

СЕКЦІЯ 3

БЕЗПЕКА ФУНКЦІОНУВАННЯ ТЕЛЕКОМУНІКАЦІЙНИХ СИСТЕМ ТА МЕРЕЖ

Керівник секції: д.т.н. проф. С.Г. Семенов, НТУ “ХПІ”, Харків
Секретар секції: к.т.н. С.С. Бульба, НТУ “ХПІ”, Харків

MATHEMATICAL MODEL OF THE OPTIMAL PLACEMENT CALCULATION OF MILITARY FIELD COMMUNICATION SITE

Imanov R.R., Bayramov A.A.
Armed Forces War College of the Azerbaijan Republic
Pashaev A.B., Sabziev E.N.
Institute of Control Systems of the Azerbaijan National Academy of Sciences

Electromagnetic field impacts to radioelectronic set and makes worse their work. It is very important problem in solution of the task of jointly operation of various military radioelectronic set in the field condition. During solution this problem it would be taken account that on the one side the electromagnetic compatibility should be satisfied, on another side these set must occupy the minimal area that is to be compacted [1].

In the given work there has been offered the mathematical model determination such relative position of set of the military field communication site on the horizontal area that there is a total electric-field strength in the point of each set formed another set does not exceed some limit value. At the same time, all set are located in the circle with minimal area. The relative position of set has such sense that any position of set can be connected with coordinate system with any kind. The sources of electric field must be such located that the impact part each to other would be minimum. For solution this task the penalty method [2] had been used. The military field communication site included 8 sets with given radiation powers P ($P=20\div 125$ W) had been considered as an example. The model calculation shows that taking an account of electromagnetic compatibility the distance between sets is varied from 50 m to 100 m. The placement of military field communication site is limited by circle with ≈ 200 m radius.

References

1. Imanov R.R., Bayramov A.A. Ensuring electromagnetic compatibility of radioelectronic means in communications centers. Сб. Докл. от годишната научна конференция на факултет „Национална сигурност и отбрана“. Военна академия „Георги Стойков Раковски“, II part. 17–18 май 2018. p.153-155.
2. Elster K.X., Reyngart R., Shoyble M., Donar G. Introduction in nonlinear programming. Moscow: Nauka, 1985, 264 p.