous fees and charges)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Request for Reconsideration-After Non-Final Rejection	SANU_0004USP_ROA_1.pdf	1938177 22918e3b27a762d4b68c3eb83d3da1735382505c	no	9
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	37851 5b04ed64c5043816d1c6b717e939991dbc032d81	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1976028		

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New Applications Under 35 U.S.C. 111

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National Stage of an International Application under 35 U.S.C. 371

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/SB/06 (09-11)
Approved for use through 1/31/2014. OMB 0651-0032
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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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 17/257,570	Filing Date 01/02/2021	☐ 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))	19 minus 20 =	* 0		x $50 =	0
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3 minus 3 =	* 0		x $240 =	0
☐ 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	0

APPLICATION AS AMENDED - PART II

		(Column 1)		(Column 2)	(Column 3)			
AMENDMENT	06/06/2022	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0		x $50 =	0
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $240 =	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

		(Column 1)		(Column 2)	(Column 3)			
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".	/GERALDINE L STANLEY/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.	

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

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

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named Inventor: Min LIANG	§	Art Unit: 2643
	§	
Application No.: 17/257,570	§	Examiner: HTUN, SAN A
	§	
Date Filed: 01/02/2021	§	Confirmation No.: 6950
	§	
Title: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD	§	

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: June 6, 2022
Electronic Signature for Chihhuai Chiu: /Chih Huai Chiu/

RESPONSE TO NON-FINAL OFFICE ACTION

Dear Commissioner:

In response to the Office Action dated January 6, 2022, Applicant respectfully requests reconsideration in view of the following amendments and remarks. This response is submitted with a two-month extension request, making June 6, 2022 the new due date. Therefore, this response is timely filed. While Applicant believes that no additional fees are due in connection with this response, the Commissioner is hereby authorized to charge counsel's Deposit Account No. 602953/SANU_0004USP, for any fees, including time extension or excess claim fees, required to make this response timely and acceptable to the Office.

Amendments to the Claims begin on page 2 of this paper.

Remarks begin on page 8 of this paper.

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions of claims in the application:

1. (Original) An interactive electronic tag device communication system, comprising: a background server, a base station, an electronic tag device and an external device;

wherein the electronic tag device comprises two communication paths: a first communication path and a second communication path; the first communication path supports two monitoring modes: a normal monitoring mode and a fast monitoring mode; and the base station comprises two wake-up modes: a normal wake-up mode and a fast wake-up mode;

the external device is configured to transmit first data to the electronic tag device through the second communication path;

the electronic tag device is configured to receive the first data, transmit the first data to the base station through the first communication path, and enter the fast monitoring mode;

the base station is configured to receive the first data and transmit the first data to the background server;

the background server is configured to generate a control instruction and second data according to the first data, and transmit the control instruction and the second data to the base station;

the base station is further configured to receive the control instruction and the second data, communicate with the electronic tag device in the fast wake-up mode, and transmit a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

the electronic tag device is further configured to receive the fast wake-up instruction, the control instruction and the second data, and switch to the normal monitoring mode after completing the communication.

2. (Previously Presented) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is configured to attach an ID of the electronic tag device to the first data when transmitting the first data to the base station.

3. (Previously Presented) The interactive electronic tag device communication system according to claim 1, wherein when the first data is received by a plurality of base stations, the plurality of base stations are configured to attach respective energy value information of the plurality of base stations to the first data when transmitting the first data to the background server;

the background server is configured to determine an optimal base station among the plurality of base stations according to the respective energy value information of the plurality of base stations, and transmit the control instruction and the second data to the electronic tag device through the optimal base station.

4. (Original) The interactive electronic tag device communication system according to claim 3, wherein the background server is further configured to perform deduplication processing on the first data uploaded by the plurality of base stations.

5. (Original) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

6. (Original) The interactive electronic tag device communication system according to claim 1, wherein the electronic tag device is further configured to switch to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

7. (Original) An interactive electronic tag device communication method, comprising:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

8. (Original) The interactive electronic tag device communication method according to claim 7, wherein transmitting, by the electronic tag device, the first data to the base station comprises:

attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.

9. (Original) The interactive electronic tag device communication method according to claim 7, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises:

attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.

10. (Original) The interactive electronic tag device communication method according to claim 9, further comprising: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.

11. (Original) The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

12. (Original) The interactive electronic tag device communication method according to claim 7, further comprising: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

13. (Previously Presented) A computer device comprising a memory, a processor and a computer program stored on the memory and executable by the processor, wherein the processor implements, when executing the computer program, the method according to claim 7.

14. (Currently Amended) A non-transitory computer-readable storage medium storing therein a computer program for executing an interactive electronic tag device communication method comprising:

transmitting, by an external device, first data to an electronic tag device through a second communication path in the electronic tag device;

receiving, by the electronic tag device, the first data, transmitting the first data to a base station through a first communication path in the electronic tag device, and entering a fast monitoring mode;

receiving, by the base station, the first data and transmitting the first data to a background server;

generating, by the background server, a control instruction and second data according to the first data, and transmitting the control instruction and the second data to the base station;

receiving, by the base station, the control instruction and the second data, communicating with the electronic tag device in a fast wake-up mode, and transmitting a fast wake-up instruction, the control instruction and the second data to the electronic tag device through the first communication path; and

receiving, by the electronic tag device, the fast wake-up instruction, the control instruction and the second data, and switching to a normal monitoring mode after completing the communication;

wherein the electronic tag device comprises two communication paths: the first communication path and the second communication path, the first communication path supports two monitoring modes: the normal monitoring mode and the fast monitoring mode, and the base station comprises two wake-up modes: a normal wake-up mode and the fast wake-up mode.

15. (Currently Amended) The non-transitory computer-readable storage medium according to claim 14, wherein transmitting, by the electronic tag device, the first data to the base station comprises:

attaching an ID of the electronic tag device to the first data, and transmitting the ID of the electronic tag device and the first data to the base station.

16. (Currently Amended) The non-transitory computer-readable storage medium according to claim 14, wherein receiving, by the base station, the first data and transmitting the first data to a background server comprises:

attaching, by a plurality of base stations, respective energy value information of the plurality of base stations to the first data when receiving the first data, and transmitting, by the plurality of base stations, the first data and the respective energy value information of the plurality of base stations to the background server.

17. (Currently Amended) The non-transitory computer-readable storage medium according to claim 16, wherein the computer program further executes the act of: performing, by the background server, deduplication processing on the first data uploaded by the plurality of base stations.

18. (Currently Amended) The non-transitory computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to a normal monitoring mode when the fast wake-up instruction transmitted by the base station is not received within a preset time range.

19. (Currently Amended) The non-transitory computer-readable storage medium according to claim 14, wherein the computer program further executes the act of: switching, by the electronic tag device, to the normal monitoring mode when the fast wake-up instruction is received but the control instruction and the second data are not received within a preset time range.

REMARKS

Status of the Claims

In the Office Action of January 6, 2022, claims 14-19 were rejected and claims 1-13 were allowed.

In this Response, claims 14-19 are amended. Thus, claims 14-19 are now pending and subject to further examination.

Allowable Subject Matter

Applicant notes with appreciation the Examiner's indication that claims 1-13 are allowed.

Claim Rejections under 35 U.S.C. §101

In the Office Action, claims 14-19 were rejected under 35 U.S.C. § 101 as being directed to a non-statutory subject matter.

Specifically, the scope of the generic term "computer-readable storage medium" in these claims covers a signal per se or does not exclude a signal.

As a response, the Applicant has amended the generic term "computer-readable storage medium" in claims 14-19 to "non-transitory computer-readable storage medium" according to par. 0061 in PG PUB of instant application, for excluding any transitory medium such as a signal.

Therefore, concerns raised in the Office Action have been addressed. Accordingly, Applicant respectfully requests withdrawal of these grounds of rejection.

Conclusion

Applicant respectfully submits that the present application is in condition for allowance, and notice to this effect is respectfully requested. Should any questions arise in conjunction with this application, or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application, the undersigned Applicant's representative can be reached at the telephone number or email address listed below.

Respectfully submitted,

Electronic signature: /Chih Huai Chiu/
Chih Huai Chiu
Registration No.: 75,299
NZ Carr Law Office
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Houston, Texas 77042
Telephone: 281-704-7896

UNITED STATES PATENT AND TRADEMARK OFFICE

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NOTICE OF ALLOWANCE AND FEE(S) DUE

162130 7590 06/22/2022

NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

EXAMINER
HTUN, SAN A

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 06/22/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

TITLE OF INVENTION: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	09/22/2022

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.

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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.

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)

162130 7590 06/22/2022
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

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.

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.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

TITLE OF INVENTION: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	09/22/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
HTUN, SAN A	2643	370-311000

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,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document 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
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

162130 7590 06/22/2022
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

EXAMINER	
HTUN, SAN A	
ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 06/22/2022

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); (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. 17/257,570	Applicant(s) LIANG et al.	
	Examiner SAN HTUN	Art Unit 2643	AIA (FITF) Status Yes

-- 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 06/06/2022.
   ☐ 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 1-19 . 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 _____.

/SAN HTUN/
Primary Examiner, Art Unit 2643

Notice of Allowance

1. This Office Action is in response to the Applicant's response filed on 06/06/2022. In virtue of this communication, claims 1-19 are currently patentable in this Office Action.

Allowable Subject Matter

2. Claims 1-19 are allowed.

3. The following is a statement of reasons for the indication of allowable subject matter:

the prior art of record fails to anticipate or render the claimed limitations obvious, singly or in combination, particularly, "switching between normal and fast wake-up modes of an electronic tag device via two communication paths by a control instruction and a fast wake-up instruction" as detailed in the independent claims in light of fig. 1-3 in the disclosure.

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAN A HTUN whose telephone number is (571)270-3190. The examiner can normally be reached on Monday - Thursday 7 AM - 5 PM.

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, Jinsong Hu can be reached on 5712723965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/SAN HTUN/

Primary Examiner, Art Unit 2643

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

CPC - Searched*		
Symbol	Date	Examiner
H04W40/$.H04W52/$.H04W76/28.H04W88/$.	12/31/2021	/S.H./
H04W4/70-80.H04W40/$.H04W52/$.H04W76/15,20,28.H04W88/$.	06/10/2022	/S.H./

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
Searched in PE2E search.	12/31/2021	/S.H./
Explored NPL datatbase attached.	01/01/2022	/S.H./
Conducted assignee and inventor search in PE2E search.	12/31/2021	/S.H./
Updated search in PE2E SEARCH.	06/10/2022	/S.H./
Conducted interference search in SEARCH.	06/10/2022	/S.H./
Explored NPL documents in the databases attached.	06/10/2022	/S.H./

/SAN HTUN/ Primary Examiner, Art Unit 2643	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H04W	4/70-80.40/$.52/$.76/15,20,28.88/$.	06/10/2022	/S.H./

/SAN HTUN/ Primary Examiner, Art Unit 2643	

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	**Art Unit**
	SAN HTUN	2643

CPC								
Symbol							**Type**	**Version**
H04W	/	52	/	0229			F	2013-01-01
H04W	/	52	/	0212			I	2013-01-01
H04W	/	52	/	0235			I	2013-01-01
H04W	/	76	/	15			I	2018-02-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SAN HTUN/ Primary Examiner, Art Unit 2643	10 June 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20220610

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	**Art Unit**
	SAN HTUN	2643

INTERNATIONAL CLASSIFICATION				
CLAIMED				
H04W	/	52	/	02
H04W	/	76	/	15

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

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

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SAN HTUN/ Primary Examiner, Art Unit 2643	10 June 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20220610

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

☑ 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		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SAN HTUN/ Primary Examiner, Art Unit 2643	10 June 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20220610

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2	"20210321332"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:51 PM
L2	103734945	Zhejiang Hanshow Technology Co. Ltd	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L3	42328739	LIANG, Min; HOU, Shiguo; CHEN, Jun; JIANG, Qi; ZHAO, Yang	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L5	1003494	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/12/31 11:55 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L6	19914	(wireless OR mobile OR cell$4) AND (normal OR fast) AND sleep$3 AND (wake?up OR wak$4up) AND (path OR link) AND (bs OR (base station) OR eNB OR gNB) AND server AND (device OR station OR terminal OR equipment OR telephone OR phone)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L7	116244414	L1 OR L3 OR L5 OR L2	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L8	18748	L6 AND L7	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	ADJ	ON	ON	2021/12/31 11:58 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L9	14812	L8 AND (control AND (instruction OR command) AND monitor$3)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:28 AM
L10	977	L9 AND (sleep$3 AND (wake-up OR wake$4up OR wake?up)).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L11	182	L10 AND (path OR link).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L12	1	US-20070103296-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	ADJ	ON	ON	2022/01/01 01:30 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L13	1	US-20090135000-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 01:32 AM
L14	741	(wireless OR mobile OR cell$4) SAME (tag OR asset) SAME (sleep$3 OR wake-up OR wak$4up OR wake?up) SAME (mode OR normal OR low OR high OR fast) SAME server SAME (station OR device OR equipment OR terminal)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 02:28 AM
L15	210	L14 AND (sleep$3 OR wake-up OR wak$4up OR wake?up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	ADJ	ON	ON	2022/01/01 02:29 AM

			IBM_TDB)				
L16	2	us-20150002274-a1.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:52 AM
L17	1	L16 AND tag AND server AND sleep$3 AND wake?up	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:53 AM
L18	1235759	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/06/10 01:06 PM
L19	83993	(wireless OR mobile OR cell$4 OR electronic OR comput$3 OR portable) AND (tag OR rfid OR transponder OR FOB) AND (mode OR normal OR fast) AND (wake?up OR sleep$3 OR (power	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/06/10 01:10 PM

		near10 sav$3)) AND server AND (command$3 OR monitor$3 OR instruct$3) AND (link OR path) AND (bluetooth OR nfc OR (direct mode) OR (short range))	MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L20	13939	L18 AND L19	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/06/10 01:10 PM
L21	54817	(wireless OR mobile OR cell$4 OR electronic OR comput$3 OR portable) AND (tag OR rfid OR transponder OR FOB) AND (mode OR normal OR fast) AND (wake?up OR sleep$3 OR (power near10 sav$3)) AND server AND (command$3 OR monitor$3 OR instruct$3) AND (link OR path) AND (bluetooth OR nfc OR (direct mode) OR (short range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 01:10 PM
L22	10617	L21 AND L18	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	ADJ	ON	ON	2022/06/10 01:10 PM

			IBM_TDB)				
L23	1154	L22 AND ((sleep$3 OR sav$3 OR wake?up OR wake-up OR wak$4up) AND power).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 01:11 PM
L24	166	L23 AND ((fast OR quick OR normal) WITH (wak$4up OR sleep$3 OR wake-up))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 02:39 PM
L25	37886	(wireless OR mobiel OR cell$4 OR protable OR user OR electronic OR smart OR comput$3) SAME (terminal OR device OR station OR equipment OR phone OR telephone) SAME (wak$4up OR wake-up) SAME (mode OR normal OR fast)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:29 PM
L26	15144	L25 AND (wak$4up OR wake-up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	ADJ	ON	ON	2022/06/10 04:31 PM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L27	5171	L26 AND (tag OR rfid OR nfc OR bluetooth OR (direct mode) OR (shrt range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:32 PM
L28	5483	L26 AND (tag OR rfid OR nfc OR bluetooth OR (direct mode) OR (short range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:36 PM
L29	672	L28 AND (mode WITH (fast OR normal) WITH (wak$4up OR (wake up) OR wake-up))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:38 PM
L30	1273963	(H04W4/70-80 OR	(US-PGPUB; USPAT;	ADJ	ON	ON	2022/06/10

		H04W40/$ OR H04W52/$ OR H04W76/15,20,28 OR H04W88/$).CPC.	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				07:45 PM
L31	249	L29 AND L30	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 07:45 PM

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	167700	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:45 AM
N2	0	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3) AND monitor$3).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:54 AM
N3	0	((wireless OR mobile OR cell$4) AND tag	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:55 AM

		AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3 OR monitor$3)).clm.					
N4	22	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast) AND (data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:56 AM
N5	43	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N6	21	N5 NOT N4	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N7	111	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND server AND (sleep$3 OR wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM

N8	16	N1 AND N7	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM
N9	95	N7 NOT N8	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:10 AM
N10	216313	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:04 PM
N11	218	((tag OR rfid OR responder) AND (wireless OR mobile OR electronic OR device OR cell$4 OR user OR equipment OR station OR terminal) AND (server OR (base station) OR node) AND (sleep$3 OR (power sav$3) OR wak$4up OR wake-up) AND (mode OR normal OR fast)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:12 PM
N12	60	N10 AND N11	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:12 PM
N13	158	N11 NOT N10	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:13 PM
N15	222631	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/15,20,28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:46 PM
N16	60	N15 AND N11	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:46 PM
N17	0	N16 NOT N13 NOT N12	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:47 PM

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Showing 1-5 of 5 for fast wake up mode for mobile device

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Single Year Range

2018 2022

From 2018 To 2022

Author

Affiliation

Publication Title

Publisher

Conference Location

Publication Topics

4.4 A 1.3TOPS/W @ 32GOPS Fully Integrated 10-Core SoC for IoT End-Nodes with 1.7μW Cognitive Wake-Up From MRAM-Based State-Retentive Sleep Mode

Davide Rossi; Francesco Conti; Manuel Eggiman; Stefan Mach; Alfio Di Mauro; Marco Guermandi; Giuseppe Tagliavini; Antonio Pullini; Igor Loi; Jie Chen; Eric Flamand; Luca Benini

2021 IEEE International Solid- State Circuits Conference (ISSCC)

Year: 2021 | Volume: 64 | Conference Paper | Publisher: IEEE

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4.4 A 1.3TOPS/W @ 32GOPS Fully Integrated 10-Core SoC for IoT End-Nodes with 1.7μW Cognitive Wake-Up From MRAM-Based State-Retentive Sleep Mode

Davide Rossi; Francesco Conti; Manuel Eggiman; Stefan Mach; Alfio Di Mauro; Marco Guermandi; Giuseppe Tagliavini; Antonio Pullini; Igor Loi; Jie Chen; Eric Flamand; Luca Benini

2021 IEEE International Solid- State Circuits Conference (ISSCC)

Year: 2021 | Volume: 64 | Conference Paper | Publisher: IEEE

Vega: A Ten-Core SoC for IoT Endnodes With DNN Acceleration and Cognitive

Wake- Up **From MRAM-Based State-Retentive Sleep** Mode
Davide Rossi; Francesco Conti; Manuel Eggiman; Alfio Di Mauro; Giuseppe Tagliavini; Stefan Mach; Marco Guermandi; Antonio Pullini; Igor Loi; Jie Chen; Eric Flamand; Luca Benini
IEEE Journal of Solid-State Circuits
Year: 2022 | Volume: 57, Issue: 1 | Journal Article | Publisher: IEEE

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Vega: A Ten-Core SoC for IoT Endnodes With DNN Acceleration and Cognitive Wake- Up From MRAM-Based State-Retentive Sleep Mode

Davide Rossi; Francesco Conti; Manuel Eggiman; Alfio Di Mauro; Giuseppe Tagliavini; Stefan Mach; Marco Guermandi; Antonio Pullini; Igor Loi; Jie Chen; Eric Flamand; Luca Benini
IEEE Journal of Solid-State Circuits
Year: 2022 | Volume: 57, Issue: 1 | Journal Article | Publisher: IEEE

Techniques for Reducing the Connected-Standby Energy Consumption of Mobile Devices
Jawad Haj-Yahya; Yanos Sazeides; Mohammed Alser; Efraim Rotem; Onur Mutlu
2020 IEEE International Symposium on High Performance Computer Architecture (HPCA)
Year: 2020 | Conference Paper | Publisher: IEEE
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Techniques for Reducing the Connected-Standby Energy Consumption of Mobile Devices

Jawad Haj-Yahya; Yanos Sazeides; Mohammed Alser; Efraim Rotem; Onur Mutlu
2020 IEEE International Symposium on High Performance Computer Architecture (HPCA)
Year: 2020 | Conference Paper | Publisher: IEEE

Optimized Neighbor Discovery for Opportunistic Networks of Energy Constrained IoT Devices
Pierpaolo Loreti; Lorenzo Bracciale
IEEE Transactions on Mobile Computing
Year: 2020 | Volume: 19, Issue: 6 | Journal Article | Publisher: IEEE
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Optimized Neighbor Discovery for Opportunistic Networks of Energy

Constrained IoT Devices

Pierpaolo Loreti; Lorenzo Bracciale
IEEE Transactions on Mobile Computing
Year: 2020 | Volume: 19, Issue: 6 | Journal Article | Publisher: IEEE

A 10-Gb/s/ch, 0.6-pJ/bit/mm Power Scalable Rapid-ON/OFF Transceiver for On-Chip Energy Proportional Interconnects

Da Wei; Tejasvi Anand; Guanghua Shu; José E. Schutt-Ainé; Pavan Kumar Hanumolu
IEEE Journal of Solid-State Circuits
Year: 2018 | Volume: 53, Issue: 3 | Journal Article | Publisher: IEEE
Cited by: Papers (5)

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A 10-Gb/s/ch, 0.6-pJ/bit/mm Power Scalable Rapid-ON/OFF Transceiver for On-Chip Energy Proportional Interconnects

Da Wei; Tejasvi Anand; Guanghua Shu; José E. Schutt-Ainé; Pavan Kumar Hanumolu
IEEE Journal of Solid-State Circuits
Year: 2018 | Volume: 53, Issue: 3 | Journal Article | Publisher: IEEE

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Author

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Publication Title

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Conference Location

Publication Topics

Ultra-Low Standby Power Embedded SRAM Design Techniques for Smart IoT Applications

Koji Nii

2019 IEEE 11th International Memory Workshop (IMW)

Year: 2019 | Conference Paper | Publisher: IEEE

Cited by: Papers (1)

Abstract HTML

Ultra-Low Standby Power Embedded SRAM Design Techniques for Smart IoT Applications

Koji Nii

2019 IEEE 11th International Memory Workshop (IMW)

Year: 2019 | Conference Paper | Publisher: IEEE

Non-Contact Low-Power Proximity Switch Based on Kitchen Garbage Crusher

Shouhua Wang; JinBao Guo; DanDan Xu

2018 International Conference on Intelligent Transportation, Big Data & Smart City (ICITBS)

Year: 2018 | Conference Paper | Publisher: IEEE

Abstract HTML

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Effects of Radio Triggered Sensor MAC Protocol over Wireless Sensor Network
Pranesh Sthapit; Jae-Young Pyun
2011 IEEE 11th International Conference on Computer and Information Technology
Year: 2011 | Conference Paper | Publisher: IEEE
Cited by: Papers (12) | Patents (1)

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Pranesh Sthapit; Jae-Young Pyun
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Cyclic dinucleotide as an anticancer agent

The present invention relates to compounds of formula (I) as well as pharmaceutically acceptable compositions comprising the compounds of the present invention, and methods of using the compositions in the treatment of various disorders. - Here all substituents are defined herein

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KR20190042998A | Patent Application | 2019-04-29 | 3

Cyclic dinucleotide as an anticancer agent

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Main Concept Text
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us 20210321332 A1

(No Concept Modifiers)
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17257570	NOA	06/22/2022	SANU_0004USP

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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
17/257,570	01/02/2021	2643	910	SANU_0004USP	19	3

CONFIRMATION NO. 6950

CORRECTED FILING RECEIPT

162130
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

OC000000134850052

Date Mailed: 06/30/2022

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Inventor(s)

Min LIANG, Jiaxing, Zhejiang, CHINA;
Shiguo HOU, Jiaxing, Zhejiang, CHINA;
Jun CHEN, Jiaxing, Zhejiang, CHINA;
Qi JIANG, Jiaxing, Zhejiang, CHINA;
Yang ZHAO, Jiaxing, Zhejiang, CHINA;

Applicant(s)

Hanshow Technology Co. Ltd., Jiaxing, Zhejiang, CHINA;

Power of Attorney: The patent practitioners associated with Customer Number 162130

Domestic Priority data as claimed by applicant

This application is a 371 of PCT/CN2019/070431 01/04/2019

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CHINA 201810706496.2 07/02/2018

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The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 17/257,570**

Projected Publication Date: Not Applicable

Non-Publication Request: No

Early Publication Request: No

** **SMALL ENTITY** **

Title

INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

Preliminary Class

370

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

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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	17/257,570	Filing Date	2021-01-02	Docket Number (if applicable)	SANU/0004USP	Art Unit	2643
First Named Inventor	Min LIANG			Examiner Name	HTUN, SAN A		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

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- ☐ Other _____

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- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
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☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

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Signature	/CHIH HUAI CHIU/	Date (YYYY-MM-DD)	2022-08-25
Name	CHIH HUAI CHIU	Registration Number	75299

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Electronic Patent Application Fee Transmittal

Application Number:	17257570
Filing Date:	02-Jan-2021
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Filer:	Chih Huai Chiu/Chiayen Chen
Attorney Docket Number:	SANU_0004USP

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RCE- 1ST REQUEST	2801	1	680	680
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Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
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First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
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Attorney Docket Number:	SANU_0004USP
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5	Transmittal Letter	SANU_0004USP_IDS_Transmittal.pdf	113508 d358243ddf1c28e9b01512c8edffdc59fdfbfae4	no	2
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6	Information Disclosure Statement (IDS) Form (SB08)	SANU_0004USP_PTOSB08a.pdf	1034626 948963360f66ef8c0bec56d79b97363156a99e7f	no	4
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7	Request for Continued Examination (RCE)	SANU_0004USP_RCE.pdf	697649 bbae6dc2f346fc8b043f96d982be83fdeb5731f7	no	3
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8	Fee Worksheet (SB06)	fee-info.pdf	37758 a4364434ab1ee3f943937c64c3ed29ebefe3df93	no	2
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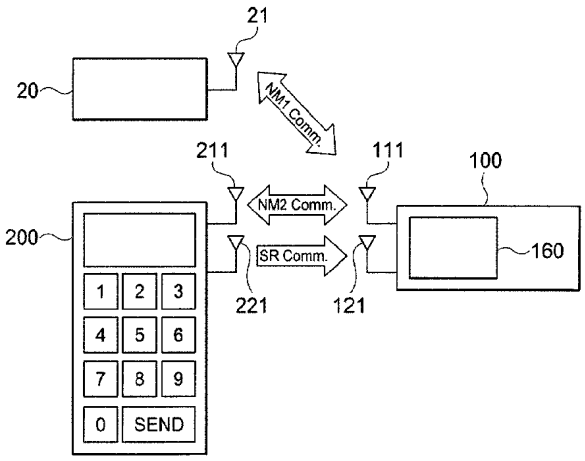
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(54) Electronic shelf label, system for electronic shelf label and method of operating system for electronic shelf label

(57) The present invention relates to an ESL, a system for an ESL, and a method of operating a system for an ESL, which includes a first communication unit for receiving a first radio frequency signal having lower power than the second radio frequency signal and outputting a pattern signal generated by patterning the first radio frequency signal; a second communication unit for receiving the second radio frequency signal; a control module for controlling the ESL to perform a predetermined specific operation by receiving the pattern signal; and a display unit for displaying a screen according to the control of the control module, and provides an useful effect that only a specific target, which requires forced wake-up, selectively wakes up and furthermore performs predetermined operations.

