ABSTRACT

The number of contours or slopes of the road is caused by a lack of soil density or due to the movement of the earth's plates which results in a change in the slope of the highway that is not standard and if left unchecked will be dangerous for road users. So, we need a tool that can measure the slope of the highway. In this study a device was designed that was able to overcome these problems, namely a device consisting of an Accelerometer sensor, Ublox Neo-6m GPS, Arduino Mega, ESP826 Wifi Module, and LCD. From the tests that have been carried out, the tool succeeds in measuring the slope of the highway by obtaining the X, Y and Z axis values obtained from the Accelerometer sensor which are converted to degrees using the GLBB formula. The tool that has been designed has also succeeded in obtaining latitude and longitude location points obtained by the Ublox Neo-6m GPS. In this study, the accuracy value of the MPU 6050 Accelerometer sensor was 96.68% and the error value obtained was 3.31%. On road conditions where the slope exceeds the standard, it can be seen from the X value on the MPU 6050 Accelerometer sensor whose value exceeds 0.45 m/s², road conditions whose slope exceeds the standard can also be known by the location point with latitude and longitude coordinates taken from the Ublox Neo-6m GPS which is quite accurate with a maximum distance of about 4 meters from the original point. in this study the results of measurements are displayed in real time on the LCD and Thingspeak.

Keywords: Highway, Accelerometer, MPU6050 sensor, Ublox Neo-6m Arduino Mega GPS.