

CLAIMS

What is claimed is:

1. A battery-powered device, comprising:
 - a cellular modem;
 - a processor, in communication with the cellular modem;
 - a memory device, in communication with the processor;
 - instructions, stored in the memory device, which when executed by the processor configure the battery-powered device to perform actions comprising:
 - sending data to a headend computer or data collector in a communication;
 - receiving, from the headend computer or a mobility management entity (MME), a first value for a first timer and a second value for a second timer, wherein the first value and the second value are based at least in part on an analysis by the headend computer, the analysis based at least in part on inputs comprising:
 - a value of a maximum coupling loss (MCL) of the communication;
 - replacing existing values of the first timer and the second timer with the first value and the second value, respectively;
 - utilizing the first value and the first timer to time periods during which the cellular modem is in a power-save mode (PSM);
 - utilizing the second value and the second timer to time periods during which the cellular modem is in an idle mode; and
 - operating a power supply to power at least the cellular modem, wherein the operating is at either a higher-power level or at a lower-power level, based at least in part on at least one of the first value and the first timer and the second value and the second timer.
2. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

operating the cellular modem in an extended discontinuous reception (eDRX) mode;
idling the cellular modem according to a number of hyper frames; and
operating the power supply in the lower-power level or the higher-power level based at least in part on the number of hyper frames.

3. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

responsive to at least one of the first timer and the second timer, providing a signal on a general-purpose input/output (GPIO) pin of the cellular modem to change a power level provided by the power supply.

4. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

responsive to at least one of the first timer and the second timer, operating the processor and the memory device at either a higher-power level or at a lower-power level.

5. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

reading consumption data from the memory device of the battery-powered device, wherein the consumption data was created by a metrology unit, and wherein the reading was performed at a time based at least in part on one of the first timer and the second timer.

6. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

basing an active period of a device, the device external to the cellular modem but within the battery-powered device, at least at least in part on at least one of the first timer and the second timer.

7. The battery-powered device of claim 1, wherein the performed actions additionally comprise:

notifying the headend computer or MME of availability of the battery-power device within a network according to operation of the first timer;

activating the power supply, according to timing of the first timer, to provide power to the cellular modem during the notification;

determining a period of time during which the cellular modem remains reachable by the headend computer or MME during an idle mode according to operation of the second timer; and

activating the power supply, according to timing of the second timer, to provide power to the cellular modem during the determined period of time.

8. A method of operating a battery-powered device, comprising:

sending data in a communication to a headend computer or remote computing device by operation of a cellular modem;

receiving a first value for a first timer and a second value for a second timer, wherein the first value and the second value are based at least in part on an analysis by the headend computer, the analysis based at least in part on inputs comprising:

a period of polling of the battery-powered device;

an acceptable device latency of the battery-powered device; and

a value of a maximum coupling loss (MCL) of the communication;

replacing existing values used by the first timer and the second timer with the first value and the second value, respectively;

utilizing the first timer to time periods during which the cellular modem is in a power-save mode (PSM);

utilizing the second timer to time periods during which the cellular modem is in an idle mode;

timing a change in a level of power supplied to the cellular modem, wherein the timing of the change is based at least in part on at least one of the first timer and the second timer; and
providing power to the cellular modem according to the timed change.

9. The method of operating the battery-powered device of claim 8, additionally comprising:
responsive to at least one of the first timer and the second timer, operating a processor and a memory device at either a higher-power level or at a lower-power level.

10. The method of operating the battery-powered device of claim 8, additionally comprising:
operating the cellular modem in an extended discontinuous reception (eDRX) mode;
idling the cellular modem according to a number of hyper frames (HF); and
operating a power supply in a lower-power level or a higher-power level based at least in part on the number of HF.

11. The method of operating the battery-powered device of claim 8, additionally comprising:
accessing consumption data from a memory device of the battery-powered device at a time based at least in part on one of the first timer and the second timer.

12. The method of operating the battery-powered device of claim 8, additionally comprising:
outputting a signal based on at least one of the first timer and the second timer on a general-purpose input/output (GPIO) pin of the cellular modem; and
activating a device, the device external to the cellular modem but within the battery-powered device, with the signal on the GPIO pin.

13. The method of operating the battery-powered device of claim 8, wherein sending data to the remote computing device or headend computer comprises:

sending metrology data to the remote computing device or headend computer.

14. The method of operating the battery-powered device of claim 8, additionally comprising:

- notifying the remote computing device or MME of availability of the battery-power device within a network according to operation of the first timer;
- activating a power supply, according to timing of the first timer, to provide power to the cellular modem during the notification;
- determining a period of time during which the cellular modem remains reachable by the remote computing device or MME during an idle mode according to operation of the second timer; and
- activating a power supply, according to timing of the second timer, to provide power to the cellular modem during the determined period of time.

15. A method of operating a headend computer, comprising:

- under control of one or more processors configured with executable instructions:
- receiving data from user equipment (UE) in a communication;
- receiving, from a mobility management entity (MME), a value of a maximum coupling loss (MCL) of the communication;
- analyzing the MCL of the communication, wherein the analyzing is based at least in part on data inputs from the UE, wherein the analyzing comprises:
 - determining a period of polling of the user equipment; and
 - determining acceptable device latency; and
- providing the UE with values for:
 - a first timer; and
 - a second timer;
- wherein the values provided to the UE are based at least in part on the determined period of polling and the determined acceptable device latency, and the MCL of the communication.

16. The method of claim 15, wherein the determined period of polling and the determined acceptable device latency are based at least in part on system design requirements.

17. The method of claim 15, wherein providing the UE with the values for the first timer and the second timer, comprises:

providing a value for the first timer that directs a cellular modem of the UE when to enter and when to exit a power-save mode (PSM); and

providing a value for the second timer that directs the cellular modem of the UE when to enter and when to exit an idle mode.

18. The method of claim 15, additionally comprising:

configuring the value for the first timer and the value for the second timer in a manner that allows the values to be used to change a level of a power supplied by a power supply of the UE; and

wherein the data inputs from the UE comprise at least an identification of a cell servicing the UE.

19. The method of claim 15, wherein:

the value of the first timer and the value of the second timer govern aspects of times of transmission and/or reception by a cellular modem of the UE; and

the headend computer receives metrology data according to times based at least in part on operation of the first timer and the second timer.

20. The method of claim 15, wherein data inputs from the UE comprise data describing a battery level of the UE.