[FIG. 2]



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Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] Claim and incorporate by reference domestic priority application and foreign priority application as follows:

"CROSS REFERENCE TO RELATED APPLICATION

[0002] This application claims the benefit of Korean Patent Application Serial No. 10-2013-0092559, entitled filed August 5, 2013, which is hereby incorporated by reference in its entirety into this application."

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0003] The present invention relates to an electronic shelf label, a system for an electronic shelf label, and a method of operating a system for an electronic shelf label.

2. Description of the Related Art

[0004] Labels, which display product information and price, are used to display and sell a significant number of products in certain areas such as retail stores.

[0005] In general, price labels are attached near the corresponding products on display by directly writing product information necessary for sale, for example, price and discount information on paper by hand or printing the product information on paper according to the standardized format.

[0006] The conventional method as above seems to be simple and convenient and implemented at low cost, but the existing paper label application method has limitations in the areas, such as large retail stores, in which the standardized formats are used for tens of thousands of product items and product fluctuation occurs at any time.

[0007] That is, when the price fluctuation of some of the numerous product items occurs, it is needed to correct and change the labels in the location of the corresponding products displayed in the retail stores after picking out the corresponding labels and manually writing or printing the product information such as the changed prices.

[0008] Therefore, whenever the price information of the products is changed, the time and workforce for the correction and change are needed and the need for improvement of this is on the rise due to the properties of the large retail stores.

[0009] That is, there is a need to develop a means for changing product information rapidly, accurately, and simply at minimum costs.

[0010] In recent times, in order to satisfy the needs of the market, there are attempts to replace the existing paper label with an electronic tag using an electronic device, and related technologies are disclosed in many documents such as Patent Document 1 and Patent Document 2.

[0011] According to the language/cultural differences of organizations and countries in which the related technologies have been developed, various terms such as an electronic shelf label (ESL), an electronic price label (EPL), and an electronic information label (EIL) are used, but it is due to the cultural/language differences in recognizing and describing the label and the electronic tag and thus there is not much difference in the purpose and use thereof.

[0012] Hereinafter, in the present invention, it will be referred to as "electronic tag" in Korean and "ESL" in English.

[0013] Meanwhile, a communication module is provided in the ESL to transceive data in a wireless communication manner, and a display module such as E-paper or a liquid crystal display (LCD) is provided to display the received data on a screen.

[0014] At this time, it is common that a battery is employed to drive the display module etc. and there are continuous efforts to reduce battery consumption since the capacity of the battery is limited.

[0015] As a representative method of reducing battery consumption, a technique of alternately performing an active mode and a sleep mode has been widely used. Here, generally, conversion of the ESL from sleep mode to active mode is referred to as wake-up, and most of the ESLs repeat wake-up and sleep periodically.

[0016] Accordingly, the smaller the frequency of wake-up, the lower the battery consumption, but it takes a long time to reflect data transmitted from a server or a gateway to the corresponding ESL.

[0017] Further, in the process of operating a system for an ESL, there may be situations in which immediate operations of the ESL such as information change, state checking, and real-time price change reflection of the ESL are needed.

[0018] However, the ESL in sleep mode cannot perform the above tasks, and the efficiency of operation of the system for an ESL is remarkably reduced when the ESL waits until wake-up according to the preset period.

[0019] Because of this, various methods of forcedly waking up an ESL in sleep mode have been proposed. Among them, a representative method is a method of waking up an ESL by transmitting a low-frequency radio signal or waking up an ESL using a magnetic field.

[0020] However, the method of forcedly waking up an ESL using a low-frequency radio signal needs a large antenna compared to the case of using a general radio signal, thus disturbing miniaturization and slimming of the ESL.

[0021] Further, the method of using a magnetic field has problems such as too short reaction distance, high manufacturing costs, and increase in power consumption when employing a Hall sensor etc.

[0022] Further, when the ESL detects a low-frequency radio signal or a magnetic field, the ESL often wakes up unintentionally and thus consumes power even when it doesn't want to wake up itself.

[0023] Meanwhile, the ESL needs to perform a predetermined operation so that a store manager can check and manage state or information of the corresponding ESL, but the above-described conventional methods just wake up the ESL forcedly but cannot control the ESL to perform the required predetermined operation.

[Related Art Document]

[Patent Document]

[0024]

Patent Document 1: U.S. Patent Publication No. 2010-0205000

Patent Document 2: U.S. Patent Publication No. 2010-0106588

SUMMARY OF THE INVENTION

[0025] The present invention has been invented in order to overcome the above-described problems and it is, therefore, an object of the present invention to provide an electronic shelf label (ESL) that can selectively wake up only a specific target, which requires forced wake-up, to perform predetermined operations.

[0026] Further, it is another object of the present invention to provide a system for an ESL that can selectively wake up only a specific target, which requires forced wake-up, to perform predetermined operations.

[0027] Further, it is still another object of the present invention to provide a method of operating a system for an ESL that can selectively wake up only a specific target, which requires forced wake-up, to perform predetermined operations.

[0028] In accordance with one aspect of the present invention to achieve the object, there is provided an ESL that transceives a second radio frequency signal with a gateway, including: a first communication unit for receiving a first radio frequency signal having lower power than the second radio frequency signal and outputting a pattern signal generated by patterning the first radio frequency signal; a second communication unit for receiving the second radio frequency signal; a control module for controlling the ESL to perform a predetermined specific operation by receiving the pattern signal; and a display unit for displaying a screen according to the control of the control module.

[0029] At this time, the predetermined specific operation may be at least one selected from a wake-up operation of converting the ESL from sleep mode to active mode; a first specific operation of displaying at least one of information held by the ESL by the display unit; and a second specific operation of transmitting at least one of the information held by the ESL through the second communication unit.

[0030] Further, the first communication unit may include a first antenna for receiving the first radio frequency signal; a rectification unit connected to the first antenna and rectifying the first radio frequency signal; and a detector unit connected to the rectification unit and generating the pattern signal by patterning the signal rectified by the rectification unit to a square wave, wherein it is preferred that the rectification unit is implemented only with passive devices.

[0031] Further, the control module may include a first block maintaining an active state when the ESL is in active mode and in sleep mode; and a second block activated only when the ESL is in the active mode.

[0032] At this time, the first block may include a first register for recording first pattern data matched with the wake-up operation of converting the ESL from the sleep mode to the active mode; a second register for recording pattern data generated by converting the pattern signal output from the first communication unit; and a third register for recording a pattern data which is recorded in the second resister and different from the first pattern data.

[0033] Further, the first block may further include a control unit for recording the first pattern data in the first register, comparing the pattern data recorded in the second register with the first pattern data, and transmitting an interrupt signal to the second block when the pattern data recorded in the second register is the first pattern data.

[0034] Further, the second block may read the pattern data recorded in the third register and perform a specific operation of the specific operations, which matches with the read pattern data, when the interrupt signal is applied.

[0035] Further, the ESL may further include a storage unit including a pattern data storage for storing the pattern data; and a process information storage for storing process information which is information about the specific operation, wherein the respective pattern data and the respective process information are stored to match with each other.

[0036] Meanwhile, the information held by the ESL may be at least one selected from MAC address, the number of abnormal operations, and battery voltage information of the ESL, and ambient temperature of the ESL.

[0037] Further, it is preferred that the first pattern data are unique values different in the respective ESLs.

[0038] In accordance with another aspect of the present invention to achieve the object, there is provided a system for an ESL including an ESL, a gateway, a server, and a mobile terminal that outputs a first radio frequency signal, wherein a predetermined specific operation includes an assign operation of registering the ESL in the system for an ESL or an unassign operation of releasing registration of the ESL in the system for an ESL.

[0039] At this time, it is preferred that the ESLs are provided in plural number and the respective ESLs have

first pattern data as different unique values.

[0040] In accordance with still another aspect of the present invention to achieve the object, there is provided a method of operating a system for an ESL including an ESL, a gateway, a server, and a mobile terminal that outputs a first radio frequency signal, including the steps of: recording first pattern data in a first register; receiving the first radio frequency signal and performing a specific operation according to pattern data included in the received first radio frequency signal by the ESL when the mobile terminal outputs the first radio frequency signal; and converting the ESL to sleep mode.

[0041] At this time, the step of receiving the first radio frequency signal and performing the specific operation according to the pattern data included in the received first radio frequency signal by the ESL may include the steps of recording pattern data in a second register; determining whether the pattern data recorded in the first register is equal to the pattern data recorded in the second register; transmitting an interrupt signal from a first block to a second block when the pattern data recorded in the first register is equal to the pattern data recorded in the second register; reading pattern data recorded in a third register by the second block; searching process information matched with the pattern data recorded in the third register; and performing a normal operation when there is no process information matched with the pattern data recorded in the third register.

[0042] Further, the pattern data recorded in the second register may be copied to the third register when the pattern data recorded in the first register is not equal to the pattern data recorded in the second register.

[0043] Further, a specific operation according to the process information matched with the pattern data recorded in the third register may be performed when there is the process information matched with the pattern data recorded in the third register.

[0044] Meanwhile, the step of receiving the first radio frequency signal and performing the specific operation according to the pattern data included in the received first radio frequency signal may include the steps of recording pattern data in a second register; determining whether the pattern data recorded in the first register is equal to the pattern data recorded in the second register; and transmitting an interrupt signal from a first block to a second block when the pattern data recorded in the first register is equal to the pattern data recorded in the second register, wherein the second block wakes up when receiving the interrupt signal.

BRIEF DESCRIPTION OF THE DRAWINGS

[0045] These and/or other aspects and advantages of the present general inventive concept will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

[0046] FIG. 1 is a view schematically showing a system for an ESL in accordance with an embodiment of the present invention;

[0047] FIG. 2 is a view for explaining operation of the system for an ESL in accordance with an embodiment of the present invention;

[0048] FIG. 3 is a view schematically showing an ESL in accordance with an embodiment of the present invention;

[0049] FIG. 4 is a view for explaining a first radio frequency signal and a second radio frequency signal transceived by the ESL in accordance with an embodiment of the present invention, wherein FIG. 4a is a view showing the first radio frequency signal, and FIG. 4b is a view showing the second radio frequency signal;

[0050] FIG. 5 is a block diagram schematically showing configuration of a control module of the ESL in accordance with an embodiment of the present invention;

[0051] FIG. 6 is a view for explaining the relationship between signals and data processed by the ESL in accordance with an embodiment of the present invention; and

[0052] FIG. 7 is a flowchart schematically showing a method of operating a system for an ESL in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERABLE EMBODIMENTS

[0053] Advantages and features of the present invention and methods of accomplishing the same will be apparent by referring to embodiments described below in detail in connection with the accompanying drawings. However, the present invention is not limited to the embodiments disclosed below and may be implemented in various different forms. The embodiments are provided only for completing the disclosure of the present invention and for fully representing the scope of the present invention to those skilled in the art. Like reference numerals refer to like elements throughout the specification.

[0054] Terms used herein are provided to explain embodiments, not limiting the present invention. Throughout this specification, the singular form includes the plural form unless the context clearly indicates otherwise. When terms "comprises" and/or "comprising" used herein do not preclude existence and addition of another component, step, operation and/or device, in addition to the above-mentioned component, step, operation and/or device.

[0055] For simplicity and clarity of illustration, the drawing figures illustrate the general manner of construction, and descriptions and details of well-known features and techniques may be omitted to avoid unnecessarily obscuring the discussion of the described embodiments of the invention. Additionally, elements in the drawing figures are not necessarily drawn to scale. For example, the dimensions of some of the elements in the figures may be exaggerated relative to other elements to help improve understanding of embodiments of the present

invention. The same reference numerals in different figures denote the same elements.

[0056] The terms "first," "second," "third," "fourth," and the like in the description and in the claims, if any, are used for distinguishing between similar elements and not necessarily for describing a particular sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments of the invention described herein are, for example, capable of operation in sequences other than those illustrated or otherwise described herein. Similarly, if a method is described herein as comprising a series of steps, the order of such steps as presented herein is not necessarily the only order in which such steps may be performed, and certain of the stated steps may possibly be omitted and/or certain other steps not described herein may possibly be added to the method.

[0057] The terms "left," "right," "front," "back," "top," "bottom," "over," "under," and the like in the description and in the claims, if any, are used for descriptive purposes and not necessarily for describing permanent relative positions. It is to be understood that the terms so used are interchangeable under appropriate circumstances such that the embodiments of the invention described herein are, for example, capable of operation in other orientations than those illustrated or otherwise described herein. The term "coupled," as used herein, is defined as directly or indirectly connected in an electrical or non-electrical manner. Objects described herein as being "adjacent to" each other may be in physical contact with each other, in close proximity to each other, or in the same general region or area as each other, as appropriate for the context in which the phrase is used. Occurrences of the phrase "in one embodiment" herein do not necessarily all refer to the same embodiment.

[0058] Hereinafter, configurations and operational effects of the present invention will be described in detail with reference to the accompanying drawings.

[0059] FIG. 1 is a view schematically showing a system 1000 for an ESL in accordance with an embodiment of the present invention, FIG. 2 is a view for explaining operation of the system 1000 for an ESL in accordance with an embodiment of the present invention, FIG. 3 is a view schematically showing an ESL 100 in accordance with an embodiment of the present invention, FIG. 4 is a view for explaining a first radio frequency signal RF1 and a second radio frequency signal transceived by the ESL 100 in accordance with an embodiment of the present invention, wherein FIG. 4a is a view showing the first radio frequency signal RF1, and FIG. 4b is a view showing the second radio frequency signal, FIG. 5 is a block diagram schematically showing configuration of a control module 140 of the ESL 100 in accordance with an embodiment of the present invention, and FIG. 6 is a view for explaining the relationship between signals and data processed by the ESL 100 in accordance with an embodiment of the present invention.

[0060] Referring to FIGS. 1 to 6, a system 1000 for an electronic shelf label (ESL) in accordance with an embodiment of the present invention may include a server 10, a gateway 20, an ESL 100, and a mobile terminal 200.

[0061] Generally, the server 10 is constructed based on a wired communication network such as a TCP/IP network, and the ESL 100 is connected to a network mainly in a wireless communication manner.

[0062] Therefore, a means of relaying a wired communication network and a wireless communication network and converting data is needed, and the gateway 20 can play a role of the above means.

[0063] The server 10 may store product information such as product name and price, which are to be displayed by the ESL 100, various events such as temporary discount, and identification information of the ESLs 100. However, the product information and the events may be stored in a separate legacy system (not shown) connected to the server 10 and transmitted to the server 10 or input to the server 10 by a store manager through a separate input means connected to the server 10.

[0064] The server 10 configured as above may perform a function of converting the information, which are to be displayed by the ESL 100 disposed on shelves in the store, into data and providing the data to the ESL 100 through the gateway 20.

[0065] Next, the ESL 100 may perform a function of receiving and displaying the data transmitted from the server 10 through the gateway 20.

[0066] At this time, the ESL 100 and the gateway 20 may exchange data by transceiving a second radio frequency signal. The second radio frequency signal and the fact that the ESL 100 outputs a predetermined screen or transmits predetermined information to the gateway 20 by transceiving the second radio frequency signal are substantially the same as the case of a conventional typical system for an ESL.

[0067] Meanwhile, the ESL 100 in accordance with an embodiment of the present invention may be forced to wake up by receiving a first radio frequency signal RF1 transmitted from the mobile terminal 200.

[0068] Further, the information held by the ESL 100, such as MAC address, the number of abnormal operations, and battery voltage information of the ESL 100 and ambient temperature of the ESL 100 may be displayed on a display unit 160 or transmitted to the mobile terminal 200 or the gateway 20. In the present specification, these operations of the ESL 100 will be referred to as "specific operations". Further, the specific operation is a concept including wake-up.

[0069] As shown in FIG. 2, a first antenna unit 221 of the mobile terminal 200 may transmit the first radio frequency signal RF1, and a first antenna 121 of the ESL 100 may receive the first radio frequency signal RF1.

[0070] Further, the ESL 100 may perform wake-up and specific operations using pattern data Dp included in the received first radio frequency signal RF1. Among the specific operations, a communication process of transmitting

the information held by the ESL 100 to a relay antenna 21 of the gateway 20 is represented by NM1 Comm. and a communication process of transmitting the information held by the ESL 100 to the mobile terminal 200 is represented by NM2 Comm. Here, NM means a normal mode and is used to represent a method of transceiving data using the second radio frequency signal.

[0071] Meanwhile, looking into the difference between the first radio frequency signal RF1 and the second radio frequency signal with reference to FIGS. 4a and 4b, it will be understood that the first radio frequency signal RF1 has lower power than the second radio frequency signal.

[0072] That is, the second radio frequency signal is used to transceive data between the gateway 20 and the ESL 100 and typically has power over a certain reference value to allow one gateway 20 to normally transceive data with a plurality of ESLs 100 positioned within a predetermined radius.

[0073] On the other hand, since the first radio frequency signal RF1 is a radio frequency signal transmitted from the mobile terminal 200 and used to manage the specific ESL 100 among the ESLs 100 installed in the store by the manager etc, only the ESL 100 to be managed needs to receive the first radio frequency signal RF1. Therefore, since the mobile terminal 200 just needs to transmit the first radio frequency signal RF1 in the state close to the corresponding ESL 100, the radio frequency signal doesn't need to have high power.

[0074] In addition, if the power of the first radio frequency signal RF1 is high, the ESL 100 positioned around the ESL 100 as a management target also has much possibility of receiving the first radio frequency signal RF1, thus causing a problem that the ESL 100, which is not the management target, processes the first radio frequency signal RF1 unnecessarily.

[0075] As will be described later, the ESL 100 in accordance with an embodiment of the present invention may not wake up in spite of reception of the first radio frequency signal RF1 when it is not the management target. Nevertheless, since a process of checking the first radio frequency signal RF1 will be performed, it is preferred that the ESLs 100, which are not the management targets, are prevented from receiving the first radio frequency signal RF1, if possible.

[0076] For this, in the system 1000 for an ESL in accordance with an embodiment of the present invention, the power of the first radio frequency signal RF1 is low. Particularly, it is preferred that the first radio frequency signal has power that enables normal data communication only within a distance of about 20cm.

[0077] Referring to FIG. 2 again, data may be transceived between a second antenna 111 of the ESL 100 and a second antenna unit 211 of the mobile terminal 200 through the second radio frequency signal. That is, it is the same as the wireless communication method between the gateway 20 and the second antenna 111 of the ESL 100. By reflecting this, the wireless communication between the second antenna 111 of the ESL 100 and the second antenna unit 211 of the mobile terminal 200 is represented by NM2 Comm.

[0078] Referring to FIG. 3, the ESL 100 may include a first communication unit 120, a second communication unit 110, a control module 140, a storage unit 150, and a display unit 160.

[0079] The first communication unit 120 performs a function of receiving the first radio frequency signal RF1, and the second communication unit 110 performs a function of transceiving the second radio frequency signal. The second communication unit 120 may be implemented equally to a typical ESL 100.

[0080] The first communication unit 120 may include a first antenna 121, a rectification unit 123, and a detector unit 125 and additionally further include a low-noise amplifier 122 or a protection unit 124.

[0081] First, the first antenna 121, which receives the first radio frequency signal RF1, may be implemented with a typical antenna. At this time, since the frequency of the first radio frequency signal RF1 doesn't need to be low, there is no need to increase the size of the antenna compared to the conventional case of implementing a forced wake-up with a low-frequency radio signal.

[0082] Next, the rectification unit 123 performs a function of rectifying the first radio frequency signal RF1, which is an AC signal, to convert the first radio frequency signal to a linear analog signal. At this time, the rectification unit 123 may be implemented with a plurality of passive devices such as capacitors and diodes to rectify the first radio frequency signal RF1 without separate power consumption.

[0083] The signal, which is rectified to the linear analog signal, is patterned to a square wave by the detector unit 125 to be output as a pattern signal Sp. At this time, the detector unit 125 may be implemented with a plurality of transistors to which a bias voltage is applied.

[0084] Meanwhile, since the transistor may be damaged when a too high voltage is applied to the detector unit 125, it is needed to limit the signal output from the rectification unit 123 to below a certain level, and the protection unit 124 may be further provided to limit the signal output from the rectification unit 123 to below a predetermined reference value like this.

[0085] Further, the low-noise amplifier 122 may be further provided between the first antenna 121 and the rectification unit 123 when necessary.

[0086] When the low-noise amplifier 122 is provided, the low-noise amplifier 122 can amplify the first radio frequency signal RF1 to convert the first radio frequency signal RF1 to the pattern signal Sp even when the power of the first radio frequency signal RF1 is relatively low.

[0087] Accordingly, a command to perform a specific operation such as wake-up can be transmitted between the mobile terminal 200 and the ESL 100 using the first radio frequency signal RF1. As a result, the system 1000 for an ESL in accordance with an embodiment of the present invention can be used even when the ESLs 100

are disposed far away from the product store and the manager uses the mobile terminal 200 in the position far away from the ESL 100. For example, the system 1000 for an ESL in accordance with an embodiment of the present invention can be used in warehouses or parking lots in which the ESLs 100 are provided to be used.

[0088] Referring to FIG. 5, the control block 140 may consist of a first block 141 and a second block 142.

[0089] At this time, the first block 141 maintains an active state in all states in which power is maintained, and the second block 142 is activated only when the ESL 100 is in active mode.

[0090] As described above, the ESL 100 repeats sleep and wake-up periodically to reduce power consumption. At this time, the second block 142 is activated to perform various functions only when the ESL 100 is woken up. On the other hand, the first block 141 always maintains an active state regardless of the state of the ESL 100 and processes the pattern signal Sp included in the first radio frequency signal RF1 to activate the second block 142 or helps the second block 142 to perform a specific operation.

[0091] More specifically, the first block 141 may include a control unit 144 and a register unit 143 in which the pattern data Dp is recorded.

[0092] Meanwhile, referring to FIG. 6, it will be able to understand the relationship between the first radio frequency signal RF1, the pattern signal Sp, the register, and the pattern data Dp.

[0093] That is, when the first radio frequency signal RF1 has a waveform shown in FIG. 6, the above-described first communication unit 120 outputs the pattern signal Sp by processing the first radio frequency signal RF1 to pattern the first radio frequency signal RF1 to a square wave. The pattern signal Sp output like this is digitized in the first block to be the pattern data Dp. For example, when the pattern signal Sp is high H, the pattern signal Sp may be digitized to 1, and when the pattern signal Sp is low L, the pattern signal Sp may be digitized to 0. The pattern data Dp digitized like this may be recorded in a second register 143-2.

[0094] Further, the pattern data Dp may have various combinations according to the number of patterns.

[0095] That is, when the number of the patterns is 4, total 16 kinds of different pattern data Dp can be represented according to the combination of the patterns. Therefore, 16 kinds of different specific operations can be performed according to the respective pattern data Dp.

