

A 1.57ghz Mixer Design for GPS Receiver

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Abstract : During the Persian Gulf War in 1991s, The confederation forces were surprised when they were being shot at by friendly forces in Iraqi desert. As obvious was the fact that they were misled due to the lack of proper guidance and technology resulting in unnecessary loss of life and bloodshed. This unforeseen incident along with many others led the US department of defense to open the doors of GPS. In the very beginning, this technology was for military use, but now it is being widely used and increasingly popular among the public due to its high accuracy and immeasurable significance. The GPS system simply consists of three segments, the space segment (the satellite), the control segment (ground control) and the user segment (receiver). This project work is about designing a 1.57GHZ mixer for triple conversion GPS receiver .The GPS Front-End receiver based on super heterodyne receiver which improves selectivity and image frequency. However the main principle of the super heterodyne receiver depends on the mixer. Many different types of mixers (single balanced mixer, Single Ended mixer, Double balanced mixer) can be used with GPS receiver, it depends on the required specifications. This research project will provide an overview of the GPS system and details about the basic architecture of the GPS receiver. The basic emphasis of this report is on investigating general concept of the mixer circuit some terms related to the mixer along with their definitions and present the types of mixer, then gives some advantages of using singly balanced mixer and its application. The focus of this report is on how to design mixer for GPS receiver and discussing the simulation results.

Keywords : GPS , RF filter, heterodyne, mixer

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