Radar Equations For Modern Radar
(Artech House Radar)
Synopsis

Based on the classic Radar Range-Performance Analysis from 1980, this practical volume extends that work to ensure applicability of radar equations to the design and analysis of modern radars. This unique book helps you identify what information on the radar and its environment is needed to predict detection range. Moreover, it provides equations and data to improve the accuracy of range calculations. You find detailed information on propagation effects, methods of range calculation in environments that include clutter, jamming and thermal noise, as well as loss factors that reduce radar performance. This invaluable book is supported with nearly 200 illustrations and over 430 equations.


Book Information

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Customer Reviews

Are you a radar engineer? If you are, then this book is for you. Author David K. Barton, has done an outstanding job of writing a book that ensures the applicability of radar equations to design and analyze modern radars; to identify what information on the radar and its environment is needed to predict detection range; and, to provide equations and data to improve the accuracy of range calculations. Author Barton, begins by reviewing the steps by which the radar equation was developed, and discusses its evolution to forms that can be applied to analysis and design of modern radar systems. Next, the author deals with the search radar equation, which is a
modification of the basic equation that allows one to avoid the process of generating many
alternative designs and testing them to see which can meet a specified objective. Then, he
discusses how the typical sources of clutter applies to radars whose targets are manmade objects
such as aircraft, missiles, land vehicles, or vessels operating in the natural environment that
contributes to the clutter. In addition, the author summarizes methods of calculating D(n) for
different radar waveforms and target models. He continues by describing the beamshape loss for
different target types and processing methods. The author then discusses why thermal and
quasi-thermal noise cannot be eliminated or filtered out by any special circuitry or devices, while
many manmade noises can be. Next, he summarizes and updates the data; discusses practical
modeling and computational methods; and, presents the results in metric units and in graphical
formats that improve reading accuracy and interpretation. Then, the author discusses both
reflections from the surface and diffraction on paths that graze the surface.

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