[0096] FIG 6 shows an example in which the pattern data Dp consists of 8 bits. In this case, 256 different pattern data Dp, which is 2 to the power of 8, can be combined. However, it is only an example for explanation and doesn't limit the number of the patterns.

[0097] Referring to FIG. 5 again, the register unit 143 may include a first register 143-1, a second register 143-2, and a third register 143-3.

[0098] The first pattern data Dp1 is recorded in the first register 143-1, the pattern signal Sp, which is received from the detector unit 125 and converted to the pattern data Dp, is recorded in the second register 143-2, and the pattern data Dp, which is recorded in the second register 143-2, is copied to the third register 143-3. At this time, when the pattern data Dp recorded in the second register 143-2 is equal to the first pattern data Dp1, the pattern data Dp is not copied to the third register 143-3. That is, only the pattern data Dp1, which is different from the first pattern data Dp1, can be copied to the third register 143-3.

[0099] Further, the storage unit 150 may have a pattern data storage 151 and a process information storage 152. Here, the pattern data storage 151 may store a plurality of pattern data Dp, and as described above, the respective pattern data Dp may have various combinations according to the number of the patterns.

[0100] That is, the pattern data storage 151 may store the first to Nth pattern data Dp1 to DpN, and the respective pattern data Dp may match with various specific operations.

[0101] Here, information about the specific operation may be converted to process information Ip and stored in the process information storage. That is, the process information storage 152 may store the first to Nth process information Ip1 to IpN. The first process information Ip1 may match with the first pattern data Dp1, and the Nth process information IpN may match with the Nth pattern data DpN.

[0102] For example, the first pattern data Dp1 may match with a wake-up operation of the specific operations, and the specific operation according to the first process information Ip1 matched with the first pattern data Dp1 on the system is a wake-up operation.

[0103] Further, the second process information Ip2 may correspond to the specific operation of outputting the MAC address of the ESL 100 to the screen, the third process information Ip3 may correspond to the specific operation of transmitting the MAC address of the ESL 100 to the mobile terminal 200, and the fourth process information Ip4 may correspond to the specific operation of transmitting the MAC address of the ESL 100 to the gateway 20.

[0104] Accordingly, the ESL 100 can perform the specific operation matched with the pattern data Dp when recognizing the pattern data Dp which is obtained by converting the pattern signal Sp output from the first communication unit 120 to data.

[0105] Meanwhile, since the first process information Ip1 may match with the wake-up operation of the specific operations and thus the first pattern data Dp1 stored in the first register 143-1 matches with the first process information Ip1, if the pattern data Dp, which is obtained by converting the pattern signal Sp output from the first communication unit 120 to data, is equal to the first pattern data Dp1, the ESL 100 can wake up.

[0106] At this time, the pattern data Dp, which is obtained by converting the pattern signal Sp output from

the first communication unit 120 to data, is recorded in the second register 143-2 as described above and compared with the first pattern data Dp1 recorded in the first register 143-1.

[0107] And when the pattern data Dp recorded in the second register 143-2 is the first pattern data Dpi recorded in the first register 143-1, an interrupt signal S_I is transmitted to the second block 142. Here, the interrupt signal S_I may be a signal that activates the second block 142 to read the third register 143-3.

[0108] That is, the second block 142 maintains a sleep state together in a state in which the ESL 100 is in sleep mode. As the interrupt signal S_I is applied, the second block 142 can be activated and the ELS also can be in active mode.

[0109] Further, the interrupt signal S_I may be a signal that allows the second block 142 to read the third register 143-3.

[0110] For example, when there is no pattern data Dp recorded in the third register 143-3, the second block 142 and the ESL 100 may be preset to perform a normal operation in active mode.

[0111] Accordingly, when the pattern data Dp is not detected as a result of reading the third register 143-3 by the second block 142 receiving the interrupt signal S_I, the second block 142 performs a normal operation.

[0112] Further, it may be set to record the first pattern data Dp1 also in the third register 143-3 in the process of recording the first pattern data Dp1 in the first register 143-1.

[0113] As described above, since the first pattern data Dp1 matches with the specific operation, that is, wake-up, the second block 142 wakes up and performs a normal operation after wake-up when the first pattern data Dp1 is checked as a result of reading the third register 143-3 by the second block 142 according to the interrupt signal S_I.

[0114] Meanwhile, when the pattern data Dp recorded in the second register 143-2 is not the first pattern data Dp1, the pattern data Dp recorded in the second register 143-2 is copied to the third register 143-3.

[0115] In this state, new pattern data Dp may be recorded in the second register 143-2 by the subsequent first radio frequency signal RF1. If the new pattern data Dp is equal to the first pattern data Dp1, the interrupt signal S_I is applied to the second block 142. And the second block 142, which received the interrupt signal S_I, reads the third register 143-3 and performs the specific operation by drawing the process information Ip matched with the pattern data Dp recorded in the third register 143-3.

[0116] For example, if the pattern data Dp recorded in the third register 143-3 is the third pattern data Dp and the third processing information Ip matched with the third pattern data Dp corresponds to the specific operation of transmitting the MAC address of the ESL 100 to the mobile terminal 200, the corresponding ESL 100 can perform the specific operation of transmitting its own MAC address to the mobile terminal 200 through NM2 Comm.

[0117] Accordingly, if the manager wants to know the MAC address of one ESL 100 using the mobile terminal 200, the manager just has to transmit the first radio frequency signal including the first pattern data Dp1 after transmitting the first radio frequency signal RF1 including the third pattern data Dp3 by operating the mobile terminal 200.

[0118] That is, the manager can control the predetermined ESL 100 to perform the specific operation using the mobile terminal 200.

[0119] Meanwhile, the control unit 144 may perform functions of controlling the register unit 143, recording the pattern data Dp in the register unit 143, and transmitting the interrupt signal S_I to the second block 142.

[0120] Then again, the first pattern data Dp1 may be set to different values for the respective ESLs 100. For example, if the first pattern data Dp1 of one ESL 100 is [1000001], the first pattern data Dp1 of another ESL 100 may be [100000010].

[0121] Accordingly, even though the first radio frequency signal RF1 is transmitted to the adjacent ESLs 100 at the same time, only the originally aimed ESL 100 wakes up to perform a specific operation or a normal operation. As a result, it is possible to prevent the unnecessary forced wake-up of the ESL and advantageous to reduction of power consumption.

[0122] FIG. 7 is a flowchart schematically showing a method of operating a system for an ESL in accordance with an embodiment of the present invention.

[0123] Referring to FIGS. 1 to 7, the method of operating a system for an ESL in accordance with an embodiment of the present invention may include the steps of setting by recording first pattern data Dp in a first register 143-1 (S110) and performing a specific operation according to the pattern data Dp included in a first radio frequency signal RF1 by an ESL 100 (S300, S300').

[0124] Specifically, first, pattern data Dp is recorded in a second register 143-2 (S140), and it is determined whether the pattern data Dp recorded in the first register 143-1 is equal to the pattern data Dp recorded in the second register 143-2 (S150).

[0125] At this time, when the pattern data Dp recorded in the first register 143-1 is equal to the pattern data Dp recorded in the second register 143-2, an interrupt signal S_I is transmitted from a first block 141 to a second block 142 (S160). Here, if the second block 142 is in a sleep state, the second block 142 may wake up when receiving the interrupt signal S_I (S170).

[0126] Next, the second block 142 reads the pattern data Dp recorded in a third register 143-3 (S270). At this time, the second block 142 also searches process information Ip matched with the pattern data Dp recorded in the third register 143-3.

[0127] Continuously, a normal operation is performed when the process information Ip are not detected as a result of searching (S290').

[0128] On the contrary, when the matched process in-

formation Ip is detected, a specific operation corresponding to the detected process information Ip, that is, a first specific operation or a second specific operation is performed (S300, S300'). Here, when performing the first specific operation, a screen is output on a display unit 160 of the ESL 100 (S300). When performing the second specific operation, data is transmitted through a second communication unit 110.

[0129] Meanwhile, in the above step S150, when the pattern data Dp recorded in the first register 143-1 is not equal to the pattern data Dp recorded in the second register 143-2, the pattern data Dp recorded in the second register 143-2 is copied to the third register (S160').

[0130] According to the present invention configured as above, it is possible to selectively wake up only a specific target, which requires forced wake-up, and furthermore to perform predetermined operations.

Claims

1. An ESL which transceives a second radio frequency signal with a gateway, comprising:

   a first communication unit for receiving a first radio frequency signal having lower power than the second radio frequency signal and outputting a pattern signal generated by patterning the first radio frequency signal;
   a second communication unit for receiving the second radio frequency signal;
   a control module for controlling the ESL to perform a predetermined specific operation by receiving the pattern signal; and
   a display unit for displaying a screen according to the control of the control module.

2. The ESL according to claim 1, wherein the predetermined specific operation is at least one selected from a wake-up operation of converting the ESL from sleep mode to active mode; a first specific operation of displaying at least one of information held by the ESL by the display unit; and a second specific operation of transmitting at least one of the information held by the ESL through the second communication unit.

3. The ESL according to claim 2, wherein the first communication unit comprises:

   a first antenna for receiving the first radio frequency signal;
   a rectification unit connected to the first antenna and rectifying the first radio frequency signal; and
   a detector unit connected to the rectification unit and generating the pattern signal by patterning the signal rectified by the rectification unit to a square wave, wherein the rectification unit is implemented only with passive devices.

4. The ESL according to claim 3, wherein the control module comprises:

   a first block maintaining an active state when the ESL is in active mode and in sleep mode; and
   a second block activated only when the ESL is in the active mode.

5. The ESL according to claim 4, wherein the first block comprises:

   a first register for recording first pattern data matched with the wake-up operation of converting the ESL from the sleep mode to the active mode;
   a second register for recording pattern data generated by converting the pattern signal output from the first communication unit; and
   a third register for recording a pattern data which is recorded in the second resister and different from the first pattern data.

6. The ESL according to claim 5, wherein the first block further comprises:

   a control unit for recording the first pattern data in the first register, comparing the pattern data recorded in the second register with the first pattern data, and transmitting an interrupt signal to the second block when the pattern data recorded in the second register is the first pattern data.

7. The ESL according to claim 6, wherein the second block reads the pattern data recorded in the third register and performs a specific operation of the specific operations, which matches with the read pattern data, when the interrupt signal is applied.

8. The ESL according to claim 7, wherein the ESL further comprises:

   a storage unit comprising a pattern data storage for storing the pattern data; and a process information storage for storing process information which is information about the specific operation, wherein the respective pattern data and the respective process information are stored to match with each other.

9. The ESL according to claim 2, wherein the information held by the ESL is at least one selected from MAC address, the number of abnormal operations, and battery voltage information of the ESL, and ambient temperature of the ESL.

10. The ESL according to claim 5, wherein the first pattern data are unique values different in the respective ESLs.

11. A system for an ESL comprising an ESL, a gateway, a server, and a mobile terminal that outputs a first radio frequency signal according to claim 5, wherein a predetermined specific operation comprises an assign operation of registering the ESL in the system for an ESL or an unassign operation of releasing registration of the ESL in the system for an ESL.

12. The system for an ESL according to claim 11, wherein the ESLs are provided in plural number and the respective ESLs have first pattern data as different unique values.

13. A method of operating a system for an ESL comprising an ESL according to claim 8, a gateway, a server, and a mobile terminal that outputs the first radio frequency signal, comprising:

recording the first pattern data in a first register;
receiving the first radio frequency signal and performing a specific operation according to pattern data included in the received first radio frequency signal by the ESL when the mobile terminal outputs the first radio frequency signal; and
converting the ESL to sleep mode.

14. The method of operating a system for an ESL according to claim 13, wherein receiving the first radio frequency signal and performing the specific operation according to the pattern data included in the received first radio frequency signal by the ESL comprises:

recording pattern data in a second register;
determining whether the pattern data recorded in the first register is equal to the pattern data recorded in the second register;
transmitting an interrupt signal from a first block to a second block when the pattern data recorded in the first register is equal to the pattern data recorded in the second register;
reading pattern data recorded in a third register by the second block;
searching process information matched with the pattern data recorded in the third register; and
performing a normal operation when there is no process information matched with the pattern data recorded in the third register.

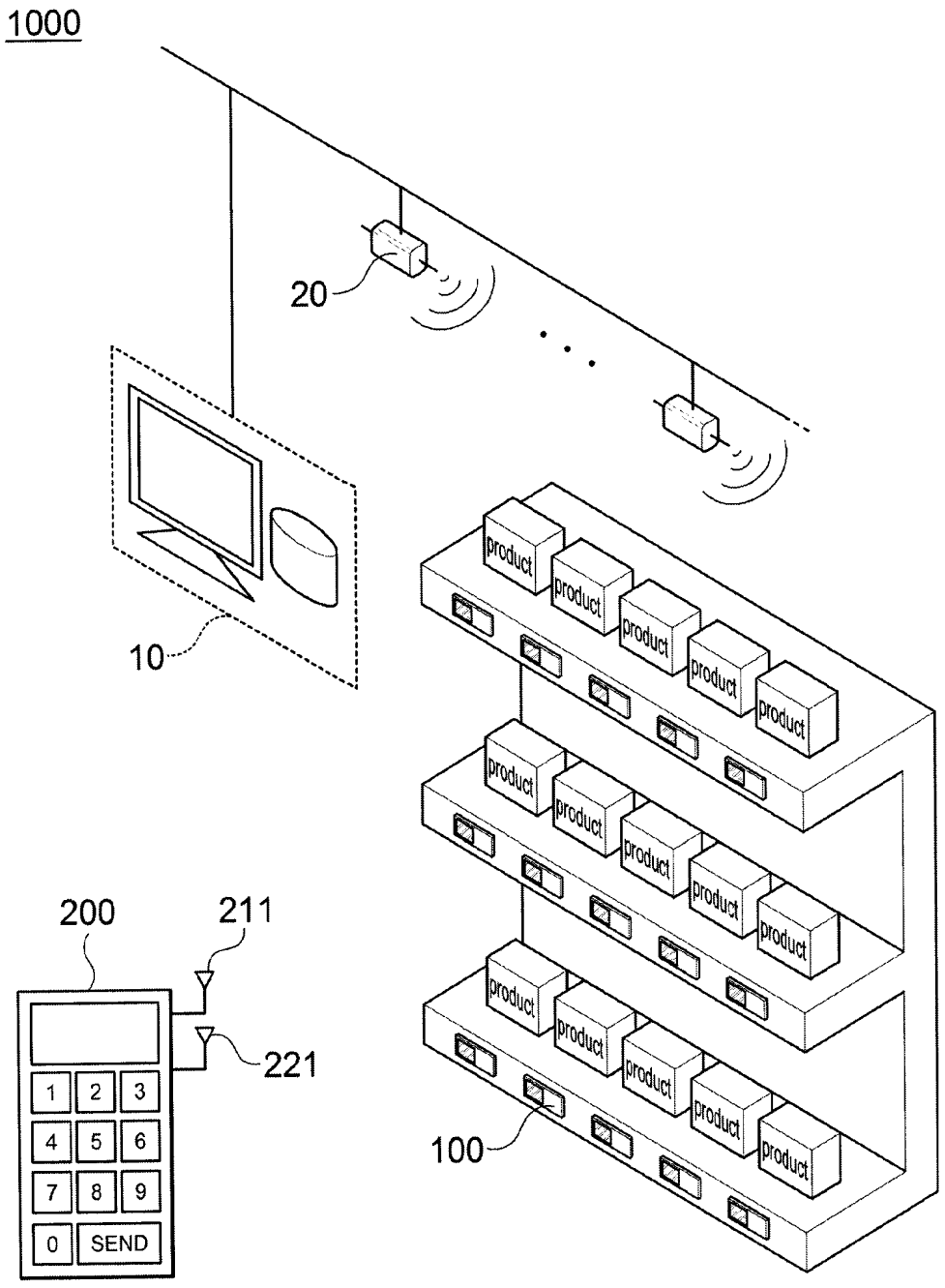
15. The method of operating a system for an ESL according to claim 14, wherein the pattern data recorded in the second register is copied to the third register when the pattern data recorded in the first register is not equal to the pattern data recorded in the second register.

16. The method of operating a system for an ESL according to claim 14, wherein a specific operation according to the process information matched with the pattern data recorded in the third register is performed when there is the process information matched with the pattern data recorded in the third register.

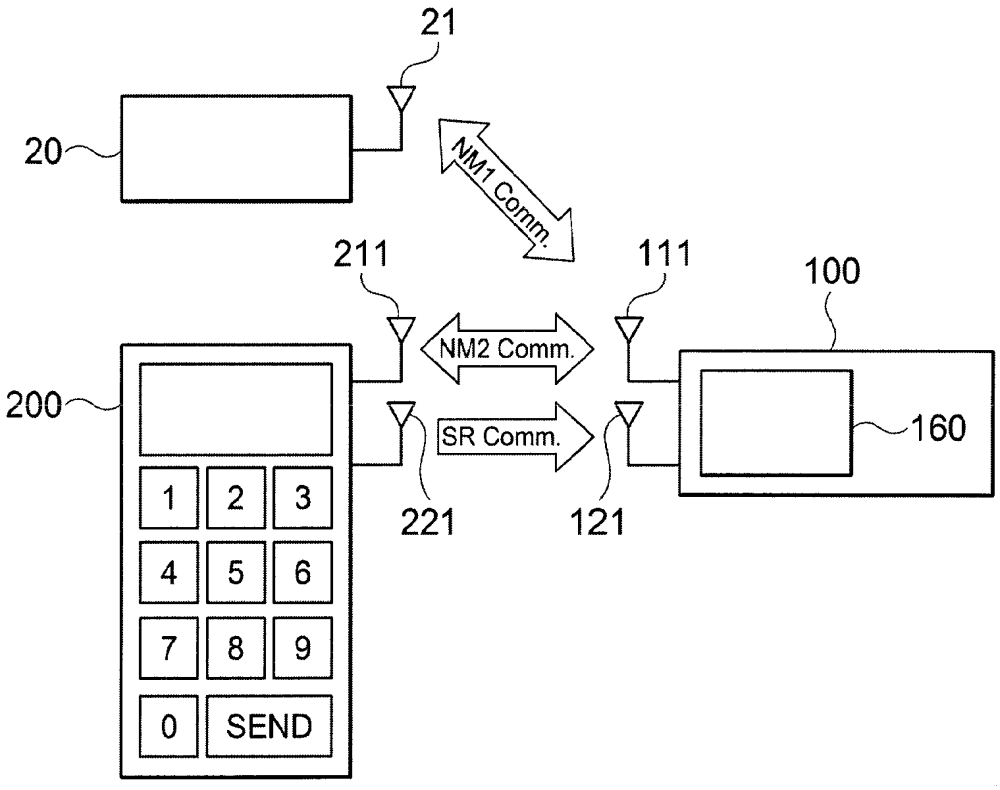
17. The method of operating a system for an ESL according to claim 13, wherein receiving the first radio frequency signal and performing the specific operation according to the pattern data included in the received first radio frequency signal by the ESL comprises:

recording pattern data in a second register;
determining whether the pattern data recorded in the first register is equal to the pattern data recorded in the second register; and
transmitting an interrupt signal from a first block to a second block when the pattern data recorded in the first register is equal to the pattern data recorded in the second register, wherein the second block wakes up when receiving the interrupt signal.

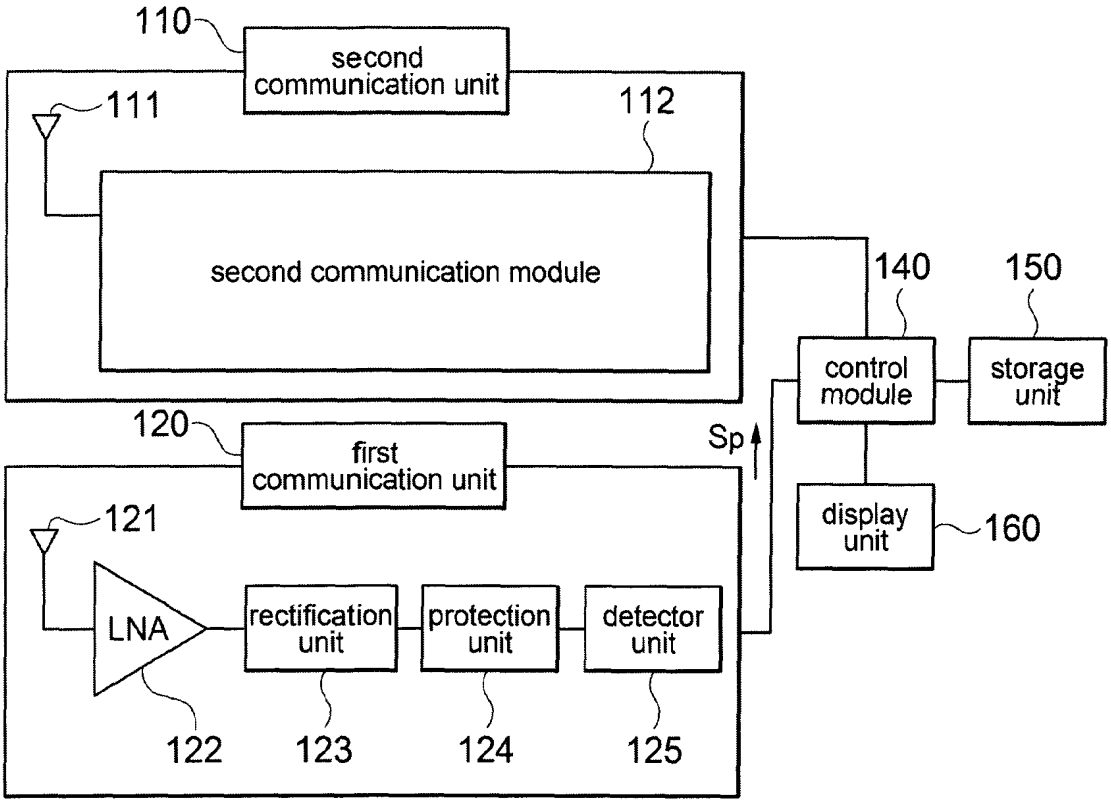
[FIG. 1]



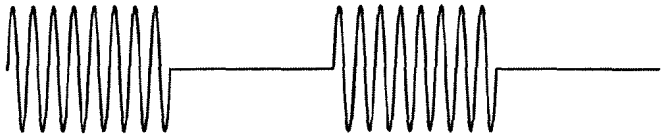
[FIG. 2]


21
20
NM1 Comm.
211
111
100
NM2 Comm.
200
SR Comm.
160
1
2
3
4
5
6
7
8
9
0
SEND
221
121

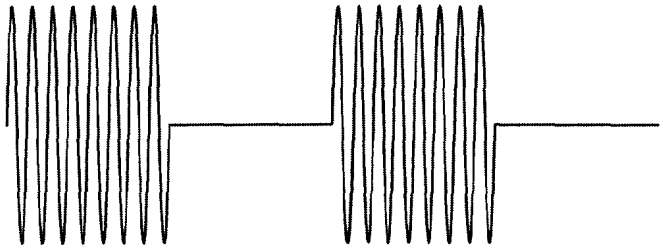
[FIG. 3]



