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METHOD FOR PROVIDING AN INDEPENDENT POWER SOURCE FOR INTEGRATED IoT BEACONING DEVICE WITHIN A MOBILE SYSTEM

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Method for providing an independent power source for integrated IoT beaconing device within a mobile system

Disclosed is a method that describes how to provide an independent power source for an integrated IoT device that maybe used on a mobile system. Typically, a mobile system will have a battery that supplies power to all of its system resources. This battery will be charged when needed to supply power to the entire mobile device. However, when the battery is completely discharged there is no way to provide power to the system unless the system is plugged into an AC outlet.

For most user situations, the systems need to be powered and the display turned on for it to be functional and useable by the user. This type of usage consumes considerable power and would not be efficient to operate under any other power besides battery power or AC. However, there are also some "low power" applications on a notebook which draw very little average power and could utilize power sources such as a small solar array to provide operational power for integrated IoT devices whose function is solely focused on notebook security and management purposes.

For example, one such experience could be tracking and locating a lost notebook. Whereby, even if the system was completely discharged, a small solar panel could provide sufficient power to independently power an integrated Mobile broadband device. The mobile broadband device could power up several times a day from power generated from a small integrated solar panel (30mm x 30mm) on the lid of the notebook.

The solar panel would create an additional power state that only occurs when the system battery power reaches below a certain minimum charge state. As described in the Figure 1 below, a new power state known as "IoT mode" would provide only certain system resources (Mobile Broadband, BLE device, etc.) power during this very low battery charge states. Within the "IoT mode" power state the solar panel would provide for a slow charging to the battery, that would allow the device to be able to operate a few times a day.

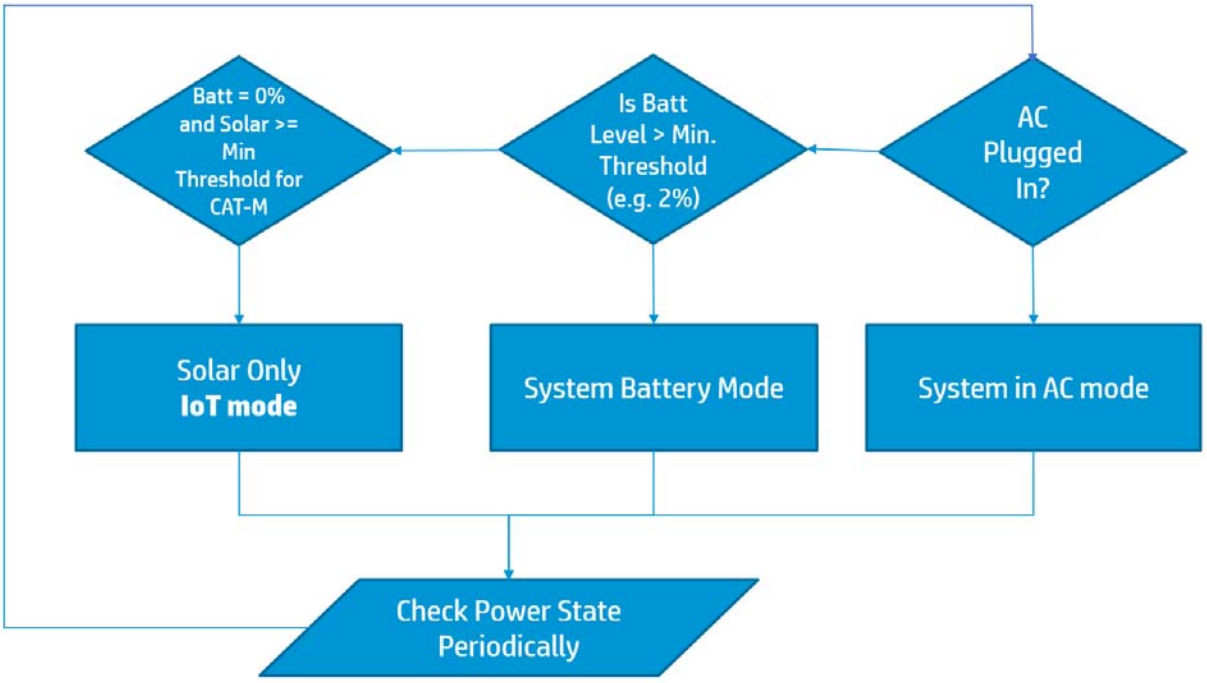

Figure 1: Flowchart of the various system power states including IoT mode.

