Product Design Specifications

GPS Jammer Detector

# Team Members

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# Marketing Requirements

## Must:

1. Receive I/Q data
2. Determine if a civilian GPS jamming signal is present
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

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| Marketing requirements | Engineering Requirements | Justification |
| 1 | 1. The device must accept in-phase and quadrature (I/Q) data through an external interface. | The jamming signals that will be collected and used to test the device will be in an I/Q data format. |
| 2 | 1. The device must be able to detect the presence of a jamming signal in the L1 band. | The primary use of the device is the detection of a jamming signal in the civilian GPS band. |
| 4 | 1. The device needs to notify the user within 1 seconds. | Most receivers can detect a jammer from a range of 20 meters. A car traveling on a three lane highway will pass through the effective in about 1 seconds. |
| 3,5,6 | 1. Must be able to differentiate between continuous, pulse, and chirp jamming. | There are multiple type of jammers. The operator needs to clearly see what type of jamming signal is being used. |
| 7 | 1. The device should be developed on an FPGA. | FPGAs are provided by the project sponsor. |
| 8 | 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. |
| 9 | 1. The device should be less than 8 x 8 x 4 inches. | The detector is likely to be used in a motor vehicle. |