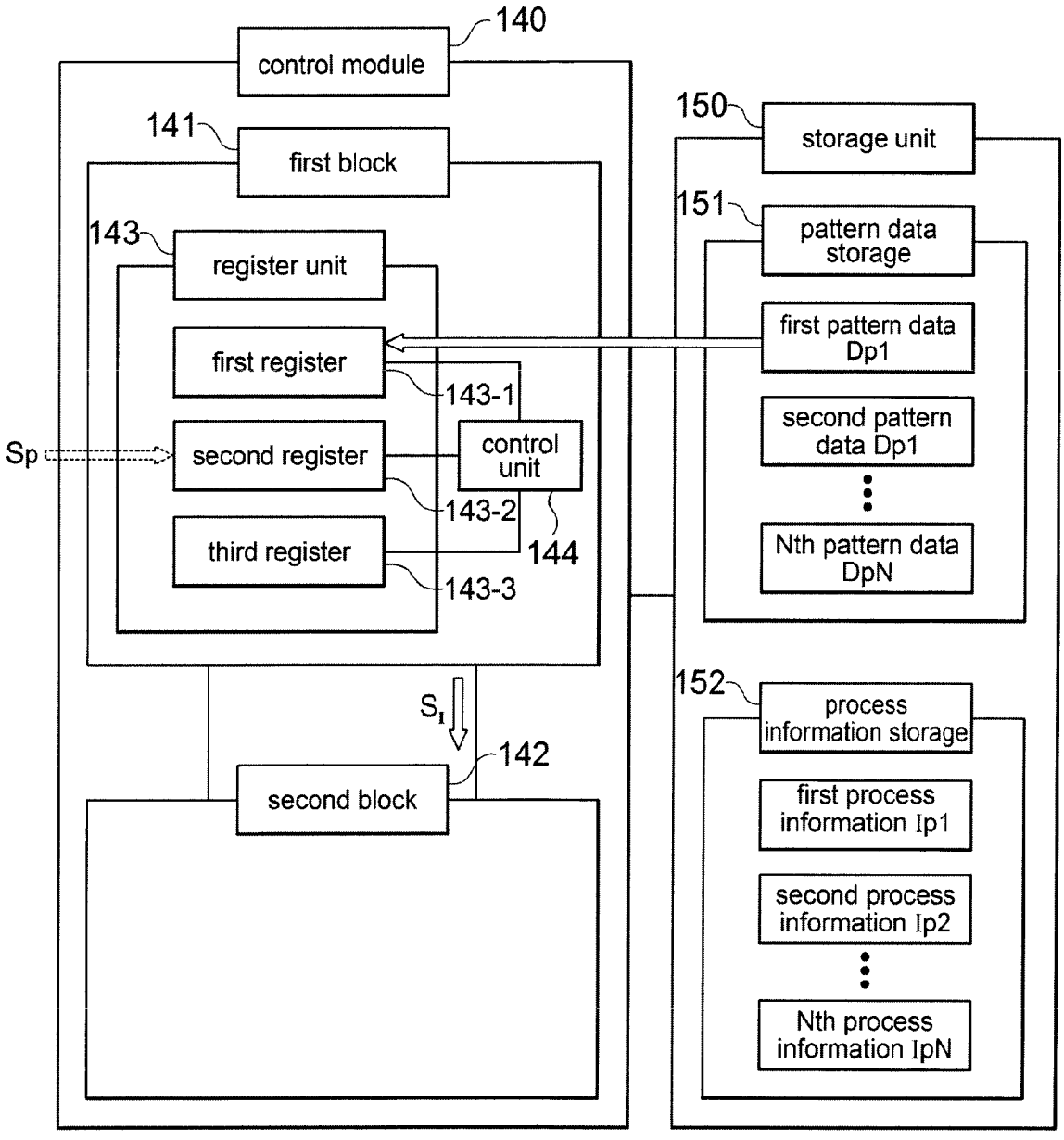
[FIG. 4A]



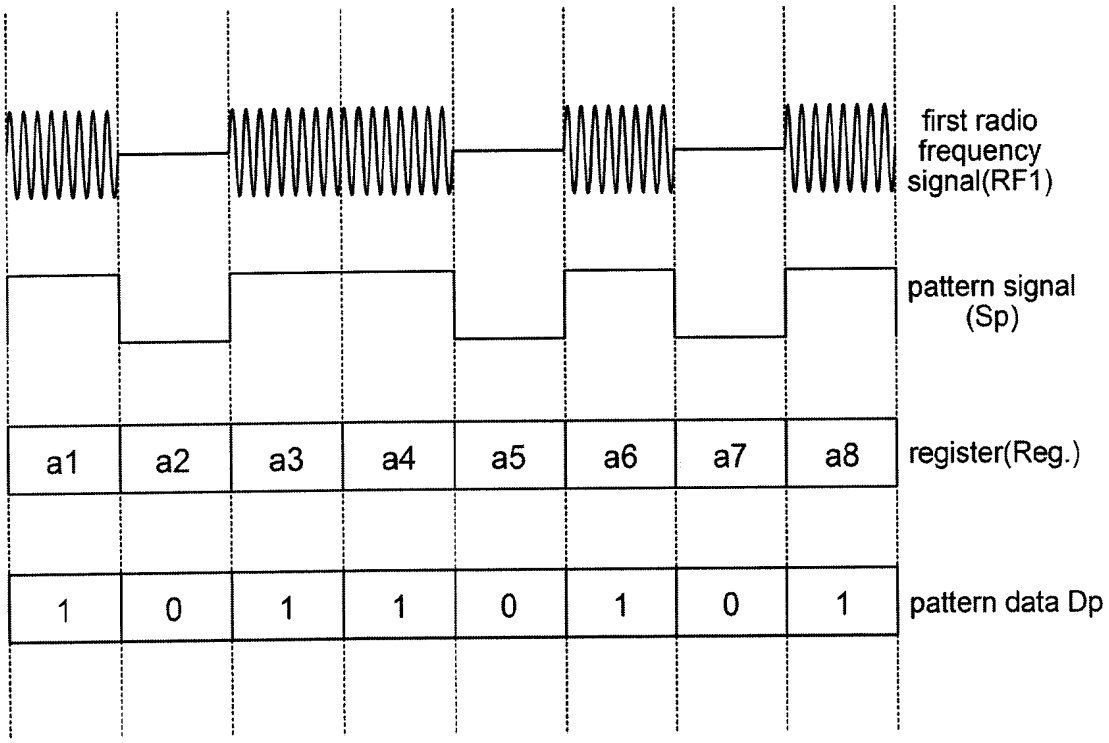
[FIG. 4B]



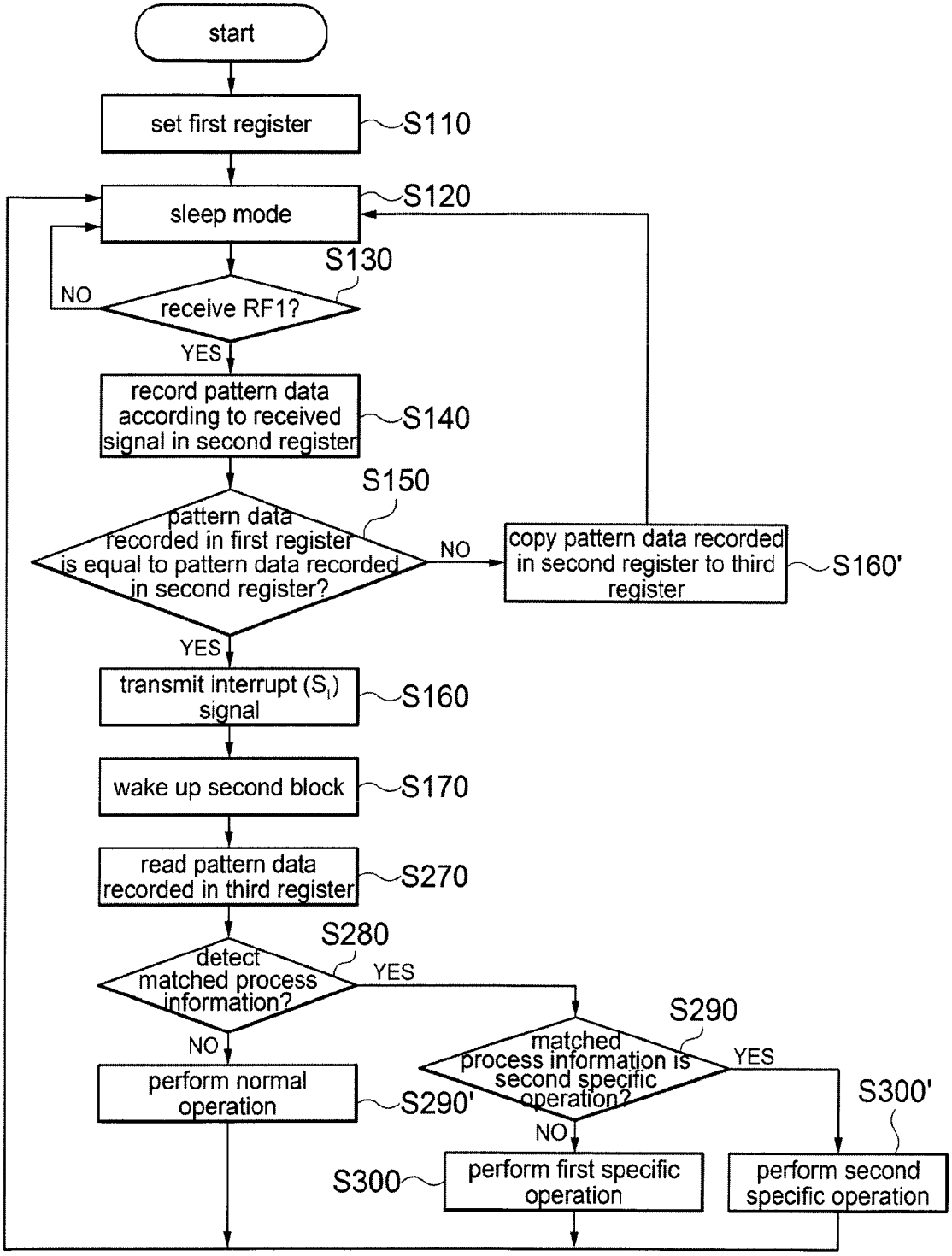
[FIG. 5]


control module
140
141
first block
143
register unit
first register
143-1
Sp
second register
control unit
143-2
144
third register
143-3
S_I
142
second block
150
storage unit
151
pattern data storage
first pattern data Dp1
second pattern data Dp1
Nth pattern data DpN
152
process information storage
first process information Ip1
second process information Ip2
Nth process information IpN

[FIG. 6]


first radio frequency signal(RF1)
pattern signal (Sp)
a1
a2
a3
a4
a5
a6
a7
a8
register(Reg.)
1
0
1
1
0
1
0
1
pattern data Dp

[FIG. 7]


start
set first register
S110
sleep mode
S120
S130
NO
receive RF1?
YES
record pattern data according to received signal in second register
S140
S150
pattern data recorded in first register is equal to pattern data recorded in second register?
NO
copy pattern data recorded in second register to third register
S160'
YES
transmit interrupt (S_I) signal
S160
wake up second block
S170
read pattern data recorded in third register
S270
S280
detect matched process information?
YES
NO
S290
matched process information is second specific operation?
YES
NO
perform normal operation
S290'
S300'
S300
perform first specific operation
perform second specific operation

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EUROPEAN SEARCH REPORT

Application Number
EP 13 27 5264

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
Y	HUA QIN ET AL: "ZigBee-assisted Power Saving Management for mobile devices", MOBILE ADHOC AND SENSOR SYSTEMS (MASS), 2012 IEEE 9TH INTERNATIONAL CONFERENCE ON, IEEE, 8 October 2012 (2012-10-08), pages 93-101, XP032375652, DOI: 10.1109/MASS.2012.6502506 ISBN: 978-1-4673-2433-5 * page 1 - page 3 * * page 5 *	1-17	INV. G06Q10/08
Y,D	US 2010/205000 A1 (CHO YOUNG BIN [KR]) 12 August 2010 (2010-08-12) * the whole document *	1-17	
Y,D	US 2010/106588 A1 (JONES JOHN CLIFFORD [GB] ET AL) 29 April 2010 (2010-04-29) * the whole document *	1-17	

TECHNICAL FIELDS SEARCHED (IPC)
G06Q

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	19 May 2014	Härdeman, David

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 27 5264

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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19-05-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2010205000 A1	12-08-2010	CN 101809600 A	18-08-2010
		EP 2201505 A2	30-06-2010
		JP 2011501287 A	06-01-2011
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		WO 2009051449 A2	23-04-2009
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		US 2010106588 A1	29-04-2010
		WO 2010004349 A1	14-01-2010

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 1020130092559 **[0002]**
- US 20100205000 A **[0024]**
- US 20100106588 A **[0024]**

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Date
01.03.2022

Reference	Application No./Patent No.
AJF/P219529EP00	19830815.7 - 1205 / 3820203 PCT/CN2019070431
Applicant/Proprietor	
Hanshow Technology Co., Ltd.	

Communication

The extended European search report is enclosed.

The extended European search report includes, pursuant to Rule 62 EPC, the supplementary European search report (Art. 153(7) EPC) and the European search opinion.

Copies of documents cited in the European search report are attached.

☒ 0 additional set(s) of copies of such documents is (are) enclosed as well.

Refund of the search fee
If applicable under Article 9 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.

Should you wish to further prosecute this application in the examination phase, your attention is drawn to the provisions of Rule 70a EPC. An invitation to respond to the extended European search report will be issued shortly (R. 70(2) EPC).

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The examination is being carried out on the **following application documents**

Description, Pages

1-9 filed with entry into the regional phase before the EPO

Claims, Numbers

1-14 filed with entry into the regional phase before the EPO

Drawings, Sheets

1/3-3/3 filed with entry into the regional phase before the EPO

1.0 Reference is made to the following documents; the numbering will be adhered to in the rest of the procedure.

D1 US 2018/174009 A1 (SCHLEEF THOMAS [US] ET AL) 21 June 2018 (2018-06-21)

D2 US 2014/266625 A1 (MERLIN SIMONE [US] ET AL) 18 September 2014 (2014-09-18)

D3 US 2012/326846 A1 (TSENG LINCOLN [TW] ET AL) 27 December 2012 (2012-12-27)

2.0 The application does not meet the requirements of Article 84 EPC, because claims 1, 7 are not clear.

2.1 Regarding claim 1:

a) The terms "normal wake-up" mode and "fast wake-up mode" are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of the claim unclear (Article 84 EPC). The wording of the claim does not provide any information regarding these two terms, what differences they have (i.e what makes one mode "fast"), what operation becomes fast(er) with respect to the normal mode. The lack of this kind of information

and/or of a definition of these modes makes it impossible for the skilled person to distinguish one from the other, therefore the transition between these modes does not make technical sense.

b) The terms "normal monitoring mode" and "fast monitoring mode" are vague and unclear and leave the reader in doubt as to the meaning of the technical features to which they refer, thereby rendering the definition of the subject-matter of the claim unclear (Article 84 EPC). The wording of the claim does not provide any information regarding these two terms, what differences they have (i.e what makes one mode "fast"), what is monitored during these modes. The lack of this kind of information and/or of a definition of these modes makes it impossible for the skilled person to distinguish one from the other, therefore the transition between these modes does not make technical sense.

c) Claim 1 is not supported by the description as required by Article 84 EPC, as its scope is broader than justified by the description and drawings. In particular, claim 1 refers broadly to "two communication paths", whereas the description specifies that they correspond to different RF channels (par. 23).

The same objections apply to claim 7.

3.0 With respect to the unclear terms mentioned under the points 2.1.a) and 2.1.b), it is further noted that the description does not provide any further information that would allow the reader to determine their technical meaning and distinguish them from each other.

Thus, the description does not disclose these features which are essential for carrying out the invention in sufficient detail to render it apparent to the skilled person how to put the invention into practice.

Therefore the requirements of Article 83 EPC are not met.

4.0 The applicant should **adapt the description to the claims on file and delete or amend any statements or expressions which throw doubt on the scope of protection (GL F-IV, 4.3)**. Failure to do so could lead to the **refusal** of the application under Article 97(2) EPC in combination with Article 84 EPC.

The applicant should amend the description as needed to fulfil the following requirements:

– The technical field of the invention (Rule 42(1)(a), GL F-II.4.2) must correspond to the amended set of claims.

– The summary of the invention (Rule 42(1)(c) and GL F-II.4.5) must correspond to the amended set of claims. If appropriate, statements such as "The invention is set out in the appended set of claims" or "The invention is as defined in claim X" can be applied instead of repeating the claims verbatim.

– All embodiments which are not covered by the claims anymore must be deleted, unless these embodiments can reasonably be considered to be useful for highlighting specific aspects of the amended subject-matter. In such case, they must be prominently marked as not being part of the present invention (T 1808/06):

- For example, if an independent claim has been amended by limiting it to a certain feature, then ways of carrying out the invention using features presented as alternatives to this feature must either be deleted or the fact that they are not encompassed by the claims must be prominently stated.
- Any combinations of features which do not fall under the scope of the amended independent claims must be prominently marked as not being part of the present invention. For example, if an amended claim comprises features A, B and C and the description refers only to B+C as an embodiment of the invention, then it must be marked as not being part of the invention.
- Statements such as "The following examples/aspects/embodiments X, Y, Z are not according to the invention and are present for illustration purposes only" may be used at the start of the description (or in the list of figures) when such a situation arises.

– All technical features of the independent claims shall not be presented as optional in the description. Terms such as "for example", "may", "can", "exemplary", "optionally", "preferably" and the like should be removed when preceding a feature of an independent claim.

5.0 It is not at present apparent which part of the application could serve as a basis for a new, allowable claim. Should the applicant nevertheless regard some particular matter as patentable, an independent claim should be filed taking account of Rule 43(1) EPC. The applicant should also indicate in the letter of reply the difference of the subject-matter of the new claim vis-à-vis the state of the art and the significance thereof.

5.1 When filing new independent claims, the applicant should also indicate according to the requirements of the problem-and-solution approach (Guidelines G-VII, 5):

- how the subject-matter of the new independent claims differs from the state of the art in terms of technical features, the distinguishing technical features;

- what technical effect is caused by these differing technical features;

- what is therefore the technical problem underlying the claimed invention;

and

- why the skilled person would not solve this problem in a manner indicated in the totality of the prior art without employing any inventive skill.

5.2 It would be appropriate to draft the independent claims in the two-part form as required by Rule 43(1) EPC, whereby the features known from D1 should be placed in the preamble.

5.3 The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 43(7) EPC). This applies to both the preamble and characterising portion (see the Guidelines, F-IV, 4.11).

5.4 To meet the requirements of Rule 42(1)(b) EPC, the documents D1 - D3 should be identified in the description and the relevant background art disclosed therein should be briefly discussed.

5.5 When filing amended claims the applicant should at the same time bring the description into conformity with the amended claims. Care should be taken during revision, especially of the introductory portion and any statements of problem or advantage, not to add subject-matter which extends beyond the content of the application as originally filed (Article 123(2) EPC).

5.6 In order to facilitate the examination of the conformity of the amended application with the requirements of Article 123(2) EPC, the applicant is requested to clearly identify the amendments carried out, irrespective of whether they concern amendments by addition, replacement or deletion, and to indicate the passages of the application as filed on which these amendments are based.

5.7 Amendments should be made by filing replacement pages. Unnecessary recasting of the description should be avoided. An amended abstract is not required. The applicant should also take account of the requirements of Rule 50(1) EPC. According to Rule 50(1) in conjunction with Rule 49(8) EPC, amendments shall be typed or printed. Handwritten amendments may only be made in documents other than those replacing application documents (Rule 50(2) EPC); they may, for example, be used to fulfil the requirements of Rule 137(4) EPC (identifying amendments and indicating basis for them).

*****

Europäisches Patentamt
European Patent Office
Office européen des brevets

SUPPLEMENTARY EUROPEAN SEARCH REPORT

Application Number
EP 19 83 0815

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2018/174009 A1 (SCHLEEF THOMAS [US] ET AL) 21 June 2018 (2018-06-21) * abstract * * paragraph [0016] - paragraph [0068] * * figures 1-9 *	1-14	INV. H04W52/02
A	US 2014/266625 A1 (MERLIN SIMONE [US] ET AL) 18 September 2014 (2014-09-18) * abstract * * paragraph [0051] - paragraph [0133] * * figures 1-13 *	1-14	
A	US 2012/326846 A1 (TSENG LINCOLN [TW] ET AL) 27 December 2012 (2012-12-27) * abstract * * paragraph [0043] - paragraph [0077] * * figures 1-13 *	1-14	
			TECHNICAL FIELDS SEARCHED (IPC) H04W

The supplementary search report has been based on the last set of claims valid and available at the start of the search.

Place of search	Date of completion of the search	Examiner
The Hague	15 February 2022	Tzimeas, K

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C04)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 83 0815

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

15-02-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2018174009 A1	21-06-2018	US 2018174009 A1	21-06-2018
		US 2019034774 A1	31-01-2019
		US 2019340479 A1	07-11-2019
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		WO 2014158950 A1	02-10-2014
US 2012326846 A1	27-12-2012	TW M418349 U	11-12-2011
		US 2012326846 A1	27-12-2012

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

Information on Search Strategy - Pilot phase (see OJ 2015, A86)
The type of information contained in this sheet may change during the pilot for improving the usefulness of this new service.

Application Number
EP 19 83 0815

TITLE: INTERACTIVE ELECTRONIC LABEL DEVICE COMMUNICATION SYSTEM AND METHOD

APPLICANT: Hanshow Technology Co., Ltd.

IPC CLASSIFICATION: H04W52/02

EXAMINER: Tzimeas, K

CONSULTED DATABASES: WPI

CLASSIFICATION SYMBOLS DEFINING EXTENT OF THE SEARCH:

IPC:

CPC: H04W52/0235, H04W52/0229

FI/F-TERMS:

KEYWORDS OR OTHER ELEMENTS FEATURING THE INVENTION:

EPO FORM P04A42

Espacenet

Bibliographic data: CN103093170 (A) — 2013-05-08

Electronic tag fast recognition method and device

Inventor(s): WANG HONGGANG; LIU HUIMIN ± (WANG HONGGANG, ; LIU HUIMIN)

Applicant(s): SHENZHEN ZTE V INFORMATION TECHNOLOGY CO LTD ± (SHENZHEN ZTE-V INFORMATION TECHNOLOGY CO., LTD)

Classification: - international: *G06K7/00*
- cooperative: G06K7/10297 (EP)

Application number: CN20131015548 20130116 Global Dossier

Priority number(s): CN20131015548 20130116

Also published as: CN103093170 (B) WO2014110842 (A1)

Abstract of CN103093170 (A)

The invention relates to an electronic tag fast recognition method which comprises the following steps: receiving a waking up signal and extracting waking up instructive information; receiving a control signal, analyzing the control signal and acquiring first information and second information, wherein the second information comprises a tag agreement working mode, a communication timing sequence mode and a working information channel information; judging whether the electronic tag is wakened up or not according to the waking up instructive information, if yes, continuously keeping the electronic tag in a dormant state after storing the first information; waking up the electronic tag and finishing the recognition procedure of the electronic tag according to a recognition process which is instructed by the tag agreement working mode information and sending and receiving data based on requirements of a reader, and so that the electronic tag enters the dormant state. The invention further relates to a device which is used for achieving the aforementioned method. The electronic tag fast recognition method and the device have the advantages of being simple in handling process, fast in recognition speed and accurate in recognition.

