

Abstract

This master's dissertation consists of 83 pages, 36 illustrations, 23 tables.

In this master's thesis was developed Bluetooth indoor orientation system.

This topic is relevant today, since in the conditions of automation of production processes the same tendency occurs in non-destructive control, and for automatic or automated devices of non-destructive control, orientation systems in space are required.

System, proposed in this work, consists of modern software and hardware components. The hardware part is Bluetooth-beacons, based on the newest Bluetooth LE v4.0 devices, and any device equipped with a Bluetooth module can be a signal receiver. The software part performs the functions of measuring the distance to control points (beacons), calculating the coordinates of the object location, and filtering the data.

With the use of modern development environments, was carried out the simulation of the working program - with, and without the use of a filter.

Also, development of a potential startup of the project was conducted, and the possibility of the system's exit to the international and domestic markets was considered.

The developed system can be applied in automatic or automated systems of non-destructive testing as a main or auxiliary. Also, due to the versatility of the algorithms, the program with minimal changes can be rebuilt under another way of finding the distance to beacons, or for another type of mathematical data filter.

Keywords: orientation indoors, Bluetooth, BLE, beacons, automated NK, modeling.