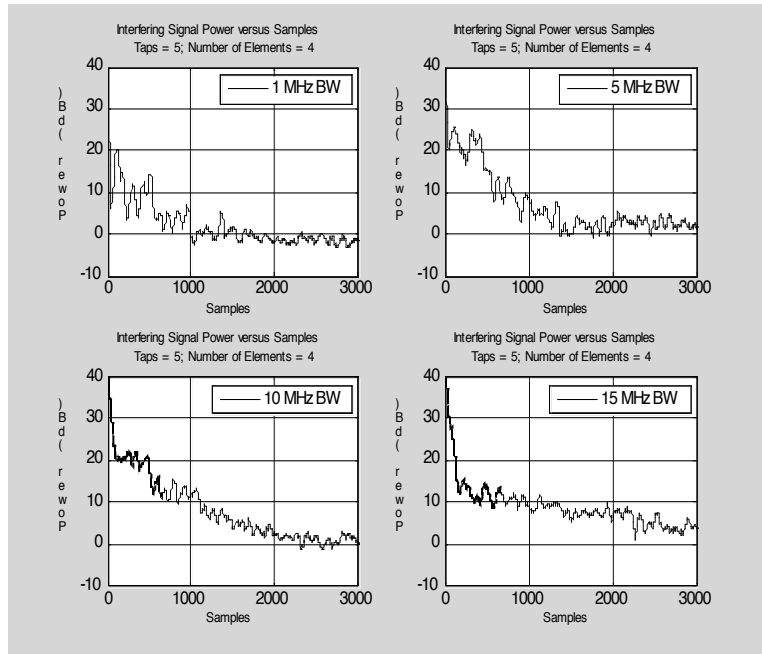


## Digital AJ ASIC for Handheld GPS Receivers

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Sponsor: AFRL/SN, Wright Patterson AFB, Ohio (RBS Technologies is the Prime)



Under this project we are developing an application specific integrated circuit (ASIC) which will enable incorporation of advanced anti-jam techniques such as STAP or SFAP into handheld GPS receivers. The ASIC size and power requirements will permit a fully integrated anti-jam handheld GPS receiver, so that routine handheld operations may be performed without a need for auxiliary power or equipment. The main challenges in the development of ASIC are the selection of the appropriate STAP/SFAP weighting algorithm and efficient implementation of the algorithm. STAP/SFAP weighting algorithms for GPS AJ systems, in general, can be classified into two groups; null steering algorithms and beam forming/null steering algorithms. Beam forming/null steering algorithms do lead to better performance as compared to the null steering algorithms, however they have higher power requirements (more operations) and need a lot more information for proper implementation. We, therefore, are using a simple null steering STAP/SFAP weighting algorithm for the ASIC development. We are studying various methods for implementing the null steering algorithms. These methods include Least Mean Squared (LMS) and its many variations as well as Recursive Least Squares (RLS) method and its many variations. Our performance metric is the convergence rate, stability, null depth as well as the effects of quantization errors.