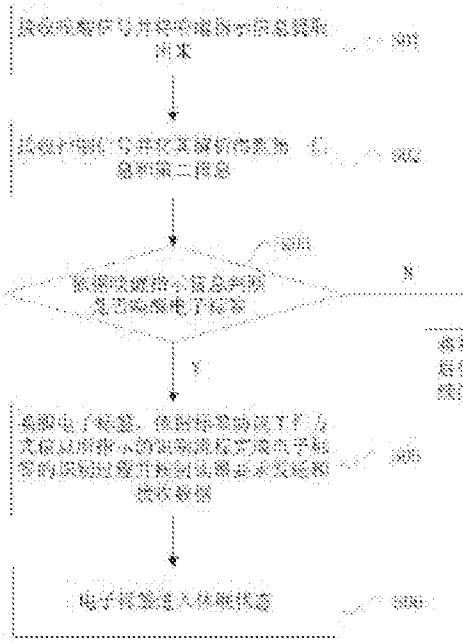


图 1 / FIG.1

S01 RECEIVE A WAKEUP SIGNAL AND EXTRACT WAKEUP INDICATION INFORMATION FROM THE WAKEUP SIGNAL

S02 RECEIVE A CONTROL SIGNAL, AND PARSE THE CONTROL SIGNAL TO OBTAIN FIRST INFORMATION AND SECOND INFORMATION

S03 DETERMINE WHETHER TO WAKE UP THE ELECTRONIC TAG ACCORDING TO THE WAKEUP INDICATION INFORMATION

S04 CONTINUOUSLY KEEP THE ELECTRONIC TAG IN A DORMANT STATE AFTER STORING THE FIRST INFORMATION

S05 WAKE UP THE ELECTRONIC TAG, COMPLETE AN IDENTIFICATION PROCEDURE OF THE ELECTRONIC TAG ACCORDING TO AN IDENTIFICATION PROCESS WHICH IS INDICATED BY INFORMATION OF A TAG PROTOCOL WORKING MODE, AND SEND AND RECEIVE DATA BASED ON REQUIREMENTS OF A READER

S06 THE ELECTRONIC TAG ENTERS THE DORMANT STATE

(19)中华人民共和国国家知识产权局

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(51)Int.Cl.
G06K 7/00(2006.01)

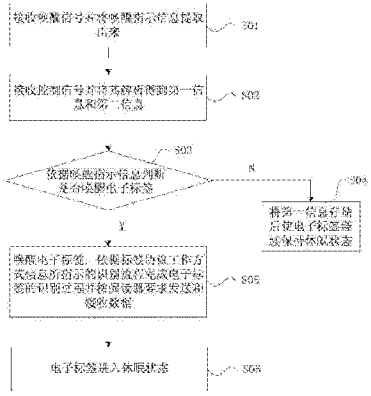
权利要求书2页 说明书9页 附图4页

(54)发明名称

一种电子标签快速识别的方法及装置

(57)摘要

本发明涉及一种电子标签快速识别的方法，包括如下步骤：接收唤醒信号并将唤醒指示信息提取出来；接收控制信号并将其解析得到第一信息和第二信息；所述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；依据所述唤醒指示信息判断是否唤醒所述电子标签，如不是，将所述第一信息存储后使所述电子标签继续保持休眠状态；唤醒所述电子标签，依据所述标签协议工作方式信息所指示的识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；所述电子标签进入休眠状态。本发明还涉及一种实现上述方法的装置。实施本发明的电子标签快速识别的方法及装置，具有以下有益效果：处理流程简单、识别速度较快、识别较准确。



CN 103093170 A

1. 一种电子标签快速识别的方法，其特征在于，包括如下步骤：

A）接收唤醒信号并将唤醒指示信息提取出来；

B）接收控制信号并将其解析得到第一信息和第二信息；所述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；

C）依据所述唤醒指示信息判断是否唤醒所述电子标签，如是，执行步骤 D）；否则，将所述第一信息存储后使所述电子标签继续保持休眠状态；

D）唤醒所述电子标签，依据所述标签协议工作方式信息所指示的识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

E）所述电子标签进入休眠状态。

2. 根据权利要求 1 所述的电子标签快速识别的方法，其特征在于，所述第一信息包括标签所处的位置信息或 / 和时间信息，所述第二信息还包括信息速率或 / 和调制方式信息。

3. 根据权利要求 2 所述的电子标签快速识别的方法，其特征在于，所述步骤 D）进一步包括：

D1）唤醒所述电子标签；

D2）依据所述标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如是，执行步骤 D3）；否则，按照一般识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据，并执行步骤 D5）；

D3）依据所述通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如是，所述电子标签依据所述工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据，并执行步骤 D5）；否则，执行步骤 D4）；

D4）所述电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据所述读写命令的指示或预定的内容回复数据；

D5）所述电子标签进入休眠状态。

4. 根据权利要求 3 所述的电子标签快速识别的方法，其特征在于，所述一般识别流程为多标签识别协议流程。

5. 根据权利要求 1 至 4 任意一项所述的电子标签快速识别的方法，其特征在于，所述电子标签收到外部发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

6. 一种实现如权利要求 1 所述的电子标签快速识别的方法的装置，其特征在于，包括：

唤醒提取模块：用于接收唤醒信号并将唤醒指示信息提取出来；

控制信号解析模块：用于接收控制信号并将其解析得到第一信息和第二信息；所述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；

唤醒判断模块：用于依据所述唤醒指示信息判断是否唤醒所述电子标签，并在不唤醒时将所述第一信息存储后使所述电子标签继续保持休眠状态；

唤醒及识别模块：用于唤醒所述电子标签，依据所述标签协议工作方式信息所指示的识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

休眠模块：用于使所述电子标签进入休眠状态。

7. 根据权利要求 6 所述的实现电子标签快速识别的方法的装置，其特征在于，所述第一信息包括标签所处的位置信息或 / 和时间信息，所述第二信息还包括信息速率或 / 和调

制方式信息。

8. 根据权利要求 7 所述的实现电子标签快速识别的方法的装置，其特征在于，所述唤醒及识别模块进一步包括：

唤醒单元：用于唤醒所述电子标签；

识别流程判断单元：用于依据所述标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如不是，按照一般识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

时序判断单元：用于依据所述通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如是，所述电子标签依据所述工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据；

回复单元：用于在所述电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据所述读写命令的指示或预定的内容回复数据；

休眠单元：用于使所述电子标签进入休眠状态。

9. 根据权利要求 8 所述的实现电子标签快速识别的方法的装置，其特征在于，所述一般识别流程为多标签识别协议流程。

10. 根据权利要求 6 至 9 任意一项所述的实现电子标签快速识别的方法的装置，其特征在于，所述电子标签收到外部发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

一种电子标签快速识别的方法及装置

技术领域

[0001] 本发明涉及无线通信领域，更具体地说，涉及一种电子标签快速识别的方法及装置。

背景技术

[0002] 射频识别(RFID，Radio Frequency Identify)是一种非接触式的自动识别技术，它通过射频信号自动识别目标对象并获取相关数据，识别工作无须人工干预，可工作于各种恶劣环境。射频识别技术可识别高速运动物体并可同时识别多个标签，操作快捷方便。射频识别技术的基本工作原理如下：阅读器向其电磁场覆盖区中的标签发送射频信号，标签接收阅读器发出的射频信号后，凭借感应电流所获得的能量发送出存储在芯片中的产品信息(对于无源标签或被动标签)，或者利用标签携带的电池所提供的能量发送某一频率的信号(对于有源标签或主动标签)；有源标签可主动向阅读器发送射频信号。阅读器读取信息并解码后，送至应用系统进行有关数据处理，以达到对场区内标签的识别和数据收集。

[0003] 目前，不同的射频识别系统根据具体应用和技术要求不同而采用不同的通信方法。比如，国际标准 ISO 18000-6 和 ISO 18000-7 分别规范了工作在 900MHz 的无源射频识别系统的通信方法和工作在 433MHz 的有源射频识别系统的通信方法。在我国 GJB 7377.2-2011 军用射频识别空中接口协议定义的有源射频识别系统工作于 2.45GHz 频段。

[0004] 一般地，一个射频识别系统由一个阅读器和多个标签组成，因此，上述的通信方法在射频识别领域也称为阅读器清点标签或识别标签的方法。具体地，在 ISO 18000-6 type C 中规定的阅读器与标签通信的方法是：阅读器通过发送查询命令 (Query) 发起一个清点周期，标签收到该查询命令后，根据命令参数 Q 随机在 0 到 $2^{Q}-1$ 范围内选择一个整数，选 0 的发送。发送的标签同时携带一个 16 位随机数 RN16 作为临时身份 ID，若发送成功，以此 ID 为身份信息完成阅读器与标签之间的鉴别。鉴别成功后，阅读器发送点到点的命令读取标签携带的信息，例如：EPC (Electronic Product Code，电子物品编码)、TID (Tag identifier，标签识别号)等。此外，阅读器可以通过命令完成写操作。没有发送成功的标签，等待下一个查询命令(Query)重新响应。阅读器根据当前时隙的接收结果调整 Q 值。总体而言，该通信过程所定义的一次完整的清点过程完成了以下三个任务：第一，通过查询命令(Query)及相关命令完成标签的接入(也称为多标签防碰撞)；第二，以 RN16 为临时身份信息进行相应的身份鉴别；第三，阅读器通过命令对单个标签进行读写操作。

[0005] 具体地，在 ISO 18000-7 中规定的阅读器与标签通信的方法是：阅读器发送特定的波形作为唤醒信号，唤醒处于休眠状态的标签。标签被唤醒后，等待接收阅读器发送的收集命令(Collection)。标签收到该收集命令后，根据参数随机地在一个时间窗口内选择一个时间片回复自己的信息(也就是选择成帧的时隙 ALOHA 中一个帧内的一个时隙发送自己的信息)。阅读器接收完一个时间窗口(或一帧)后，对发送成功的标签进行确认，同时进一步读取标签信息，比如 UDB (Universal Data Block，通用数据块)，读取成功后发送休眠命令，该标签收到休眠命令后，进入休眠状态，无法响应后续收集命令，直到下次被唤醒后。没

有发送成功的标签，在后续的时间窗内重新选择时间片并发送。阅读器根据当前时间窗内接收的情况调整窗口大小。总体而言，该通信过程所定义的一次完整的清点过程可简要划分为一个唤醒期和多个收集期。收集期又可以分为同步期、侦听期和确认期。具体来讲，在唤醒期，阅读器发送一定时长的唤醒信号，以唤醒处于休眠的标签。在收集期，阅读器发送收集命令，同步所有标签，并在后续侦听期(时间窗口)内侦听标签的回复。侦听结束后，阅读器对成功的标签进行点到点的读写操作，也就是确认期，操作完毕的标签通过命令转入休眠。该收集期不断调整和重复直到所有标签都清点完毕。

[0006] 具体地，在 GJB 7377.2-2011 中规定的阅读器与标签的通信方法是：标签通常处于休眠状态或者周期性休眠 / 苏醒状态，在阅读器与标签通信之前，必须通过外部唤醒系统将标签唤醒或者保证标签在苏醒状态，阅读器与标签的通信过程分为唤醒期、接入期、收集期和会话期。阅读器向处于唤醒状态的标签发送接入命令，并按照事先设定的防碰撞协议，使所有已唤醒的标签接入，并为每个已接入的标签分配表示其在收集时隙中时隙位置的收集时隙编号；阅读器发出收集命令，标签按照其接收到的收集时隙编号所决定的收集时隙的时隙位置将收集指令(收集命令)要求的数据传输到阅读器。在会话期阅读器与标签进行点到点的通信，之后，阅读器发送休眠命令使得标签处于休眠状态。

[0007] 可以看到，在上述有源射频识别系统中，标签在不清点或识别过程之外时通常需要处于休眠状态，以节省标签能量，从而获得更长的使用寿命。因此，在对标签进行识别之前，通常会发送一定时长的唤醒信号，以激活标签，打开标签通信模块。当标签被激活后，通常会执行一个预定的防碰撞协议或算法，以达到多标签的接入，之后当读写器获得标签的 TID 后，再与标签进行双向的数据交互。对于快速运动标签的识别，这样的处理流程有些复杂，使得识别速度不快，甚至当标签运动速度高或者通信量大时，很难保证标签的成功识别。

发明内容

[0008] 本发明要解决的技术问题在于，针对现有技术的上述处理流程复杂、识别速度不快、识别不准确的缺陷，提供一种处理流程简单、识别速度较快、识别较准确的电子标签快速识别的方法及装置。

[0009] 本发明解决其技术问题所采用的技术方案是：构造一种电子标签快速识别的方法，包括如下步骤：

A) 接收唤醒信号并将唤醒指示信息提取出来；

B) 接收控制信号并将其解析得到第一信息和第二信息；所述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；

C) 依据所述唤醒指示信息判断是否唤醒所述电子标签，如是，执行步骤 D)；否则，将所述第一信息存储后使所述电子标签继续保持休眠状态；

D) 唤醒所述电子标签，依据所述标签协议工作方式信息所指示的识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

E) 所述电子标签进入休眠状态。

[0010] 在本发明所述的电子标签快速识别的方法中，所述第一信息包括标签所处的位置信息或 / 和时间信息，所述第二信息还包括信息速率或 / 和调制方式信息。

[0011] 在本发明所述的电子标签快速识别的方法中，所述步骤 D）进一步包括：

D1）唤醒所述电子标签；

D2）依据所述标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如是，执行步骤 D3）；否则，按照一般识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据，并执行步骤 D5）；

D3）依据所述通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如是，所述电子标签依据所述工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据，并执行步骤 D5）；否则，执行步骤 D4）；

D4）所述电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据所述读写命令的指示或预定的内容回复数据；

D5）所述电子标签进入休眠状态。

[0012] 在本发明所述的电子标签快速识别的方法中，所述一般识别流程为多标签识别协议流程。

[0013] 在本发明所述的电子标签快速识别的方法中，所述电子标签收到外部发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

[0014] 本发明还涉及一种实现上述电子标签快速识别的方法的装置，包括：

唤醒提取模块：用于接收唤醒信号并将唤醒指示信息提取出来；

控制信号解析模块：用于接收控制信号并将其解析得到第一信息和第二信息；所述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；

唤醒判断模块：用于依据所述唤醒指示信息判断是否唤醒所述电子标签，并在不唤醒时将所述第一信息存储后使所述电子标签继续保持休眠状态；

唤醒及识别模块：用于唤醒所述电子标签，依据所述标签协议工作方式信息所指示的识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

休眠模块：用于使所述电子标签进入休眠状态。

[0015] 在本发明所述的实现上述电子标签快速识别的方法的装置中，所述第一信息包括标签所处的位置信息或 / 和时间信息，所述第二信息还包括信息速率或 / 和调制方式信息。

[0016] 在本发明所述的实现上述电子标签快速识别的方法的装置中，所述唤醒及识别模块进一步包括：

唤醒单元：用于唤醒所述电子标签；

识别流程判断单元：用于依据所述标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如不是，按照一般识别流程完成所述电子标签的识别过程并按阅读器要求发送和接收数据；

时序判断单元：用于依据所述通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如是，所述电子标签依据所述工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据；

回复单元：用于在所述电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据所述读写命令的指示或预定的内容回复数据；

休眠单元：用于使所述电子标签进入休眠状态。

[0017] 在本发明所述的实现上述电子标签快速识别的方法的装置中，所述一般识别流程

为多标签识别协议流程。

[0018] 在本发明所述的实现上述电子标签快速识别的方法的装置中，所述电子标签收到外部发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

[0019] 实施本发明的电子标签快速识别的方法及装置，具有以下有益效果：由于处于休眠状态的电子标签接收唤醒信号和控制信号，并将唤醒信号中的唤醒指示信息提取出来，将控制信号解析得到第一信息和第二信息；依据唤醒指示信息判断是否唤醒所述电子标签，如果唤醒电子标签，则在电子标签激活后依据标签协议工作方式信息所指示的识别流程完成电子标签的识别过程并按照阅读器要求发送和接收数据，通信完毕后电子标签进入休眠状态；如果不唤醒，则将第一信息进行存储并继续保持休眠状态；上述整个识别过程较为简单，所以其处理流程简单、识别速度较快、识别较准确。

附图说明

[0020] 图 1 是本发明电子标签快速识别的方法及装置实施例中方法的流程图；

图 2 是所述实施例中电子标签唤醒后识别的具体的流程图；

图 3 是所述实施例中装置的结构示意图；

图 4 是所述实施例中唤醒及识别模块的结构示意图；

图 5 是所述实施例中有源射频系统的结构示意图；

图 6 是所述实施例中电子标签的结构示意图；

图 7 是所述实施例中唤醒控制模块的结构示意图；

图 8 是所述实施例中对 2.45GHz 有源射频识别系统快速识别的示意图。

具体实施方式

[0021] 为了便于本领域的普通技术人员能够理解并实施本发明，下面将结合附图对本发明实施例作进一步说明。

[0022] 在本发明电子标签快速识别的方法及装置实施例中，其方法的流程图如图 1 所示，该方法包括：

步骤 S01 接收唤醒信号并将唤醒指示信息提取出来：本实施例的方法应用于有源射频识别系统，例如：工作于 433MHz 的有源射频识别系统或满足 GJB 7377.2-2011 中规定的工作于 2.45GHz 的有源射频识别系统。有源电子标签通常携带电池，标签(有源电子标签)工作所需能量来自于电池供电，为了节省能量消耗，标签通常处于周期性休眠 / 唤醒状态或者长期处于休眠状态，除非外界的唤醒信号将标签唤醒。处于周期性休眠 / 唤醒状态的标签，只有当其在唤醒状态并侦听到来自阅读器的命令时才停止周期性休眠而进入工作状态，并依据阅读器的命令完成识别过程，之后依据休眠命令进入休眠状态，并恢复到周期性休眠 / 唤醒状态。处于长期休眠状态的标签可以更好地节省能量，但需要外部的唤醒系统进行唤醒，在需要识别标签时将标签唤醒，并使其与阅读器进行通信，完成识别过程后，依据阅读器的休眠命令进入长期休眠状态。由于有源电子标签携带电池，有较为充足的能量和较大的发射功率，因而通常用来标识一些大物体，并能够实现对远距离物体的快速识别。例如：较为典型的应用就是将有源射频识别系统应用于物流系统或车辆管理系统，也就是为每个

车辆贴上有源电子标签，可以在车辆行驶过程中快速识别标签，从而获得车辆装载物品的信息。

[0023] 本步骤中，接收唤醒信号并将唤醒指示信息提取出来，也即处于休眠状态的电子标签接收唤醒信号并对其进行识别、验证和解析后将唤醒指示信息提取出来，根据唤醒指示信息可判断是否唤醒电子标签。本实施例中的唤醒信号的载波工作于 125kHz 频段，在发送时，唤醒信号所包含的信息数据以数据帧的形式逐帧发送。具体而言，当电子标签收到唤醒信号后对该唤醒信号的波形进行识别，并验证数据帧中携带的身份 ID、口令或密钥等信息，以确认合法身份。

[0024] 步骤 S02 接收控制信号并将其解析得到第一信息和第二信息：本步骤中，接收控制信号并将其解析得到第一信息和第二信息，具体来讲，当电子标签收到控制信号后，对该控制信号的数据进行解析，并将其转换成第一信息和第二信息，本实施例中，第二信息也就是信令信息，第二信息包括标签协议工作方式、通信时序模式和工作信道信息，第二信息还包括其它通信参数，例如：通信参数信息速率和调制方式信息。第一信息为时间位置信息，其包括标签所处的位置信息或 / 和时间信息，以及其它需要标签保存的信息，第一信息为数据帧中所携带的相关信息的一部分。

[0025] 值得一提的是，本实施例中，唤醒信号与控制信号可以包含在同一个数据帧中发送，也可分在不同的数据帧中发送，但必须先发送唤醒信号，后发送控制信号。数据帧至少包含帧前导、同步、帧长度、帧控制字和数据等部分，也可以包含帧后导。发送数据帧的帧控制字包含了激励类型（后面会有描述）、发送周期、唤醒指示信息和其它控制参数等，数据部分包含了激励控制器 ID（后面会有描述）、目标标签信息、身份认证信息、协议工作方式信息和其它命令信息等。数据帧各个部分的具体信息内容可根据具体系统进行调整。值得一提的是，激励控制器（后面会有描述）可以在不同时间或不同位置多次向标签发送唤醒信号与控制信号。

[0026] 步骤 S03 依据唤醒指示信息判断是否唤醒电子标签：唤醒指示信息可指示电子标签是否处于正常工作状态，本步骤中，依据唤醒指示信息判断是否唤醒电子标签，如果判断的结果为是，执行步骤 S05；如果判断的结果为否，则执行步骤 S04。

[0027] 步骤 S04 将第一信息存储后使电子标签继续保持休眠状态：如果上述步骤 S03 的判断结果为否，即不唤醒电子标签，则执行本步骤。本步骤中，将第一信息存储后使电子标签继续保持休眠状态，第一信息包括标签所处的位置信息或 / 和时间信息，以及其它需要标签保存的信息。

[0028] 步骤 S05 唤醒电子标签，依据标签协议工作方式信息所指示的识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据：如果上述步骤 S03 的判断结果为是，即唤醒电子标签，则执行本步骤。本步骤中，唤醒电子标签使其处于正常工作状态，并依据标签协议工作方式信息所指示的识别流程完成电子标签的识别过程，本实施例中提供了快速识别流程和一般识别流程，一般识别流程为多标签识别协议流程，一般识别流程有多种可供选择，例如：可以是 GJB 7377.2-2011 标准所定义的协议过程，也可以是标准 ISO 18000-6 或 ISO 18000-7 所定义的协议过程。根据具体需要，可相应选择某一识别流程，然后按照所选择的识别流程进行电子标签的识别过程，并按阅读器要求发送和接收数据。关于如何具体的进行识别，稍后会加以描述。

[0029] 步骤 S06 电子标签进入休眠状态：当电子标签完成任务后，本步骤中，电子标签进入休眠状态。电子标签在收到外部发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

[0030] 针对本实施例而言，上述步骤 S05 可进一步进行细化，其细化后的具体流程图如图 2 所示，图 2 中，其进一步包括：

步骤 S501 唤醒电子标签：本步骤中，将处于休眠状态的电子标签唤醒。

[0031] 步骤 S502 依据标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程：本步骤中，依据上述标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如果判断的结果为是，执行步骤 S504；如果判断的结果为否，则执行步骤 S503。

[0032] 步骤 S503 按照一般识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据：如果上述步骤 S502 的判断结果为否，即标签协议工作方式信息所指示的识别流程是一般识别流程，则执行本步骤。本步骤中，按照一般识别流程完成电子标签的识别过程，本实施例中，一般识别流程是 GJB 7377.2-2011 标准所定义的协议过程，当然，在本实施例的另外一些情况下，一般识别流程也可以是标准 ISO 18000-6 或 ISO 18000-7 所定义的协议过程。这里不再详细进行描述。

[0033] 步骤 S504 依据通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式：如果上述步骤 S503 的判断结果为是，即标签协议工作方式信息所指示的识别流程是快速识别流程，则执行本步骤。本步骤中，依据通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如果判断的结果为是，执行步骤 S505；如果判断的结果为否，执行步骤 S506。

[0034] 步骤 S505 电子标签依据工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据：如果上述步骤 S504 的判断结果为是，则执行本步骤。本步骤中，电子标签依据工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据，具体就是，电子标签根据第二信息中提供的工作信道信息，在预定或指定的信道上回复 TID 和其它预定或指定的信息。工作信道信息用于指定标签回复阅读器所用的频率信息或时隙信息。执行完本步骤，执行步骤 S507。

[0035] 步骤 S506 电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据读写命令的指示或预定的内容回复数据：如果上述步骤 S504 的判断结果为否，即通信时序模式为阅读器先发，则执行本步骤。本步骤中，标签首先接收阅读器发送的识别命令，当确认该识别命令为合法命令后，标签根据该识别命令指示或预定的内容回复数据，也就是说，标签接收来自阅读器发送的识别命令，解析命令参数，并按照识别命令指定的或预定的信道和通信参数回复 TID 和其它信息。值得一提的是，本步骤中，标签与阅读器的通信交互可以有多次。阅读器可多次发送识别命令，而标签可做多次回复；标签也可主动回复多次，并等待接收阅读器的确认信息。具体参数信息可在第二信息中设定，也可由阅读器命令参数设定。执行完本步骤，执行步骤 S507。

[0036] 步骤 S507 电子标签进入休眠状态：当完成 TID 和其它信息的收集，并完成按阅读器要求发送和接收数据后，也即电子标签与阅读器之间完成通信后，阅读器发送休眠命令使标签恢复（进入）休眠状态，或者通过外部休眠指示信息（例如通过激励控制器发送休眠指示信息）使标签进入休眠状态，或按照预先设置的在标签成功发送预定识别信息后（确认

识别过程结束后）自行转入休眠状态。

[0037] 本实施例还涉及一种实现上述方法的装置，其结构示意图如图 3 所示，图 3 中，该装置包括唤醒提取模块 1、控制信号解析模块 2、唤醒判断模块 3、唤醒及识别模块 4 和休眠模块 5；其中，唤醒提取模块 1 用于接收唤醒信号并将唤醒指示信息提取出来；控制信号解析模块 2 用于接收控制信号并将其解析得到第一信息和第二信息；上述第二信息包括标签协议工作方式、通信时序模式和工作信道信息；唤醒判断模块 3 用于依据唤醒指示信息判断是否唤醒电子标签，并在不唤醒时将第一信息存储后使电子标签继续保持休眠状态；唤醒及识别模块 4 用于唤醒电子标签，依据标签协议工作方式信息所指示的识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据；休眠模块 5 用于使电子标签进入休眠状态。上述第一信息包括标签所处的位置信息或 / 和时间信息，第二信息还包括信息速率或 / 和调制方式信息。

[0038] 如图 4 所示，本实施例中，上述唤醒及识别模块 4 进一步包括唤醒单元 41、识别流程判断单元 42、时序判断单元 43、回复单元 44 和休眠单元 45；其中，唤醒单元 41 用于唤醒电子标签；识别流程判断单元 42 用于依据标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程，如不是，按照一般识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据；时序判断单元 43 用于依据通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式，如是，电子标签依据工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据；回复单元 44 用于在电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据读写命令的指示或预定的内容回复数据；休眠单元 45 用于使电子标签进入休眠状态。值得一提的是，本实施例中，一般识别流程为多标签识别协议流程；电子标签收到外部（例如：阅读器或激励控制器）发送的休眠命令后进入休眠状态或按照预先设定的完成识别工作后自行进入休眠状态。

[0039] 图 5 是本实施例中有源射频系统的结构示意图，图 5 中，有源射频识别系统包括阅读器 01、激励控制器 02 和电子标签 03，更全面的系统还应该包括应用系统和连接阅读器 01 与激励控制器 02 的通信网络等。阅读器 01 与激励控制器 03 之间可以通过有线网络或其它无线网络互联，也可独立工作。在实际系统部署中允许有多个阅读器和多个激励控制器同时存在，这些阅读器和激励控制器可以用网络互联，相互协作，也可局部的独立工作。电子标签 03 分别与阅读器 01 和激励控制器 02 连接，阅读器 01 和电子标签 03 通常工作在 UHF 频道，例如：2.45GHz 频段，具体地可以工作于 2.405GHz-2.480GHz。激励控制器 02 可以工作于低频段，例如：125kHz 频段，或者 UHF 频段，例如：915MHz 频段，或其它不同于电子标签 03 与阅读器 01 通信的频段。激励控制器 02 的信号传播方式不限于低频或超高频电磁波，也可通过红外线或传感器对环境信号感应等方式。

[0040] 本实施例中，阅读器 01 与电子标签 03 工作于 2.45GHz，激励控制器 02 工作于 125kHz 频段（其工作频点可在 125kHz 附近），电子标签 03 具备一般有源射频识别标签的基本功能，支持周期性自唤醒，也支持外部唤醒，支持多标签防碰撞算法和与阅读器 01 的双向数据通信，本实施例中的电子标签 03 具备标准 GJB 7377.2-2011 所定义的功能，当然，在本实施例的一些情况下，电子标签可以具备其它标准定义的功能，例如标准 ISO 18000-6 或 ISO 18000-7 所定义的功能。

