Assessing the Accuracy of GNSS Enabled Rugged Mobile Phones

Michael Nyoagbe[1*], Richart Appiah Otoo[1], David Nii Okai Nunoo[1] Gloria Afua Poku and Krijn Dressen[2]

[1]Department of GIS and Hydraulics Network Modeling Unit, Ghana Water Limited, Accra, Ghana

[1]Waterworkx, Ghana Water Limited, Ghana

[*]Michael Nyoagbe : Michael.nyoagbe@gmail.com

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Abstract

Mobile phones have emerged as a more accessible and affordable alternative for location tracking compared to traditional GNSS devices, which can cost thousands of dollars. This raises the question of how organizations can utilize fit-for-purpose technology for accurate location data without straining their limited resources. Different mobile devices offer varying levels of accuracy based on the technology used. This study aimed to evaluate the accuracy of eight GNSS-enabled smartphones for spatial data collection over a 60-second period within a water utility company. To assess the impact of environmental factors on GNSS signals, we selected a site with eight different locations for measurements. The location data from each smartphone were compared to control point coordinates established by an RTK GNSS device, with both datasets projected into WGS UTM Zone 30N. In optimal conditions, the Oukitel WP5 Pro demonstrated the highest accuracy, followed by the Doogee S59 Pro and BlackView BV4900. However, under less favorable conditions, the BlackView BV4900 showed a notable performance.

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[1]Waterworkx, Utrecht, Netherlands

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