

Wireless Lab Design Project Proposal

Wireless communications date back to Guglielmo Marconi's and Nikola Tesla's experiments in the late 19th century.¹ Communication through the air can be thought of as the peak of human communication technology since we can



potentially transmit wireless signals around the world and beyond.² For our simple demonstration of a wireless communications link, we propose to take two Xbee (hardware IC chip shown below) Pro 50mW wireless modules and create a Zigbee (protocol) wireless link between a PC and a sensor.

Although the hardware is stated to have a range of 2 miles (~3200m) outdoors in a line-of-sight environment and up to 300ft (~90m) in an indoor environment, our link will only be used for communication over a short distance of about 100ft (~33m). As noted above, the transmit power will be 50mW (+17dBm). The RF Data rate will be 250kbps. The operating frequency is 2.4GHz. This part is FCC approved under FCC prt 15.247 and FCC ID: MCQ-XBEEPRO2.³ We will use the Atmel328 microcontroller to interface with the Xbee module and we will use a 15cm Infrared distance sensor for our data stream (or some other sensor with an equivalent data stream).

Since the primary goal of wireless communication is the transmission of information through the channel, this project is an all-encompassing exhibition. Our project will demonstrate the ability to set up a wireless link and transmit data effectively over the channel. Comments and criticisms are welcome.

1. http://en.wikipedia.org/wiki/Guglielmo_Marconi
2. http://en.wikipedia.org/wiki/Global_Positioning_System
3. Data Sheet: <http://www.digi.com/support/productdetl.jsp?pid=3430&osvid=0&s=365&tp=3&tp2=0>