[0041] 图 6 是本实施例中电子标签的结构示意图，图 6 中，电子标签 03 包括唤醒控制模

块 31、存储模块 32、中央处理与控制模块 33、无线收发模块 34 和电源模块 35；其中，电源模块 35 分别向唤醒控制模块 31、中央处理与控制模块 33 和无线收发模块 34 供电，存储模块 32 用于临时或长久地存储来自唤醒控制模块 31、中央处理与控制模块 33 和无线收发模块 34 的数据信息，无线收发模块 34 用于发送和接收无线信号，中央处理与控制模块 33 用于处理从唤醒控制模块 31、存储模块 32 和无线收发模块 34 收到的信息，并控制上述各模块的运行和各模块之间的信息交互；唤醒控制模块 31 接收来自激励控制器 02 发送的唤醒信号与控制信号，并对接收到的唤醒信号进行识别、验证和解析提取出唤醒指示信息，对控制信号进行解析得到第一信息和第二信息，并在要唤醒标签时将唤醒指示信息和第二信息（信令信息）输出到中央处理与控制模块 33 ，中央处理与控制模块 33 控制电源模块 35 给无线收发模块 34 供电，激活电子标签 03 使其处于工作状态。值得一提的是，在电子标签 03 不唤醒时，要将第一信息存储在存储模块 32 中，这时由唤醒控制模块 31 或中央处理与控制模块 33 控制存储模块 32 进行存储工作。值得一提的是，在电子标签 03 唤醒时，无线收发模块 34 接通处于工作状态；在电子标签 03 未唤醒时，无线收发模块 34 未被供电，不能进行工作。

[0042] 图 7 是本实施例中唤醒控制模块的结构示意图，图 7 中，唤醒控制模块 31 包括信号接收模块 311 和信号处理模块 312；其中，信号接收模块 311 可以包含一种或多种不同类型信号的接收机，例如：125kHz 频段的低频接收机（LF 接收机），或者是 915MHz 的超高频接收机（UHF 接收机），或者是红外线接收机，也可以是特定的传感器接口，现有技术中接口比较单一，与现有技术相比，该系统更加灵活。信号接收模块 311 接收唤醒信号和控制信号，并对唤醒信号和控制信号进行解调，还原信息，并将还原后的信息按照统一的格式发送给信号处理模块 312。信号处理模块 312 对信号接收模块 311 输出的信息进行解析，并执行该信息所包含的命令或预定的命令，例如，将唤醒指示信息输出给中央处理与控制模块 33，或存储相关接收信息，或输出协议工作方式、通信时序模式、工作信道和其它参数等。

[0043] 图 8 是本实施例中对 2.45GHz 有源射频识别系统快速识别的示意图，如图 8 所示，该射频识别系统包括应用系统、阅读器、激励控制器和标签，其中，阅读器、激励控制器和应用系统依次由计算机网络互联。激励控制器工作于 125kHz 频段，阅读器与标签工作于 2.45GHz 频段，标签贴于如图 8 所示的行驶的车辆上。利用本发明提供的方法快速识别该标签的过程执行如下：

（1）激励控制器周期性地发送唤醒信号与控制信号，例如：帧长为 50ms，发送周期为 80ms。唤醒信号与控制信号中包含激励控制器 ID："1#"；协议工作方式：快速识别流程；通信时序模式：标签先发；信道信息：信道 0（2.405GHz）；标签回复信息：TID。

[0044] （2）当车辆（携带标签）进入 A 位置时，处于休眠状态的标签利用信号接收模块 311（唤醒信号接收机）成功接收激励控制器发送的唤醒信号与控制信号，标签被唤醒，标签内部的唤醒控制模块 31 对唤醒信号与控制信号分别进行识别提取和解析，将第二信息（信令信息）发送给标签内部的中央处理与控制模块 33，标签选择快速识别流程，并选择标签先发模式，因此，标签在信道 0 发送给阅读器 TID 信息。

[0045] （3）阅读器接收标签发送的 TID 信息后，向标签发送确认信息，同时向标签发送休眠命令，标签收到确认信息和休眠命令后进入休眠状态。

[0046] 值得一提的是，有源射频识别系统通常具有较远的通信距离，而唤醒距离通常较

近。因此，如图 8 所示，在位置 A 标签被唤醒，并成功接收控制信号，而阅读器与标签的通信可以保持到位置 B，根据阅读器和标签的发射功率不同，位置 A 与位置 B 之间的距离（也可称为识别范围）相应从十几米到几百米不等。在图 8 这样的有源射频识别系统应用中，标签使用通常有以下特征：车辆（携带标签）通常需要高速通过识别区域，识别区域在一个时间段内只有一辆车（单个标签）。针对这样的应用场景，现有的 RFID 系统及协议在处理高速通过的单标签时显得不够高效，这样将限制了车辆的通过速度。而本发明提供的方法处理流程较简单且提供多种接口，所以不仅会提高该场景下的标签通过速度，还会提升系统识别的可靠性和协议的灵活度。此外，本实施例提供的方法也可以识别多个标签。

[0047] 总之，在本实施例中，有源射频识别系统至少包括阅读器 01、激励控制器 02 和电子标签 03。激励控制器 02 向电子标签 03 发送唤醒信号与控制信号，电子标签 03 中的唤醒控制模块 31 能够接收来自激励控制器 02 的唤醒信号与控制信号并分别对其进行识别提取和解析。唤醒控制模块 31 输出唤醒指示信息并唤醒电子标签 03（接通无线收发模块 34），并通过中央处理与控制模块 33 向无线收发模块 34 发送控制信号所携带的信令信息。电子标签 03 按照第二信息（信令信息）所指定的通信参数和预定的通信协议与阅读器 01 进行通信，通信完毕（识别完毕）后电子标签 03 通过接收阅读器 01 的休眠命令或激励控制器 02 的休眠指示信息恢复休眠状态或自行转入休眠状态。与现有的标准中规定的方法相比，本实施例提供的识别方法可以更快、更准确地识别标签，并能支持更多的通信内容和协议工作方法对于一些快速运动的标签的识别更加有效，例如：车辆标签的识别，从而可以有效提升运动标签的通过速度，并且使得系统功能更加丰富，使用方法更加灵活。该识别方法不仅可以快速地处理单标签，也可以执行如上所述的一般多标签识别流程，如专利申请“一种多标签接入阅读器的方法及装置（申请号：201010619525.5）中所提及的方法。

[0048] 以上所述实施例仅表达了本发明的几种实施方式，其描述较为具体和详细，但并不能因此而理解为对本发明专利范围的限制。应当指出的是，对于本领域的普通技术人员来说，在不脱离本发明构思的前提下，还可以做出若干变形和改进，这些都属于本发明的保护范围。因此，本发明专利的保护范围应以所附权利要求为准。

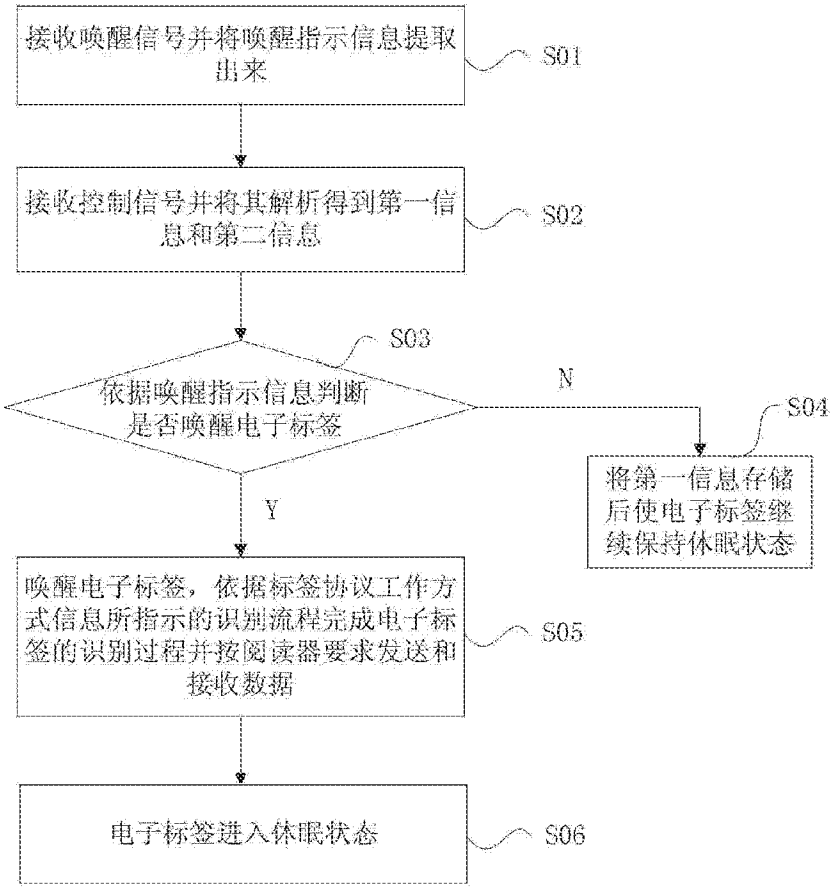

接收唤醒信号并将唤醒指示信息提取出来
S01
接收控制信号并将其解析得到第一信息和第二信息
S02
S03
依据唤醒指示信息判断是否唤醒电子标签
N
S04
将第一信息存储后使电子标签继续保持休眠状态
Y
唤醒电子标签，依据标签协议工作方式信息所指示的识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据
S05
电子标签进入休眠状态
S06

图 1

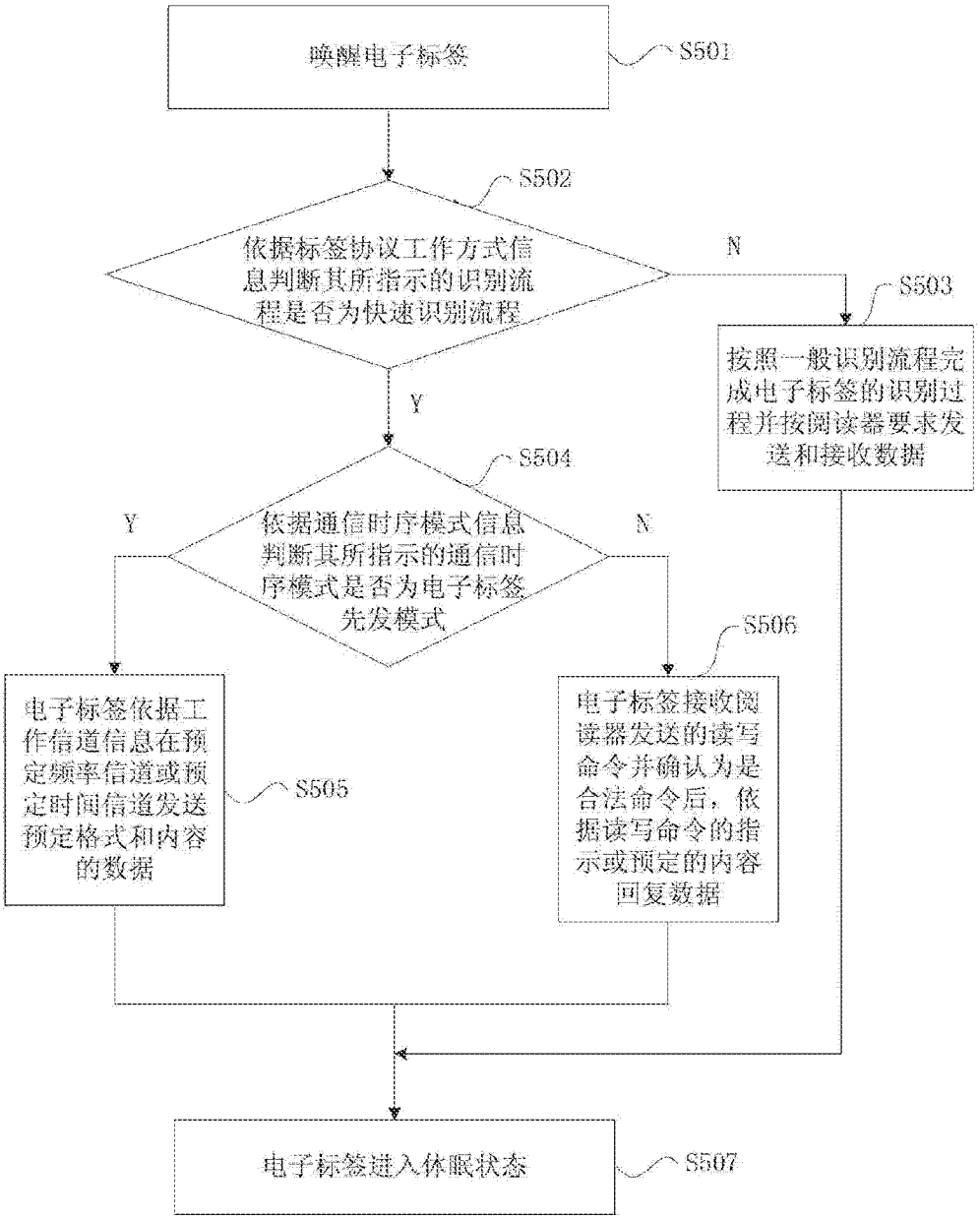

唤醒电子标签
S501
S502
依据标签协议工作方式信息判断其所指示的识别流程是否为快速识别流程
N
S503
按照一般识别流程完成电子标签的识别过程并按阅读器要求发送和接收数据
Y
S504
依据通信时序模式信息判断其所指示的通信时序模式是否为电子标签先发模式
Y
N
S506
电子标签依据工作信道信息在预定频率信道或预定时间信道发送预定格式和内容的数据
S505
电子标签接收阅读器发送的读写命令并确认为是合法命令后，依据读写命令的指示或预定的内容回复数据
电子标签进入休眠状态
S507

图 2

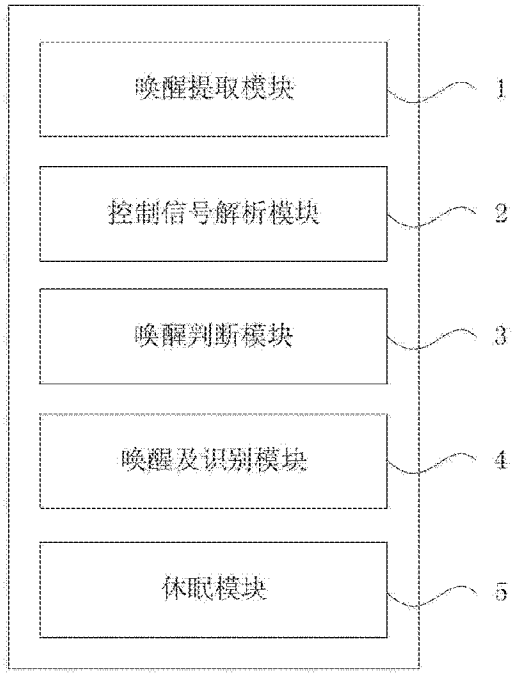

唤醒提取模块
1
控制信号解析模块
2
唤醒判断模块
3
唤醒及识别模块
4
休眠模块
5

图 3

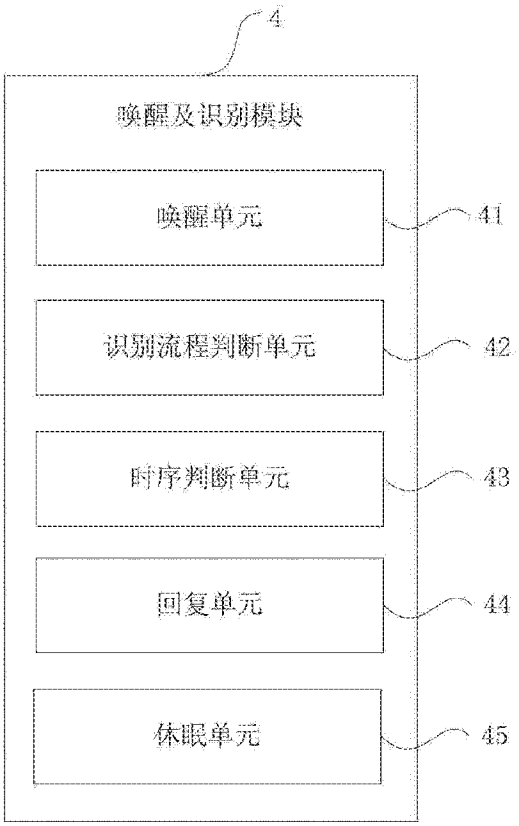

4
唤醒及识别模块
唤醒单元
41
识别流程判断单元
42
时序判断单元
43
回复单元
44
休眠单元
45

图 4

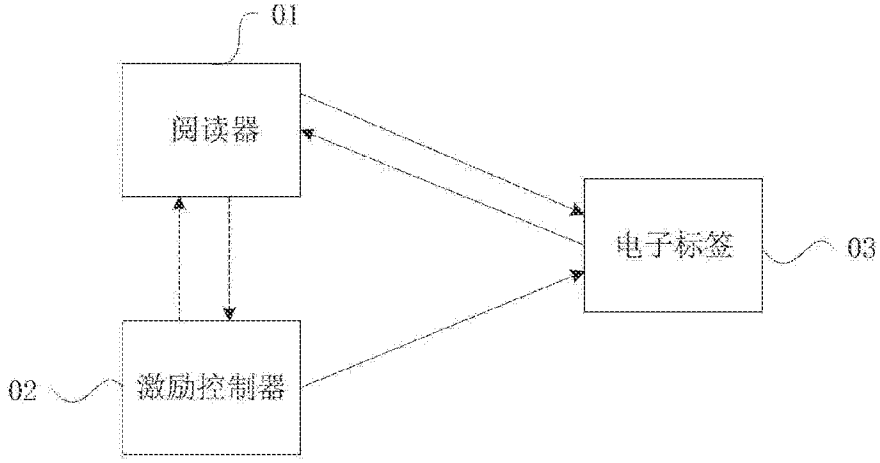

01
阅读器
电子标签
03
02
激励控制器

图 5

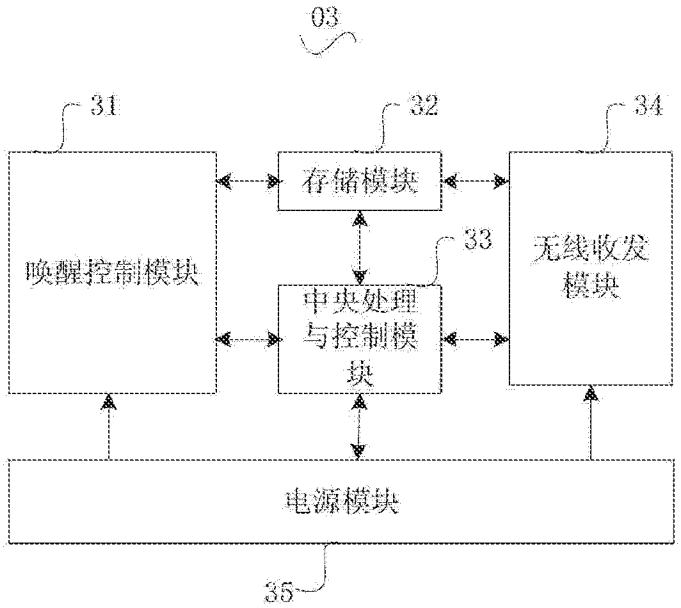

03
31
32
34
唤醒控制模块
存储模块
33
中央处理与控制模块
无线收发模块
电源模块
35

图 6

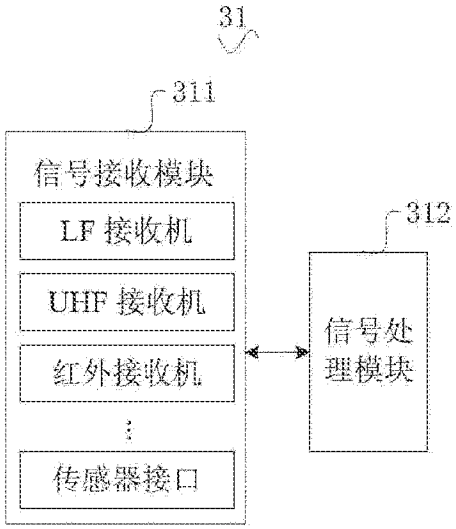

31
311
信号接收模块
LF 接收机
UHF 接收机
红外接收机
传感器接口
312
信号处理模块

图 7

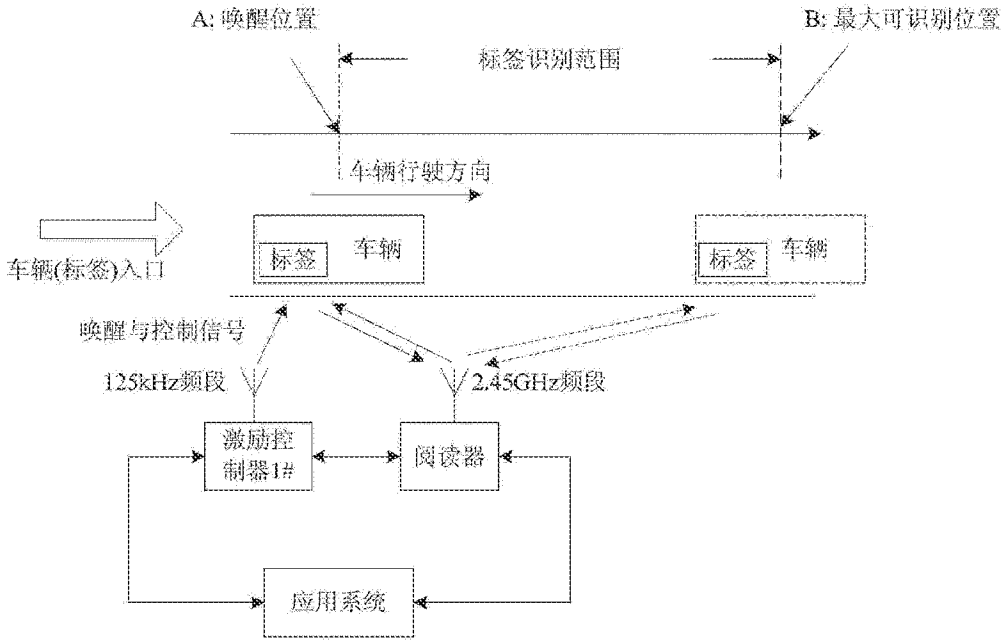

A: 唤醒位置
B: 最大可识别位置
标签识别范围
车辆行驶方向
车辆(标签)入口
标签
车辆
标签
车辆
唤醒与控制信号
125kHz频段
2.45GHz频段
激励控制器1#
阅读器
应用系统

图 8

国 家 知 识 产 权 局

100033

北京市金融街 35 号国际企业大厦 A 座 16 层 北京三友知识产权代理有限公司

王天尧(010-62300800)

发文日：

2021 年 02 月 24 日

申请号或专利号：201810706496.2　　发文序号：20210220001919490

申请人或专利权人：浙江汉朔电子科技有限公司

发明创造名称：交互式电子标签设备通信系统及方法

第 一 次 审 查 意 见 通 知 书

1. ☒应申请人提出的实质审查请求，根据专利法第 35 条第 1 款的规定，国家知识产权局对上述发明专利申请进行实质审查。

☐根据专利法第 35 条第 2 款的规定，国家知识产权局决定自行对上述发明专利申请进行审查。

2. ☐申请人要求以其在：

☐申请人已经提交了经原受理机构证明的第一次提出的在先申请文件的副本。

☐申请人尚未提交经原受理机构证明的第一次提出的在先申请文件的副本，根据专利法第 30 条的规定视为未要求优先权要求。

3. ☐经审查，申请人于_____提交的修改文件，不符合专利法实施细则第 51 条第 1 款的规定，不予接受。

4. 审查针对的申请文件：

☒原始申请文件。☐分案申请递交日提交的文件。☐下列申请文件：

5. ☐本通知书是在未进行检索的情况下作出的。

☒本通知书是在进行了检索的情况下作出的。

☒本通知书引用下列对比文件(其编号在今后的审查过程中继续沿用)：

编号	文 件 号 或 名 称	公开日期（或抵触申请的申请日）
1	CN 107343259A	20171110

6. 审查的结论性意见：

关于说明书：

☐申请的内容属于专利法第 5 条规定的不授予专利权的范围。

☐说明书不符合专利法第 26 条第 3 款的规定。

☐说明书不符合专利法第 33 条的规定。

☐说明书的撰写不符合专利法实施细则第 17 条的规定。

☐_____

关于权利要求书：

☐权利要求_____不符合专利法第 2 条第 2 款的规定。
☐权利要求_____不符合专利法第 9 条第 1 款的规定。
☐权利要求_____不具备专利法第 22 条第 2 款规定的新颖性。
☒权利要求 1-2、5-8、11-12 不具备专利法第 22 条第 3 款规定的创造性。
☐权利要求_____不具备专利法第 22 条第 4 款规定的实用性。
☐权利要求_____属于专利法第 25 条规定的不授予专利权的范围。
☐权利要求_____不符合专利法第 26 条第 4 款的规定。
☐权利要求_____不符合专利法第 31 条第 1 款的规定。
☐权利要求_____不符合专利法第 33 条的规定。
☐权利要求_____不符合专利法实施细则第 19 条的规定。
☐权利要求_____不符合专利法实施细则第 20 条的规定。
☐权利要求_____不符合专利法实施细则第 21 条的规定。
☐权利要求_____不符合专利法实施细则第 22 条的规定。
☐_____

