INVENTION DISCLOSURE

Invention Title: Light bulb wireless access point

Invention Summary: This is a system and method for providing high bandwidth wireless connectivity on a room by room basis.

Invention Description: This invention combines several technologies to provide high bandwidth wireless data connectivity to computing devices in a room. The technologies being combined are a data over power line transceiver (HomePlug), a wireless access point operating in the 60 GHz band (WiGig, IEEE 802.11ad), a phased array antenna with intelligent pointing logic and a basic light bulb. Operating a wireless link at 60 GHz has advantages and disadvantages. The proposed system seeks to maximize on the advantages while overcoming the disadvantages. The advantages of operating a wireless link at 60 GHz is that very high data bandwidth can be transmitted because of the significant frequency bandwidth that is available. Another advantage of operating at 60 GHz is that a high gain phased array antenna can be developed that is physically small enough to fit in the space of a typical light bulb. The phased array antenna can produce an antenna pattern with enough gain to overcome a disadvantage of operating at 60 GHz which is high propagation loss. A 60 GHz antenna, such as a micro strip array, that is the size of a light bulb can have enough individual antenna elements to produce a highly directional phased array beam that can be pointed to the computing device receiving the data transmissions. The directional phased array can be dynamically steered to one or more computing devices as they move. Combining the wireless access point with the functionality of a light bulb allows the access point to receive power while being placed in a room at a level, preferably the ceiling, where fewer objects would block the direct path of the wireless transmission. The addition of the data over power line transceiver to the system allows the device to communicate with other network devices in the home and through home gateways to the outside world.

Invention Commercial value/customers: This system provides significant commercial value to cable companies and other data providers. It allows these companies to provide the wireless data links that customers are demanding in a manner that minimizes installation and support costs. Currently MSO's are reporting 30% return rates on their existing wireless access points because of installation issues. 30% of their customer service calls are Wi-Fi related and 50% of Wi-Fi installations result in a repeat truck roll within the first 30 days. This system is simple enough that customers can install the devices themselves. How many people does it take to screw in a light bulb?

Invention differences: Current methods for providing wireless connectivity to computing devices in a home often involve using a single wireless access point transmitting at high power. This method results with incomplete coverage to key areas of homes and the high power transmissions interfere with neighbors in high density environments such as apartment buildings. The proposed system uses low power, high frequency, directed antenna beams to provide the data connectivity. This method ensures that the target computing device reliably receives the high bandwidth data connection. The characteristics of the high frequency radio transmission and the directed antenna beam contain the energy to the room which eliminates interference problems.