The ability to provide a discrete charging (solar) and independent power supply for IoT device (5G, BT, etc.) is accomplished via simple architecture implementation such as provided in Figure 2 below.

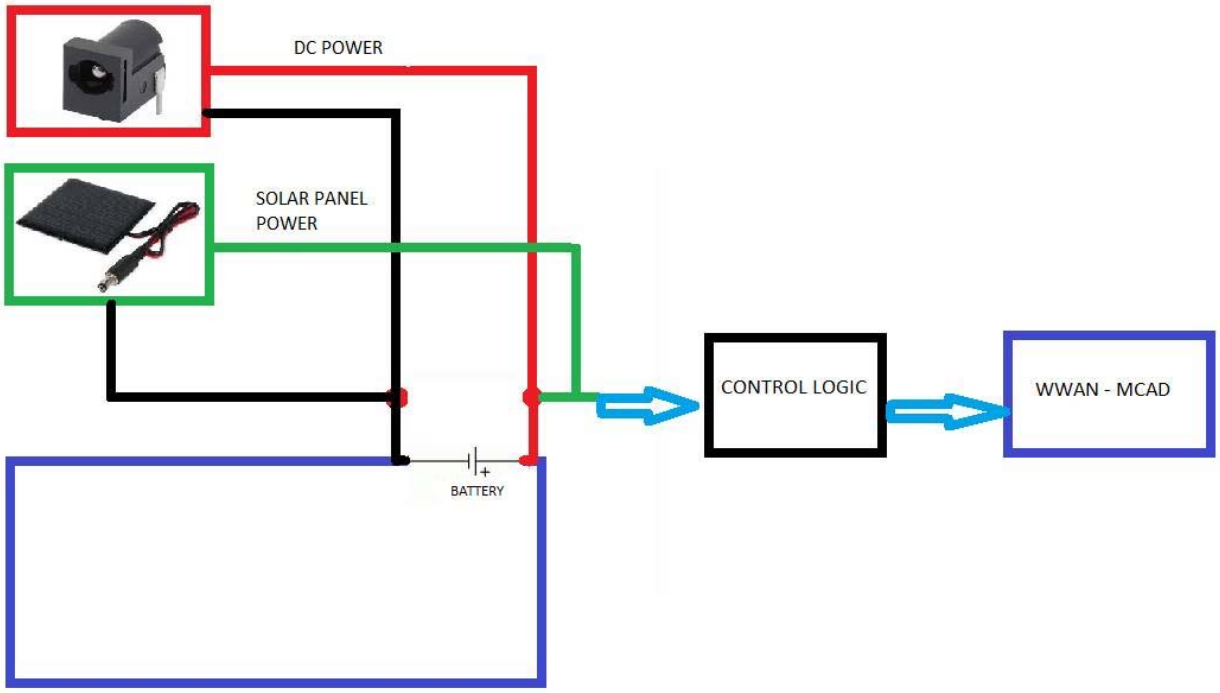

Figure 2: Illustrates a simple implementation for IoT Mode using a small integrated solar array.

With this solution the solar power source, which is dedicated to powering the IoT devices on the mobile system, can also charge a small reserved portion of the battery whenever the wireless device is not currently active or beaconing. Thus allowing the charged power to be collected and saved for the next beacon period.

With this type of solution, we believe we could address situations such as lost or stolen mobile device or stolen, and the system could still communicate with the external network even after the main battery has been completely discharged. This communication channel could allow for user features such as locate and find if the system became lost. A security function featuring system lock or data erase capability can also be achieved in the event the device is stolen. In addition, in cases of emergency where a person has become stranded or trapped, the IoT mode could provide critical communication and tracking capability of the device and user.

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