

GPS VALIDATION

Abstract:

To learn how to use a GPS (Global Positioning System) to measure different values and to measure it's precision. We are testing for the precision and accuracy of the GPS through an experiment. The experiment will validate the GPS precision and measurements.

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Procedure:

1. First head to point one and take the precision and the track of the point.
2. The precision is how many times you get the same reading off the GPS.
3. Next walk north about 20 ft.
4. Now record the precision and track.
5. Then come back to the starting point.
6. Head east for about 20 ft and do the same.
7. After you come back head west, and then south.
8. Do the same for points 2-4.
9. Makes sure to record every step.

Data From Experiment

Point # 1

Trial # 1

Track = 102 Auspeed = 38.9 Altitude = 843ft
N35 37.070'
W120 40.148

Trial # 2

Track = 122 Auspeed = 38.9 Altitude = 836
N35 37.071'
W120 40.149

Trial # 3

Track = 92 Auspeed = 38.8 Altitude = 840
N35 37.071'
W120 40.186

Point # 2

Trial # 1

Track = 276 Auspeed = 38.8 Altitude = 861
N35 37.072
W120 40.186

Trial # 2

Track = 357 Auspeed = 38.8 Altitude = 844
N35 37.074
W120 40.187

Trial # 3

Track = 085 Auspeed = 38.8 Altitude = 869
N35 37.02
W120 40.188

Point # 3

Trial # 1

Track = 282 Auspeed = 38.7 Altitude = 812
N35 37.077
W120 40.242

Trial # 2

Track = 275 Auspeed = 38.6 Altitude = 812
N35 37.077
W120 40.188

Track # 3

Track = 277 Auspeed = 38.3 Altitude = 812
N35 37.077
W120 40.242

Analysis:

We noticed the points greatly changed when we moved a different direction. You can see this when we moved from north to west. When we were at north, we were at 37.070. Then when we went west and it was 40.186. What we thought was strange was the altitude did not remain constant. The points in which we took were all on the same plain and were on even grounds. It first started at 843 ft, then went to 836ft, and then to 840ft. We thought that it was probably a dip in the road or the satellite was in a different position from what it used to be. All the trials produced similar results but had different tracks. The Auspeed was also the same, but, as we stated before, the altitude was ever changing.

Conclusion:

In our opinion, we thought that it was really accurate. Yet we didn't find the need of being so accurate in everyday life. The significant figures were ridiculous too. It was measured in a minute, which was $\frac{1}{60}$ of a degree. I doubt anyone would want to care for a number that insignificant. It is hard to bench mark the data we had collected. The easiest way to benchmark it would be by consulting a map, or calling the airport and asking them. We could also go the engineering department in the downtown area of Paso Robles. In conclusion, the GPS is a great tool for accuracy, but isn't in needed much.