

## Bluetooth and PassFree

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### Key Features

Most modern computers recognize Bluetooth (IEEE 802.15) devices. With the proper software installed, the electronic key can be used with these computers without additional hardware. Computers that do not recognize Bluetooth devices can be used when a Bluetooth USB dongle is attached to them.

Bluetooth operates in the 2.4GHz spectrum which does not require licensing.

Bluetooth transmitters are available in three ranges: 1 meter, 10 meters, and 100 meters. These ranges are fine for the current design. Power output of the 100-meter transmitter is similar to a cell phone's power output. Power output for the 1-meter and 10-meter transmitters is much lower and safer for humans.

Many phones already have Bluetooth transmitters, implying that the key can also be made available as software downloaded to the phone (if the phone's operating system allows it).

Bluetooth is suitable for low-bandwidth applications such as PassFree.

Bluetooth transmitters require less power than Wi-Fi (802.11) transmitters.

The Bluetooth protocol has parallels to portions of the PassFree protocol: that every Bluetooth device broadcast on demand its device name (such as "Master Lock 1000" or "Nokia Key N156"), device class, list of services, list of services (a regular lock replacement would advertise "Unlock" and "Lock", whereas a cash register payment console would advertise "Pay"), and technical information (where the key device can advertise its features, such as whether it is a button-only key, or thumbprint key, or network key, etc, and locks can advertise its features, such as whether it is an electrical lock, a network lock, etc).

## PassFree by Cheyenne Software

The Bluetooth protocol already allows for “pairing”, which is a method in which the users of two devices confirm they want to connect to each other, and then an encrypted connection is made. This is similar to the lock or cash register advertising its name, which is displayed on the key, and the user pressing the button to confirm.

PassFree software can use private/public key-pairs for its own protocol on top of the Bluetooth communications-link encryption.

For more information about improved electronic access control using PassFree, contact:

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## References

<http://www.bluetooth.com/bluetooth/>  
<http://en.wikipedia.org/wiki/Bluetooth>