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A practical Analysis of the Effect of Three Jammers on the GPS Signal

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Abstract

The global positioning system (GPS), which is widely used in many applications around the world, consists of three basic parts which include the space segment (satellites), the control stations and the receivers on the earth. Since the transmitted signal from the satellites has to travel a very long way to reach the earth, it's very weak and prone to disturbance. The weakness of the received GPS signal at the receiver, makes it to be easily blocked by the jammers with low power.

In this article, we have practically transmitted three types of jammers to block the GPS signal using universal software radio peripheral (USRP B210). Then, we compared their performance in terms of the time to reach the unfixed state and the noise level increase. The results show that the sweep jammer compared to the barrage jammer and the spot noise jammer has the best performance from both points of view. It's noise level increase in 72 units in 7.4 seconds which outperforms the two other jammers.

Keywords: global navigation satellite system (GNSS), global navigation system (GPS), spot noise jammer, barrage jammer, sweep jammer, software defined radio (SDR)