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## 对空情报雷达的费用一效能分析

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## A STUDY OF THE COST-EFFECTIVENESS OF AIR DEFENSE SURVEILLANCE RADARS

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摘要

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摘要

本文目的是研究对空情报雷达的全寿命费用与效能之定量评价。首先分析该类雷达全寿命费用的组成。其次着重研究和推导了该类雷达性能和效能的数学表达式。最后统计和计算了多种雷达的费用、性能、效能与费效比的数值,绘制了发展曲线,讨论了这些计算和曲线在雷达总体工程中的应用。

关键词: 雷达 效能 费用

Abstract:

A study of the cost-effectiveness of air defense surveillance radars is important to a country with large territory. The cost studied here is the life cycle cost. In addition to the procurement cost, it includes also the maintenance cost, serviceman cost, etc. Statistics indicates that the rising rate of the life cycle cost is less than that of the procurement cost, and the decreasing tendency of their ratio extends to an asymptote nearly equal to 2. The effectiveness of a radar consists of 2 factors system performance and system usability. An air defense surveillance radar's system performance involves detection performance, location performance, ECCM performance, counter-ELINT performance and target tracking capacity, each of them being expressed by a calculable formula. Then the system performance is expressed by a weighted product of these sub-performance factors. Using similar analysis, an expression for surveillance radar's usability is also derived. So a calculable expression for the radar's effectiveness is got. The values of many radar's performance, effectiveness and cost-effectiveness ratio have been calculated and regression curves of these values versus first year in service are given. The rising, rate of cost-effectiveness ratio is seen to be 7.5dB/10 year. At last, the applications of these expressions and curves are discussed.

Keywords: radar effectiveness cost

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