Product Design Specifications

GPS Jammer Detector

# Team Members

Devin Lorenzen

Hanjae Noh

Edward Sayers

Ben Wilson

Chi Wong

# Marketing Requirements

## Must:

1. Receive I/Q data
2. Determine if a Civilian GPS jamming signal is present in the L1 band
3. Notify the user that a jammer has been detected
4. Be fast enough to notify a user that a jammer is present when the jammer is in a moving vehicle

## Should:

1. Be able to detect multiple types of jamming techniques
2. Give indication of jamming method
3. Be implemented on a FPGA
4. Determine the center frequency of the jammer
5. Be portable

## May:

1. Determine the direction of jamming signal
2. Determine the presence of a GPS spoofer
3. Determine the average signal power of jammer

|  |  |  |
| --- | --- | --- |
| Marketing requirements | Engineering Requirements | Justification |
| 1 | 1. The device must detect RF signals between 1559-1610 MHz. | The FCC allotted spectrum for Civilian GPS 1559 – 1610 MHz. |
| 2 | 1. The device must be small enough that a single user can operate it in a variety of locations. | The device will typically be used along the side of a highway or while driving in a vehicle. Therefore, portability and power usage are important. |
| 3,9 | 1. The device should output a visual notification as well as a visual notification when a jammer has been detected. | The device is intended to be used near high traffic areas where there is a lot of noise as well as if it is used in a car on the move. A driver will need to focus on the road and cannot look to see if there was a jammer detected. |
| 4 | 1. The device needs |  |
| 5 | 1. The device should be able to differentiate among and indicate to the operator several different types of jamming signals. | There are multiple type of jammers. |
| 6 | 1. The device should be developed on an FPGA. | FPGAs provide an easy way to design hardware that can easily be prototyped and reconfigured. |
| 7 | 1. The device should be able to detect the center frequency of the jamming signal. | Many jammers are not very precise and may affect services other than GNSS. Also, detecting the center frequency can aid in determining the variance of cheaply produced jammers. |