

METHODS AND MEANS OF MEASURING PARAMETERS OF RADIO AND TELECOMMUNICATION SYSTEM COMPONENTS ON THE BASIS OF PHASE-FREQUENCY CONVERTERS WITH NEGATIVE DIFFERENTIAL RESISTANCE

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Анотація

Проаналізовано та досліджено методи і засоби вимірювання параметрів компонентів радіотехнічних та телекомунікаційних систем. Виконана постановка задачі збільшення точності вимірювання застосовуючи фазово-частотні перетворювачі з від'ємним диференціальним опором.

Ключові слова: опір, методи, засоби, висока частота, перетворювачі, система, телекомунікації.

Abstract

Methods and means for measuring the parameters of components of radio engineering and telecommunication systems are analyzed and investigated. The problem of increasing the accuracy of measurement was performed using phase-frequency converters with negative differential resistance.

Keywords: resistance, methods, means, high frequency, converters, system, telecommunications.

Today, a very important issue is the accuracy of measuring the parameters of components of radio and telecommunication systems, because the smallest error can lead to a complete failure or malfunction of such a system. Therefore, there is an urgent need to expand research to introduce new and improve existing measurement methods and tools.

At present, most existing measuring instruments are based on frequency and analog converters, which have a number of disadvantages, the main of which is the low noise immunity and incredibly high power consumption for useful work. In the vast majority of such means, the output voltage is current or voltage, which leads to a number of disadvantages in their operation, such as low accuracy and sensitivity, low output signal, the parasitic influence of the measuring channels on each other, significant mass and dimensions, and so on.

A promising scientific direction to address these shortcomings is the use of methods and means of measuring the parameters of components of radio and telecommunication systems on the basis of phase-frequency converters with negative differential resistance. The creation of devices using these methods and means excludes amplifiers and analog-to-digital converters from their design, which allows to reduce the cost of control and control systems, as well as to create "intelligent" measuring converters as a result of combining on one crystal the information processing circuits and the primary converter.

The purpose of the work is to improve the accuracy, sensitivity and level of the output signal when measuring the parameters of radio engineering and telecommunication systems, to determine the basic dependencies of phase-frequency converters with negative differential resistance, which will make it possible to create and manufacture competitive samples of meters of these parameters.

Conclusion

With the increase in the number of television and broadcast systems in the modern world, the number of interferences in the environment increases, therefore there is a need to increase the noise immunity of signals and the accuracy of the parameters of the components used in such systems. Accordingly, it is proposed to use phase-to-phase converters with negative differential impedance to measure the parameters of components, reject them and select the necessary ones.

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