

Bluetooth traffic monitoring was developed at the University of Maryland Center for Advanced Transportation Technology in 2008. Based on the point to point data transmission protocol commonly referred to as Bluetooth, the system logs the unique identifier, called the MAC identification number, at both an upstream and downstream location. Similar to license plate matching, the system match MAC identifiers to obtain a sample of travel time. The system has since been patented and commercialized, and is now used frequently as a standard tool for travel time measurement, and origin and destination studies.



Figure 1. A Portable Bluetooth Traffic Detector

Devices equipped with Bluetooth can communicate with other Bluetooth enabled devices anywhere from one meter to about 100 meters (300 ft). This variability in the communications capability depends on the power of the Bluetooth in the device. The Bluetooth protocol uses a unique electronic identifier in each device called a Machine Access Control (MAC) address. The MAC addresses are used as the basis for obtaining traffic information. When the MAC address of a device is matched between two consecutive sensors, the time difference between two detections provides a measure for the travel time and the average speed of the vehicle carrying the device between the successive stations.

Unlike other travel time measurement technologies such as cellular phone probe and automated toll tag matching, Bluetooth technology does not raise major privacy concerns. The MAC addresses, though unique, are not directly associated with any specific user account via any type of central database, thus reduces privacy concerns.