THE ZIGBEE PROTOCOL

The ZigBee standard has been created ~~come with with~~by the ZigBee Alliance~~, they made up~~ that is a group of many member companies, including the ~~from~~ semiconductor~~ing~~ industry, ~~and~~ software developers, and ~~to~~ original equipment manufacturers (OEMs). These~~y~~ ~~are~~ standards are designed for ~~inexpensive~~low cost~~ness~~, low-power, and low-data rate networking. ~~Devices of~~ ZigBee devices operate in the ~~industries~~industrial, ~~science~~ scientific, and medical (ISM) radio ~~banding~~bands: 868 MHz ~~of~~ in Europe, 915 MHz ~~for~~ in North America, and 2.4 GHz ~~in~~ worldwide. [2] The ZigBee standard operates ~~for the~~in the IEEE 802.15.4 physical radio specification~~s~~. This~~e specifics~~ specification describes the physical layer (PHY) protocol functions ~~with~~ and the interactions with the medium access control ~~layer~~ (MAC) layer. Moreover, it also defines the minimum hardware-level requirements~~, like~~ such as the receiver sensitivity and the transmitter output power. ~~The m~~Modulations used in IEEE 802.15.4 are ~~BPSK (~~binary phase shift keying~~)~~ (BPSK), ~~ASK (~~amplitude shift keying~~)~~ (ASK), and ~~O-QPSK (~~offset quadrature phase shift keying (O-QPSK)~~)~~. [2] One of the major benefits ~~in~~ of using ZigBee~~Bee are~~ is the low cost that allows for it to be ~~wide~~ deployed in wireless monitoring and control. ZigBee devices can activate (pass from sleep mode to active mode) in a very quick time (15 ms~~econds~~); therefore, ~~so~~ they can sleep most of the time~~.~~, ~~This makes~~making it possible to have a long-lasting battery life, typically lasting for years.

Comment [A1]: The hyphen in between is not necessary. *Low* is an adjective to the noun *power;* a compound *low-power* is oftentimes an adjective. For example, *low-power system.*

Comment [A2]: For brevity, we can remove this portion and substitute a conjunction.

Comment [A3]: *One* is a singular indefinite pronoun in this case; it should agree with a singular verb.

Comment [A4]: *Units* are normally written in *SI*; thus, milliseconds should be *ms*.

HARDWARE IMPLEMENTATION

Master~~-~~/slave is a model ~~for a~~of communication protocol that involves ~~one~~ a device or a process (~~known~~ as the master) controlling one or more devices or processes (~~known~~ as the slaves). ~~However, a~~After the master/slave association ~~was~~ is set up, the direction of control ~~will always be~~ is always from the master to the slaves ~~to the slaves~~. In the created systems, the hardware component ~~created it~~ has two parts ~~respecting~~ corresponding to this model: ~~a~~ Master ~~model~~ module and a Slave ~~model~~module.

The slave ~~system~~ device ~~will be~~is placed in the field ~~and will~~to measure ~~count~~ humidity, temperature, and light intensity ~~light~~. This data ~~will be~~are transmitted over ~~the~~ air~~, with~~ using ZigBee~~Bee,~~ to the master ~~system~~device. The master device ~~travels~~ passes the transmitted data to ~~the~~ a PC for real-time processing. ~~where it will be processed in real.~~