☐申请不符合专利法第 26 条第 5 款或者实施细则第 26 条的规定。
☐申请不符合专利法第 20 条第 1 款的规定。
☐分案申请不符合专利法实施细则第 43 条第 1 款的规定。

上述结论性意见的具体分析见本通知书的正文部分。

7. 基于上述结论性意见，审查员认为：

☐申请人应当按照通知书正文部分提出的要求，对申请文件进行修改。
☒申请人应当在意见陈述书中论述其专利申请可以被授予专利权的理由，并对通知书正文部分中指出的不符合规定之处进行修改，否则将不能授予专利权。
☐专利申请中没有可以被授予专利权的实质性内容，如果申请人没有陈述理由或者陈述理由不充分，其申请将被驳回。
☐_____

8. 申请人应注意下列事项：

(1) 根据专利法第 37 条的规定，申请人应在收到本通知书之日起的 4 个月内陈述意见，如果申请人无正当理由逾期不答复，其申请被视为撤回。

(2) 申请人对其申请的修改应当符合专利法第 33 条的规定，不得超出原说明书和权利要求书记载的范围，同时申请人对专利申请文件进行的修改应当符合专利法实施细则第 51 条第 3 款的规定，按照本通知书的要求进行修改。

(3) 申请人的意见陈述书和/或修改文本应邮寄或递交国家知识产权局专利局受理处，凡未邮寄或递交给受理处的文件不具备法律效力。

(4) 未经预约，申请人和/或代理人不得前来国家知识产权局专利局与审查员举行会晤。

(5) 对进入实质审查阶段的发明专利申请，在第一次审查意见通知书答复期限届满前（已提交答复意见的除外），主动申请撤回的，可以请求退还 50%的专利申请实质审查费。

9. 本通知书正文部分共有 2 页，并附有下述附件：

☐引用的对比文件的复印件共_____份_____页。
☐_____

审查员：张琨　　联系电话：0371－87791190　　审查部门：专利审查协作河南中心通信发明审查部

第一次审查意见通知书

申请号:2018107064962

本申请涉及一种交互式电子标签设备通信系统及方法，经审查，具体审查意见如下：

一、权利要求 1-2、5-8、11-12 不具备专利法第 22 条第 3 款有关创造性的规定。

1、权利要求 7 请求保护一种交互式电子标签设备通信方法，对比文件 1（CN107343259A）公开了一种无线电子标签系统及其多频段低功耗数据安全传输方法，并具体公开了如下技术特征（参见说明书第 0017-0045 段及附图）：群唤醒数据包用于快速唤醒无线电子标签 30（即：快速监听模式）。标签 ID 号过滤包用于存储需要更新的每个无线电子标签 30 的 ID 号，以便各无线电子标签 30 辨别自己是否需要进行更新操作。标签更新时间计时器包用于告知无线电子标签 30 将进行更新操作的更新时间点。标签更新数据包用于存储无线电子标签 30 的显示屏需要显示的更新内容，其中，针对需要更新的各无线电子标签 30 分别单独生成一个标签更新数据包；无线基站 20 接收服务器 10 下发的更新操作指令数据流（即：后台服务器根据所述第一数据生成控制指令和第二数据，并将所述控制指令和第二数据发送至基站），解密获取需要更新的所有无线电子标签 30 的 ID 号及更新内容信息（即：基站接收所述控制指令和第二数据，以快速唤醒方式与所述电子标签设备进行通信）；无线基站 20 单独打包并进行数据加密处理而分别生成群唤醒数据包、标签 ID 号过滤包、标签更新时间计时器包和标签更新数据包，然后向每个无线电子标签 30 顺序下发群唤醒数据包、标签 ID 号过滤包、标签更新时间计时器包、标签更新数据包（隐含公开了通过第一通信通路将快速唤醒指令、所述控制指令和第二数据发送至所述电子标签设备）；无线电子标签 30 初始化完成后，接收到群唤醒数据包后被唤醒，在设定的唤醒时间内，解密接收到的标签 ID 号过滤包来判断自身是否需要更新：若标签 ID 号过滤包内有此无线电子标签 30 的 ID 号，则表示需要更新，进入 3-2)；否则进入睡眠状态；3-2)无线电子标签 30 解密接收到的标签更新时间计时器包，获得更新时间点后进入睡眠状态；无线电子标签 30 更新完成后进入睡眠状态。

权利要求 7 与对比文件 1 的区别特征为：1、外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据；2、完成通信后切换至普通监听模式，唤醒方式还包括普通唤醒模式。基于该区别技术特征，本发明实际解决的技术问题是：如何实现标签设备的节能。对比文件 1 公开了无线电子标签 30 解密接收到的标签更新时间计时器包，获得更新时间点后进入睡眠状态；无线电子标签 30 更新完成后进入睡眠状态。在此基础上，当完成通信后切换至普通监听模式也是本领域技术人员容易想到的。此外，外部设备通过电子标签设备中的第二通信通路向电子标签设备发送第一数据也是本领域的惯用技术手段。因此，在对比文件 1 的基础上结合本领域的惯用技术手段得到该权利要求所要保护的技术方案对本领域技术人员来说是显而易见

的。该权利要求不具备突出的实质性特点和显著的进步，不具备专利法第22条第3款规定的创造性。

2、对于从属权利要求8，对比文件1还公开了如下技术特征（参见说明书第0017-0045段及附图）：无线基站20单独打包并进行数据加密处理而分别生成群唤醒数据包、标签ID号过滤包、标签更新时间计时器包和标签更新数据包，然后向每个无线电子标签30顺序下发群唤醒数据包、标签ID号过滤包、标签更新时间计时器包、标签更新数据包。对比文件1公开了权利要求8的附加技术特征。因此，当其引用的权利要求不具备创造性时，该权利要求也不具备专利法第22条第3款规定的创造性。

3、对于从属权利要求11-12，在本领域中，当在预设时间内未收到快速唤醒指令或控制指令、数据则切回普通监听模式是本领域的惯用技术手段。因此，当其引用的权利要求不具备创造性时，该权利要求也不具备专利法第22条第3款规定的创造性。

4、权利要求1请求保护一种交互式电子标签设备通信系统，包含后台服务器、基站、电子标签设备和外部设备，各模块执行的功能与权利要求7的方法步骤相对应，在已知所述方法的前提下，用模块实现所述方法也是本领域技术人员容易想到的，属于本领域的公知常识。因此，该权利要求不具备突出的实质性特点和显著的进步，不符合专利法第22条第3款规定的创造性。

5、从属权利要求2、5-6的附加技术特征分别与从属权利要求8、11-12的附加技术特征相对应，在已知方法的前提下，通设备实现相应的步骤也是本领域技术人员容易想到的，属于本领域的公知常识。基于同样的评述理由，权利要求2、5-6也不具备创造性，不符合专利法第22条第3款的规定。

基于上述理由，本申请按照目前的文本还不能被授予专利权。如果申请人按照本通知书提出的审查意见对申请文件进行修改，克服所存在的缺陷，则本申请可望被授予专利权。对申请文件的修改应当符合专利法第三十三条的规定，不得超出原说明书和权利要求书记载的范围。

对进入实质审查阶段的发明专利申请，在第一次审查意见通知书答复期限届满前（已提交答复意见的除外），主动申请撤回的，可以请求退还50%的专利申请实质审查费。

审查员电话0371-87791190，或审查值班电话0371-87792282代为转达。

审查员姓名:张琨
审查员代码:494611

100033

北京市金融街35号国际企业大厦A座16层 北京三友知识产权代理有限公司

王大尧(010-62300800)

Issuing Date:

Application No. or Publication No.:201810706496.2 **Issue No.:**

Applicant or Patentee: Han shuo science & technology co., ltd.

Title of Invention: Interactive electronic tag device communication system and method

First Office Action

1. ☒Upon the request of substantive examination of the applicant, in accordance with Article 35.1 of the Patent Law, the State Intellectual Property Office performs the substantive examination for the aforesaid application for a patent for invention.

☐In accordance with Article 35.2 of the Patent Law, the State Intellectual Property Office proceeds to examine the aforesaid application for a patent for invention as to its substance on its own initiative.

2. ☐The applicant requests on the basis of:

☐The applicant has submitted the copy of previous application documents for the first filed, which has been verified by the original receiving organization.

☐The applicant has not submitted the copy of previous application documents for the first filed, which has been verified by the original receiving organization. In accordance with Article 30 of the Patent Law, the claim to the right of priority shall be deemed not to have been made.

3. ☐Upon examination, the amendment submitted by the applicant on_____,shall not be accepted for not in conformity with Rule 51.1 of the Implementing Regulations of the Patent Law.

4. Application files for examination:

☒Original application documents. ☐Documents submitted on the date of submission of divisional application. ☐Following application documents:

5. ☐The decision of this Office Action has been made without search.

☒The decision of this Office Action has been made based on search.

☒The following reference documents are cited in this Office Action (the serial number(s) of which will be used in follow-on examination):

No.	Document number or Document title	publication date (or application date of the conflicting
1	CN 107343259A	20171110

6. Conclusive opinions of the examination:

About the description:

☐The application falls into the scope of subject matter which is nonpatentable according to Article 5 of the Patent Law.

☐The description fails to comply with the provisions of article 26.3 of the Patent Law.

☐The description fails to comply with the provisions of Article 33 of the Patent Law.

☐The drafting of the description fails to comply with Rule 17 of the Implementing Regulations of the Patent Law.

☐_____

About the claims:

☐The claim(s)_____fail(s) to comply with the provisions of Article 2.2 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Article 9.1 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the novelty requested by Article 22.2 of the Patent Law.☐

☒The claim(s)1-2、5-8、11-12fail(s) to comply with the inventive steps requested by Article 22.3 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the applicability requested by Article 22.4 of the Patent Law.

☐The claim(s)_____fall(s) into the scope of subject matter which is nonpatentable according to Article 25 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Article 26.4 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Article 31.1 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Article 33 of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Rule 19 of the Implementing Regulations of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Rule 20 of the Implementing Regulations of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Rule 21 of the Implementing Regulations of the Patent Law.

☐The claim(s)_____fail(s) to comply with the provisions of Rule 22 of the Implementing Regulations of the Patent Law.

☐_____

☐The application fails to comply with the provisions of Article 26.5 of the Patent Law or Rule 26 of its Implementing Regulations.

☐The application fails to comply with the provisions of Article 20.1 of the Patent Law.

☐The divisional application fails to comply with the provisions of Rule 43.1 of the Implementing Regulations of the Patent Law.

The detailed analyses of the above conclusive opinions refer to the text of this Office Action.

7. On the basis of the conclusive opinions, the examiner suggests:

☐The applicant should amend the application documents according to the text of this Office

Action.

☒The applicant should state the reasons why the patent application should be granted in the observation, and amend the part which fails to comply with the provisions according to this Office Action, otherwise the patent application should not be granted.

☐The substantive content that might be granted can not be found in the application, if the applicant does not state the reasons or the stated reasons are not sufficient, the application shall be rejected.

☐_____

8. The applicant should pay attention to the followings statements:

(1) In accordance with Article 37 of the Patent Law, the applicant should submit the written opinion within four months from the date of receipt of this Office Action. If, without any justified reason, the time limit for reply is not met, the application shall be deemed to have been withdrawn.

(2) The amendment of the application document by the applicant should be in conformity with Article 33 of the Patent Law, and it should not exceed the scope specified in the initial description and claims. Meanwhile, the amendment of the application document by applicant should be in conformity with Rule 51.3 of the Implementing Regulations of the Patent Law, and in accordance with this Office Action.

(3) The written opinion and/or amendment document of the applicant should be sent by mail or submitted directly to the Receiving Division of the Patent Office of the State Intellectual Property Office, otherwise it will be considered to have no legal effect.

(4) Without appointment, the applicant and/or the agent should not come to the Patent Office of the State Intellectual Property Office to have an interview with the examiner.

9. The text of this Office Action has 2 pages, and the attachments are as follows:

☐The total number of copies of the reference documents cited is_____copies and _____ pages.

☐_____

Name of the Examiner:张堪 Tel：0371－87791190 Examination Department:专利审查协作河南中心 通信发明审查部

The First Office Action

Application Number:2018107064962

审查员姓名:张琨

审查员代码:494611

检 索 报 告

申请号：2018107064962	申请日：20180702	首次检索
申请人：浙江汉朔电子科技有限公司	最早的优先权日：	
权利要求项数：12	说明书段数：64+3	
审查员确定的 IPC 分类号：H04W52/02		
检索记录信息：CN107343259A: 6 CNTXT, ((电子标签 or 电子价签) s 基站 s 服务器 s (唤醒 or 快速)) and pd〈20180702 CN103093170A: 76 CNABS, (快速 3d 电子标签) and pd〈20180702 EP2835772A1: 13 VEN, ((label s wake up) and pd〈20180702)		

相 关 专 利 文 献

类型	国别以及代码[11] 给出的文献号	代码[43]或[45] 给出的日期	IPC 分类号	相关的段落 和 / 或图号	涉及的权 利要求
X	CN107343259A	20171110	H04W4/00	参见说明书 第 0017-0045 段及附图	1-2、5-8、11-12
A	CN103093170A	20130508	G06K7/00	全文	1-12
A	EP2835772A1	20150211	G06Q10/08	全文	1-12

相关非专利文献					
类型	书名（包括版本号和卷号）	出版日期	作者姓名和出版者名称	相关页数	涉及的权利要求
类型	期刊或文摘名称（包括卷号和期号）	发行日期	作者姓名和文章标题	相关页数	涉及的权利要求

表格填写说明事项：

1. 审查员实际检索领域的 IPC 分类号应当填写到大组和 / 或小组所在的分类位置。
2. 期刊或其它定期出版物的名称可以使用符合一般公认的国际惯例的缩写名称。
3. 相关文件的类型说明：

X：一篇文件影响新颖性或创造性；

Y：与本报告中的另外的 Y 类文件组合而影响创造性；

A：背景技术文件；

R：任何单位或个人在申请日向专利局提交的、属于同样的发明创造的专利或专利申请文件。

P：中间文件，其公开日在申请的申请日与所要求的优先权日之间的文件；

E：抵触申请。

审 查 员：张琨　　审查部门：专利审查协作河南中心通信发明审查部

2021 年 02 月 18 日

【Translation】

China National Intellectual Property Administration

Search Report

Application Number: 201810706496.2	Application Date: July 2, 2018	First Search
Applicant: Hanshow Technology Co., Ltd.	Earliest Priority Date:	
Number of Claims: 12	Number of Paragraphs of Specification:64+3	

IPC Classification Number(s) Determined by the Examiner:

H04W52/02

Search Record Information:

CN107343259A: 6 CNTX1：((电子标签 or 电子价签) s 基站 s 服务器 s （唤醒 or 快速)) and

pd （20180702

CN103093170A: 76 CNABS,（快速 3d 电子标签）and pd（20180702

EP2835772A1:13 VEN, （(label s wake up） and pd（20180702）

Related Patent Documents

Type	Document Number Consisting of Country Code and Code [11]	Date Consisting of Code [43] or [45]	IPC Classification Number	Relevant Paragraph(s) and/or Figure(s)	Claim(s) Involved
X	CN107343259A	20171110	H04W4/00	Paragraphs 0017-0045 of the Description, Figs	1-2, 5-8, 11-12
A	CN103093170A	20130508	G06K7/00	The entire text	1-12
A	EP2835772A1	20150211	G06Q10/08	The entire text	1-12

Related Non-Patent Documents					
Type	Book Name (including Edition Number and Volume Number)	Publication Date	Author's Name and Publisher's Name	Relevant Page(s)	Claim(s) Involved
Type	Title of Periodical or Abstract (including Volume Number and Periodical Number)	Issuing Date	Author's Name and Title of the Article	Relevant Page(s)	Claim(s) Involved

Notes for Filling in the Form:

1. The IPC classification numbers of the fields actually searched by the examiner should be detailed to classification level of main group and/or subgroup.
2. Titles of periodicals or other periodical publications may be abbreviated as generally acknowledged by common international practices.
3. Explanations of types of related documents:

   X: a document that affects novelty or inventiveness alone;

   Y: a document that affects inventiveness in combination with other Y-type document(s) cited in this Report;

   A: a back-ground document;

   R: a patent or patent application document submitted to the Patent Office by any entity or individual on the Application Date and pertaining to the same invention/creation;

   P: an intermediate document having publication date between the Application Date and the claimed priority date;

   E: a conflicting application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Min LIANG	§	
	§	
	§	Group Art Unit: 2643
Serial No.: 17/257,570	§	
	§	
Confirmation No.: 6950	§	Examiner: HTUN, SAN A
	§	
Filed: January 2, 2021	§	
	§	
For: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD		

INFORMATION DISCLOSURE STATEMENT (IDS)

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

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.6(a)(4).

Dated: August 25, 2022
Electronic Signature for Chih Huai Chiu: /CHIH HUAI CHIU/

Dear Sir:

Pursuant to 37 C.F.R. §§ 1.56, 1.97, and 1.98, the attention of the United States Patent and Trademark Office is hereby directed to the references listed on the attached PTO/SB/08. It is respectfully requested that the information be expressly considered during the prosecution of the above-identified application, and that the references be made of record therein and appear among the "References Cited" on any patent to issue therefrom.

This Information Disclosure Statement is filed before the mailing of a first Office action after the filing of a request for continued examination in accordance with 37 C.F.R. § 1.97(b)(4).

In accordance with 37 C.F.R. § 1.98(a)(2)(ii), copies of U.S. patents and U.S. patent application publications are not submitted. Submitted herewith are copies of foreign patents and non-patent literature in accordance with 37 C.F.R. § 1.98(a)(2).

In accordance with 37 C.F.R. § 1.97(g), the filing of this Information Disclosure Statement shall not be construed as a representation that a search has been made. In accordance with 37 C.F.R. § 1.97(h), the filing of this Information Disclosure Statement shall not be construed to be an admission that the information cited in this Information Disclosure Statement is, or is considered to be, material to the patentability as defined in 37 C.F.R. § 1.56(b).

It is submitted that the Information Disclosure Statement is in compliance with 37 C.F.R. § 1.98, and the Examiner is respectfully requested to consider the listed references.

August 25, 2022

NZ Carr Law Office
2101 CityWest Blvd, STE 100
Houston, TX 77042
USA

phone: +1-281-704-7896

Respectfully submitted,

/CHIH HUAI CHIU/

Chih Huai Chiu
Reg. No. 75,299

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. 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

(Not for submission under 37 CFR 1.99)

Application Number	17257570
Filing Date	2021-01-02
First Named Inventor	Min LIANG
Art Unit	2643
Examiner Name	HTUN, SAN A
Attorney Docket Number	SANU/0004USP

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1					

If you wish to add additional U.S. Patent citation information please click the Add button. Add

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20180174009		2018-06-21	Schleef et al.	
	2	20140266625		2014-09-18	Merlin et al.	
	3	20120326846		2012-12-27	Tseng et al.	

If you wish to add additional U.S. Published Application citation information please click the Add button. Add

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1	103093170	CN		2013-05-08	WANG et al.		X

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	17257570
	Filing Date	2021-01-02
	First Named Inventor	Min LIANG
	Art Unit	2643
	Examiner Name	HTUN, SAN A
	Attorney Docket Number	SANU/0004USP

	2	2835772	EP		2015-02-11	CHO		☐

If you wish to add additional Foreign Patent Document citation information please click the Add button Add

NON-PATENT LITERATURE DOCUMENTS Remove

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, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
	1	The First Office Action and search report issued on February 24, 2021 for counterpart Chinese patent application No. 201810706496.2, along with machine EN translation downloaded from EPO	☒
	2	Extended European Search Report issued on March 1, 2022 for counterpart European patent application No. 19830815.7	☐

If you wish to add additional non-patent literature document citation information please click the Add button Add

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17257570
Filing Date	2021-01-02
First Named Inventor	Min LIANG
Art Unit	2643
Examiner Name	HTUN, SAN A
Attorney Docket Number	SANU/0004USP

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☒ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

☒ See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/CHIH HUAI CHIU/	Date (YYYY-MM-DD)	2022-08-25
Name/Print	CHIH HUAI CHIU	Registration Number	75299

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 governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour 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.**

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 the Freedom of Information Act requires disclosure of these record s.

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 inspections 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
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

162130 7590 09/16/2022

NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

EXAMINER
HTUN, SAN A

ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 09/16/2022

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

TITLE OF INVENTION: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	12/16/2022

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.

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)

162130 7590 09/16/2022

NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

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.

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.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

TITLE OF INVENTION: INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	$600	$0.00	$0.00	$600	12/16/2022

EXAMINER	ART UNIT	CLASS-SUBCLASS
HTUN, SAN A	2643	370-311000

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,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____
2 _____
3 _____

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

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document 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
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	6950

162130 7590 09/16/2022
NZ Carr Law Office
2101 CityWest Blvd. STE 100
Houston, TX 77042

EXAMINER	
HTUN, SAN A	
ART UNIT	PAPER NUMBER
2643	

DATE MAILED: 09/16/2022

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); (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. 17/257,570	Applicant(s) LIANG et al.	
	Examiner SAN HTUN	Art Unit 2643	AIA (FITF) Status Yes

-- 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 RCE filed on 08/25/2022.
   ☐ 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 1-19 . 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 _____.

/SAN HTUN/
Primary Examiner, Art Unit 2643

Notice of Allowance

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance ~~or after an Office action under *Ex Parte Quayle*,~~ 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 08/25/2022 has been entered.

2. In virtue of this communication, claims 1-19 are currently patentable in this Office Action.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 08/25/2022 was filed after the mailing date of the Notice of Allowance on 06/22/2022. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

4. Upon filing of RCE along with IDS, search are updated and claims are reconsidered thoroughly. However, Notice of Allowance is still valid, and thus, the following section set forth below is a duplication of the previous Notice of Allowance.

Allowable Subject Matter

5. Claims 1-19 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

the prior art of record fails to anticipate or render the claimed limitations obvious, singly or in combination, particularly, "switching between normal and fast wake-up modes of an electronic tag device via two communication paths by a control instruction and a fast wake-up instruction" as detailed in the independent claims in light of fig. 1-3 in the disclosure.

Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAN A HTUN whose telephone number is (571)270-3190. The examiner can normally be reached on Monday - Thursday 7 AM - 5 PM.

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, Jinsong Hu can be reached on 5712723965. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/SAN HTUN/

Primary Examiner, Art Unit 2643

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	**Art Unit**
	SAN HTUN	2643

CPC								
Symbol							**Type**	**Version**
H04W	/	52	/	0229			F	2013-01-01
H04W	/	52	/	0212			I	2013-01-01
H04W	/	52	/	0235			I	2013-01-01
H04W	/	76	/	15			I	2018-02-01

CPC Combination Sets								
Symbol					**Type**	**Set**	**Ranking**	**Version**
	/		/					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SAN HTUN/ Primary Examiner, Art Unit 2643	05 September 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20220905

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	**Art Unit**
	SAN HTUN	2643

INTERNATIONAL CLASSIFICATION					
CLAIMED					
H04W	/	52	/	02	
H04W	/	76	/	15	

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	**SUBCLASS**

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

NONE (Assistant Examiner) (Date)	**Total Claims Allowed:** 19	
/SAN HTUN/ Primary Examiner, Art Unit 2643 (Primary Examiner) (Date) 05 September 2022	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office Part of Paper No.: 20220905

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

☑ 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		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/SAN HTUN/ Primary Examiner, Art Unit 2643	05 September 2022	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office Part of Paper No.: 20220905

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

CPC - Searched*		
Symbol	**Date**	**Examiner**
H04W40/$.H04W52/$.H04W76/28.H04W88/$.	12/31/2021	/S.H./
H04W4/70-80.H04W40/$.H04W52/$.H04W76/15,20,28.H04W88/$.	06/10/2022	/S.H./
H04W4/70-80.H04W40/$.H04W52/$.H04W76/$.H04W88/$.	09/05/2022	/S.H./

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**
Searched in PE2E search.	12/31/2021	/S.H./
Explored NPL datatbase attached.	01/01/2022	/S.H./
Conducted assignee and inventor search in PE2E search.	12/31/2021	/S.H./
Updated search in PE2E SEARCH.	06/10/2022	/S.H./
Conducted interference search in SEARCH.	06/10/2022	/S.H./
Explored NPL documents in the databases attached.	06/10/2022	/S.H./

/SAN HTUN/ Primary Examiner, Art Unit 2643	

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	17/257,570	LIANG et al.
	Examiner	Art Unit
	SAN HTUN	2643

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
H04W	4/70-80.40/$.52/$.76/15,20,28.88/$.	06/10/2022	/S.H./
H04W	4/70-80.40/$.52/$.76/$.88/$.	09/05/2022	/S.H./

/SAN HTUN/ Primary Examiner, Art Unit 2643	

PE2E SEARCH - Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
L1	2	"20210321332"	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:51 PM
L2	103734945	Zhejiang Hanshow Technology Co. Ltd	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L3	42328739	LIANG, Min; HOU, Shiguo; CHEN, Jun; JIANG, Qi; ZHAO, Yang	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2021/12/31 11:52 PM
L5	1003494	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU,	OR	ON	ON	2021/12/31 11:55 PM

			CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L6	19914	(wireless OR mobile OR cell$4) AND (normal OR fast) AND sleep$3 AND (wake?up OR wak$4up) AND (path OR link) AND (bs OR (base station) OR eNB OR gNB) AND server AND (device OR station OR terminal OR equipment OR telephone OR phone)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L7	116244414	L1 OR L3 OR L5 OR L2	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2021/12/31 11:57 PM
L8	18748	L6 AND L7	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA,	ADJ	ON	ON	2021/12/31 11:58 PM

			VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L9	14812	L8 AND (control AND (instruction OR command) AND monitor$3)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:28 AM
L10	977	L9 AND (sleep$3 AND (wake-up OR wake$4up OR wake?up)).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L11	182	L10 AND (path OR link).clm.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 12:30 AM
L12	1	US-20070103296-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB,	ADJ	ON	ON	2022/01/01 01:30 AM

			HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L13	1	US-20090135000-A1.did. AND tag AND server AND (base station)	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 01:32 AM
L14	741	(wireless OR mobile OR cell$4) SAME (tag OR asset) SAME (sleep$3 OR wake-up OR wak$4up OR wake?up) SAME (mode OR normal OR low OR high OR fast) SAME server SAME (station OR device OR equipment OR terminal)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/01/01 02:28 AM
L15	210	L14 AND (sleep$3 OR wake-up OR wak$4up OR wake?up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	ADJ	ON	ON	2022/01/01 02:29 AM

			IBM_TDB)				
L16	2	us-20150002274-a1.did.	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:52 AM
L17	1	L16 AND tag AND server AND sleep$3 AND wake?up	(US-PGPUB; USPAT; USOCR; FIT (AU, AP, AT, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, OA, RU, SU, WO, MC, MD, MY, NL, NO, NZ, PH, PL, PT, RO, RS, SE, SG, SI, SK, TH, TN, TR, TW, UA, VN); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/01/01 10:53 AM
L18	1235759	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/06/10 01:06 PM
L19	83993	(wireless OR mobile OR cell$4 OR electronic OR comput$3 OR portable) AND (tag OR rfid OR transponder OR FOB) AND (mode OR normal OR fast) AND (wake?up OR sleep$3 OR (power	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	OR	ON	ON	2022/06/10 01:10 PM

		near10 sav$3)) AND server AND (command$3 OR monitor$3 OR instruct$3) AND (link OR path) AND (bluetooth OR nfc OR (direct mode) OR (short range))	MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L20	13939	L18 AND L19	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	OR	ON	ON	2022/06/10 01:10 PM
L21	54817	(wireless OR mobile OR cell$4 OR electronic OR comput$3 OR portable) AND (tag OR rfid OR transponder OR FOB) AND (mode OR normal OR fast) AND (wake?up OR sleep$3 OR (power near10 sav$3)) AND server AND (command$3 OR monitor$3 OR instruct$3) AND (link OR path) AND (bluetooth OR nfc OR (direct mode) OR (short range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 01:10 PM
L22	10617	L21 AND L18	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT;	ADJ	ON	ON	2022/06/10 01:10 PM

			IBM_TDB)				
L23	1154	L22 AND ((sleep$3 OR sav$3 OR wake?up OR wake-up OR wak$4up) AND power).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 01:11 PM
L24	166	L23 AND ((fast OR quick OR normal) WITH (wak$4up OR sleep$3 OR wake-up))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 02:39 PM
L25	37886	(wireless OR mobiel OR cell$4 OR protable OR user OR electronic OR smart OR comput$3) SAME (terminal OR device OR station OR equipment OR phone OR telephone) SAME (wak$4up OR wake-up) SAME (mode OR normal OR fast)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:29 PM
L26	15144	L25 AND (wak$4up OR wake-up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV,	ADJ	ON	ON	2022/06/10 04:31 PM

			MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L27	5171	L26 AND (tag OR rfid OR nfc OR bluetooth OR (direct mode) OR (shrt range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:32 PM
L28	5483	L26 AND (tag OR rfid OR nfc OR bluetooth OR (direct mode) OR (short range))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:36 PM
L29	672	L28 AND (mode WITH (fast OR normal) WITH (wak$4up OR (wake up) OR wake-up))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 04:38 PM
L30	1273963	(H04W4/70-80 OR	(US-PGPUB; USPAT;	ADJ	ON	ON	2022/06/10

		H04W40/$ OR H04W52/$ OR H04W76/15,20,28 OR H04W88/$).CPC.	USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				07:45 PM
L31	249	L29 AND L30	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/06/10 07:45 PM
L32	1557695	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/$ OR H04W88/$).CPC.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/09/05 03:36 PM
L33	24784	(wireless OR mobile OR cell$4) AND (wake?up OR wak$4up OR (wake up)) AND (normal OR fast) AND (mode OR state OR status) AND (communicat$3 OR connectivity OR connect$3) AND (link OR access OR path)	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL,	ADJ	ON	ON	2022/09/05 03:40 PM

		AND (tag OR fob OR transponder) AND server AND (command OR control OR instruct$3)	PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				
L34	5887	L32 AND L33	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/09/05 03:41 PM
L35	599	L34 AND (wake?up OR (wake up) OR wak$4up).clm.	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/09/05 03:42 PM
L36	4172	((normal OR fast) NEAR (wake?up OR (wake up) OR wak$4up))	(US-PGPUB; USPAT; USOCR; FIT (AP, AT, AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)	ADJ	ON	ON	2022/09/05 03:42 PM
L37	15	L35 AND L36	(US-PGPUB; USPAT; USOCR; FIT (AP, AT,	ADJ	ON	ON	2022/09/05 03:43 PM

			AU, BE, BG, BR, BY, CA, CH, CN, CS, CU, CZ, DD, DE, DK, EA, EE, EP, ES, FI, FR, GB, HR, HU, ID, IE, IL, IS, IT, JP, KR, LT, LU, LV, MA, MC, MD, MY, NL, NO, NZ, OA, PH, PL, PT, RO, RS, RU, SE, SG, SI, SK, SU, TH, TN, TR, TW, UA, VN, WO); FPRS; EPO; JPO; DERWENT; IBM_TDB)				

PE2E SEARCH - Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	British Equivalents	Time Stamp
N1	167700	(H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:45 AM
N2	0	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3) AND monitor$3).clm.	(US-PGPUB; USPAT)	OR	ON	ON	2022/01/01 01:54 AM
N3	0	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high) AND fast AND (data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:55 AM
N4	22	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 01:56 AM

		OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast) AND (data OR instruction OR command$3 OR monitor$3)).clm.					
N5	43	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND sleep$3 AND (wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N6	21	N5 NOT N4	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:00 AM
N7	111	((wireless OR mobile OR cell$4) AND tag AND (device OR asset OR terminal OR equipment OR station OR telephone OR phone) AND server AND (sleep$3 OR wake?up OR wak$4up OR wake-up) AND (normal OR low OR high OR fast OR data OR instruction OR command$3 OR monitor$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM
N8	16	N1 AND N7	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:09 AM
N9	95	N7 NOT N8	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/01/01 02:10 AM
N10	216313	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:04 PM
N11	218	((tag OR rfid OR responder) AND (wireless OR mobile OR electronic OR device OR cell$4 OR user OR equipment OR station OR terminal) AND	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:12 PM

		(server OR (base station) OR node) AND (sleep$3 OR (power sav$3) OR wak$4up OR wake-up) AND (mode OR normal OR fast)).clm.					
N12	60	N10 AND N11	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:12 PM
N13	158	N11 NOT N10	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 03:13 PM
N15	222631	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/15,20,28 OR H04W88/$).CPC.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:46 PM
N16	60	N15 AND N11	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:46 PM
N17	0	N16 NOT N13 NOT N12	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/06/10 07:47 PM
N18	2	L35 AND L36	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:21 PM
N19	6	((wireless OR mobile OR cell$4) AND (wake?up OR wak$4up OR (wake up)) AND (normal OR fast) AND (mode OR state OR status) AND (communicat$3 OR connectivity OR connect$3) AND (link OR access OR path) AND (tag OR fob OR transponder) AND server AND (command OR control OR instruct$3)).clm.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:21 PM
N20	266223	(H04W4/70-80 OR H04W40/$ OR H04W52/$ OR H04W76/$ OR H04W88/$).CPC.	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:22 PM
N21	0	N19 AND N20	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:22 PM
N22	445	((wireless OR mobile OR cell$4) AND (wake?up OR wak$4up OR (wake up)) AND (normal OR fast) AND (mode OR state OR status OR communicat$3 OR connectivity OR connect$3 OR link OR	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:33 PM

		access OR path OR tag OR fob OR transponder OR server OR command OR control OR instruct$3)).clm.					
N23	209	N20 AND N22	(US-PGPUB; USPAT)	ADJ	ON	ON	2022/09/05 04:33 PM

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Showing 1-8 of 8 for wake-up modes for tag

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2008 2020

Author

Affiliation

Publication Title

Publisher

Conference Location

Publication Topics

A W-band active millimeter-wave tag IC with wake-up function

M. Sadegh Dadash; Juergen Hasch; Pascal Chevalier; Andreia Cathelin; Sorin P. Voinigescu

2017 IEEE MTT-S International Microwave Symposium (IMS)

Year: 2017 | Conference Paper | Publisher: IEEE

Cited by: Papers (3)

Abstract HTML

A W-band active millimeter-wave tag IC with wake-up function

M. Sadegh Dadash; Juergen Hasch; Pascal Chevalier; Andreia Cathelin; Sorin P. Voinigescu

2017 IEEE MTT-S International Microwave Symposium (IMS)

Year: 2017 | Conference Paper | Publisher: IEEE

Range extension of passive wake-up radio systems through energy harvesting

Li Chen; Stephen Cool; He Ba; Wendi Heinzelman; Ilker Demirkol; Ufuk Muncuk; Kaushik Chowdhury; Stefano Basagni

2013 IEEE International Conference on Communications (ICC)

Year: 2013 | Conference Paper | Publisher: IEEE

Cited by: Papers (31) | Patents (1)

Abstract HTML

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Multi-Hop RFID Wake-Up Radio: Design, Evaluation and Energy Tradeoffs

Raja Jurdak; Antonio G. Ruzzelli; Gregory M. P. O'Hare

2008 Proceedings of 17th International Conference on Computer Communications and Networks

Year: 2008 | Conference Paper | Publisher: IEEE

Cited by: Papers (19) | Patents (1)

Abstract HTML

Multi-Hop RFID Wake-Up Radio: Design, Evaluation and Energy Tradeoffs

Raja Jurdak; Antonio G. Ruzzelli; Gregory M. P. O'Hare

2008 Proceedings of 17th International Conference on Computer Communications and Networks

Year: 2008 | Conference Paper | Publisher: IEEE

Applying Tabu Search to the Freeze-Tag Problem

Hamidreza Keshavarz

2016 1st Conference on Swarm Intelligence and Evolutionary Computation (CSIEC)

Year: 2016 | Conference Paper | Publisher: IEEE

Abstract HTML

Applying Tabu Search to the Freeze-Tag Problem

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Year: 2016 | Conference Paper | Publisher: IEEE

Multi-sensor UWB time-coded RFID tags for smart cities applications

Angel Ramos; Antonio Lazaro; David Girbau

2014 44th European Microwave Conference

Year: 2014 | Conference Paper | Publisher: IEEE

Cited by: Papers (4)

Abstract HTML

Multi-sensor UWB time-coded RFID tags for smart cities applications

Angel Ramos; Antonio Lazaro; David Girbau

2014 44th European Microwave Conference

Year: 2014 | Conference Paper | Publisher: IEEE

An Energy Efficient Active RFID Protocol to Avoid Overhearing Problem
Chae-Seok Lee; Dong-Hyun Kim; Jong-Deok Kim
IEEE Sensors Journal
Year: 2014 | Volume: 14, Issue: 1 | Journal Article | Publisher: IEEE
Cited by: Papers (19)

Abstract HTML

An Energy Efficient Active RFID Protocol to Avoid Overhearing Problem

Chae-Seok Lee; Dong-Hyun Kim; Jong-Deok Kim
IEEE Sensors Journal
Year: 2014 | Volume: 14, Issue: 1 | Journal Article | Publisher: IEEE

Battery Management Technique to Reduce Standby Energy Consumption in Ultra-Low Power IoT and Sensory Applications
Mohsen Radfar; Amir Nakhlestani; Hoang Le Viet; Aniruddha Desai
IEEE Transactions on Circuits and Systems I: Regular Papers
Year: 2020 | Volume: 67, Issue: 1 | Journal Article | Publisher: IEEE
Cited by: Papers (6)

Abstract HTML

Battery Management Technique to Reduce Standby Energy Consumption in Ultra-Low Power IoT and Sensory Applications

Mohsen Radfar; Amir Nakhlestani; Hoang Le Viet; Aniruddha Desai
IEEE Transactions on Circuits and Systems I: Regular Papers
Year: 2020 | Volume: 67, Issue: 1 | Journal Article | Publisher: IEEE

Nitrogen Dioxide Wireless Sensor Based on Carbon Nanotubes and UWB RFID Technology
Angel Ramos; Pierrick Clément; Antonio Lazaro; Eduard Llobet; David Girbau
IEEE Antennas and Wireless Propagation Letters
Year: 2015 | Volume: 14 | Journal Article | Publisher: IEEE
Cited by: Papers (7)

Abstract HTML

Nitrogen Dioxide Wireless Sensor Based on Carbon Nanotubes and UWB RFID Technology

Angel Ramos; Pierrick Clément; Antonio Lazaro; Eduard Llobet; David Girbau
IEEE Antennas and Wireless Propagation Letters
Year: 2015 | Volume: 14 | Journal Article |
Publisher: IEEE

Full Lifecycle Infrastructure Management System for Smart Cities: A Narrow Band IoT-Based Platform
Sifan Chen; Chungang Yang; Jiandong Li; F. Richard Yu
IEEE Internet of Things Journal
Year: 2019 | Volume: 6, Issue: 5 | Journal Article | Publisher: IEEE
Cited by: Papers (8)

Abstract HTML

Full Lifecycle Infrastructure Management System for Smart Cities: A Narrow Band IoT-Based Platform

Sifan Chen; Chungang Yang; Jiandong Li; F. Richard Yu
IEEE Internet of Things Journal
Year: 2019 | Volume: 6, Issue: 5 | Journal Article | Publisher: IEEE

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Discover Map wake-up modes for electronic tag TIC

1 - 50

Relevance

A low power dualband active RFID tag

Disclosed is a low power dual band active electronic tag. The low power dual band active electronic tag according to the present invention relates to an electronic tag comprising; a first antenna which receives a signal of a first frequency band from an active electronic tag identification device;

SOLUTIONIT CO LTD

KR101531909B1 | Korea Patents | 2015-06-26 | 4

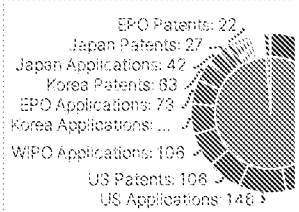
Deep sleep in a RFID tag

The present invention relates to a motionless RFID tag and a reading system and a control method thereof. The motionless state is relevant to the reconfiguration of the RFID tag rather than the power of the RFID tag. In general, the RFID tag in a preferred embodiment includes an antenna, a RF...

ID SOLUTIONS INC

TWI262449B | Taiwan Patents | 2006-09-21 | 4

Collections



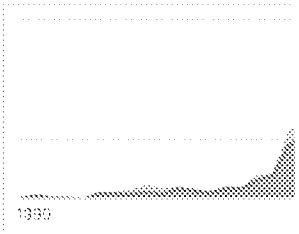
Electronic tag, electronic shelf label system and method for waking up thereof

The present invention relates to an electronic tag, an electronic label system, and a wake-up method, wherein the electronic tag performs wireless communication with a gateway that transmits an RF signal including a wake-up frame prior to data transmission if there is data to be transmitted. A

주식회사 솔루엠

KR102068781B1 | Korea Patents | 2020-01-23 | 4

Publication Date



Charts based on top 1500 results

Electronic tag device and method for monitoring power source

The present invention relates to an electronic tag device and a method for monitoring a power source thereof. The electronic tag device of the present invention may comprise a power supply unit which supplies internal power; a normal mode control unit which provides a sleep mode entering signal in a...

SAMSUNG ELECTRO MECHANICS CO LTD

KR20140081582A | Korea Applications | 2014-07-01 | 4

Electronic tag device having minimized power consumption

The present invention relates to an electronic tag device having minimized power consumption, the device activating an electronic tag module through a separate wake-up module that wirelessly communicates with a user terminal, so as to implement updating of tag information from a server, and thus...

RYU HYEONJOON

WO2021172896A1 | WIPO Applications | 2021-09-02 | 4

Electronic tag including the mode convertible function and base station device using the tag

PURPOSE: An electronic tag of a mode switching type and an electronic tag recognition device of the mode switching type are provided to perform communication with the electronic tag of the mode switching type and a different kind frequency band. CONSTITUTION: A low frequency band guide receiver(551)...

More V

Result 1

Main Concept Text
==========
wake-up modes for electronic tag

(No Concept Modifiers)
==========

(No Filters)
==========

Options
=======
De-dup: None
Cut-off: None
Sort: Relevance

Content: Patents + NPL (190)
==========
US Patents
US Designs
US Applications
EPO Patents
EPO Applications
China Patents
China Applications
Japan Patents
Japan Applications
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Korea Applications
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Receipt date: 08/25/2022

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	17257570
Filing Date	2021-01-02
First Named Inventor	Min LIANG
Art Unit	2643 17/257,570 - GAU: 2643
Examiner Name	HTUN, SAN A
Attorney Docket Number	SANU/0004USP

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	1	20180174009		2018-06-21	Schleef et al.	
	2	20140266625		2014-09-18	Merlin et al.	
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	1	103093170	CN		2013-05-08	WANG et al.		X

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Receipt date: 08/25/2022	Application Number	17257570 17/257,570 - GAU: 2643
INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Filing Date	2021-01-02
(Not for submission under 37 CFR 1.99)	First Named Inventor	Min LIANG
	Art Unit	2643
	Examiner Name	HTUN, SAN A
	Attorney Docket Number	SANU/0004USP

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	2	2835772	EP		2015-02-11	CHO		☐

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	1	The First Office Action and search report issued on February 24, 2021 for counterpart Chinese patent application No. 201810706496.2, along with machine EN translation downloaded from EPO	☒
	2	Extended European Search Report issued on March 1, 2022 for counterpart European patent application No. 19830815.7	☐

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EXAMINER SIGNATURE

Examiner Signature	/SAN HTUN/	Date Considered	09/05/2022

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[1] See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. [2] Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). [3] For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. [4] Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. [5] Applicant is to place a check mark here if English language translation is attached.

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To: docketing@carrpllc.com,uspto@dockettrak.com,randy.chiu@carrpllc.com
From: PAIR_eOfficeAction@uspto.gov
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Subject: Private PAIR Correspondence Notification for Customer Number 162130

Sep 16, 2022 03:22:21 AM

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2101 CityWest Blvd. STE 100
Houston, TX 77042
UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
17257570	NOA	09/16/2022	SANU_0004USP
	1449	09/16/2022	SANU_0004USP

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY.DOCKET NO./TITLE	REQUEST ID
17/257,570	01/02/2021	Min LIANG	SANU_0004USP	178954

Acknowledgement of Loss of Entitlement to Entity Status Discount

The entity status change request below filed through Private PAIR on 11/21/2022 has been accepted.

CERTIFICATIONS:

Change of Entity Status:

X Applicant changing to regular undiscounted fee status.

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

This portion must be completed by the signatory or signatories making the entity status change in accordance with 37 CFR 1.4(d)(4).

Signature:	/Chih Huai Chiu/
Name:	Chih Huai Chiu
Registration Number:	75299

Document Description: Issue Fee Payment (PTO-85B)

Issue Fee Transmittal Form

Application Number	Filing Date	First Named Inventor	Atty. Docket No.	Confirmation No.
17257570	02-Jan-2021	Min LIANG	SANU_0004USP	6950

TITLE OF INVENTION :

INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD

Entity Status	Application Type	Art Unit	Class - Subclass	EXAMINER
Regular Undiscounted	U.S. National Stage under 35 USC 371	2643	311000	SAN HTUN

Issue Fee Due	Publication Due	Total Fee(s) Due	Date Due	Prev. Paid Fee
$1200	$0	$1200	16-Dec-2022	$0

1.Change of Correspondence Address and/or Indication Of Fee Address (37 CFR 1.33 & 1.363)

Current Correspondence Address:	Current Indicated Fee Address :
162130 NZ Carr Law Office 2101 CityWest Blvd. STE 100 Houston TX 77042 UNITED STATES 2817047896 docketing@carrpllc.com	
☐ Change of correspondence address requested, system generated AIA/122-EFS form attached	☐ Fee Address indication requested, system generated SB/47-EFS form attached

2.Entity Status

Change in Entity Status

○ Applicant certifying micro entity status; system generated Micro Entity certification form attached. See 37 CFR 1.29.
Note: Absent a valid certification of micro entity status, issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. If this box is checked, you will be prompted to choose a micro entity status on the gross income basis (37 CFR 1.29(a)) or the institution of higher education basis (37 CFR 1.29(d)), and make the applicable certification online.

○ Applicant asserting small entity status. See 37 CFR 1.27.
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.

◉ Applicant changing to regular undiscounted fee status.
Note: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

Document Description: Issue Fee Payment (PTO-85B)

3.The Following Fee(s) Are Submitted:

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☐ I authorize USPTO to apply my previously paid issue fee to the current fees due

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2.
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5.Assignee Name(s) and Residence Data To Be Printed

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Name	City	State	Country	Category
HANSHOW TECHNOLOGY CO., LTD.	JIAXING		CHINA	corporation

6.Signature

I certify, in accordance with 37 CFR 1.4(d)(4) that I am an attorney or agent registered to practice before the Patent and Trademark Office who has filed and has been granted power of attorney in this application. I also certify that this Fee(s) Transmittal form is being transmitted to the USPTO via EFS-WEB on the date indicated below.

Signature	/Chih Huai Chiu/	**Date**	11-21-2022
Name	Chih Huai Chiu	**Registration Number**	75299

Electronic Patent Application Fee Transmittal

Application Number:	17257570
Filing Date:	02-Jan-2021
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Filer:	Chih Huai Chiu
Attorney Docket Number:	SANU_0004USP

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
UTILITY APPL ISSUE FEE	1501	1	1200	1200
PUBL. FEE- EARLY, VOLUNTARY, OR NORMAL	1504	1	0	0
Pages:				
Claims:				
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Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
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Electronic Acknowledgement Receipt

EFS ID:	47067896
Application Number:	17257570
International Application Number:	
Confirmation Number:	6950
Title of Invention:	INTERACTIVE ELECTRONIC TAG DEVICE COMMUNICATION SYSTEM AND METHOD
First Named Inventor/Applicant Name:	Min LIANG
Customer Number:	162130
Filer:	Chih Huai Chiu
Filer Authorized By:	
Attorney Docket Number:	SANU_0004USP
Receipt Date:	21-NOV-2022
Filing Date:	02-JAN-2021
Time Stamp:	18:03:59
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
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Payment was successfully received in RAM	$1200
RAM confirmation Number	E2022AKI03574797
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Authorized User	Chih-Huai Chiu

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

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1	Issue Fee Payment (PTO-85B)	Web85b.pdf	62858 9a7d2c4a7af331dbee86d2030c13a3a9b527b1d6	no	2
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	39677 3f2f83d8744cbec2f842428fb5dd48d027a8b7bd	no	2
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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
17/257,570	12/27/2022	11540216	SANU_0004USP	6950

162130 7590 12/07/2022

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2101 CityWest Blvd. STE 100
Houston, TX 77042

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.

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

Min LIANG, Jiaxing, Zhejiang, CHINA;
Shiguo HOU, Jiaxing, Zhejiang, CHINA;
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Yang ZHAO, Jiaxing, Zhejiang, CHINA;

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

Hanshow Technology Co. Ltd., Jiaxing, Zhejiang, CHINA;

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Subject: Private PAIR Correspondence Notification for Customer Number 162130

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Application	Document	Mailroom Date	Attorney Docket No.
17257570	ISSUE.NTF	12/07/2022	SANU_0004USP

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