***N.I. Egorov, Ph.D. student; sc. adv. A.N. Yakunin, D. of Tech. Sc., Ass. Prof. (NRU “MIET”, Moscow)***

**Development and research of wireless control module applying russian integrated circuits**

Egorov N.I,. Yakunin A.N.

Microelectronics is developing rapidly in the modern world. This makes it possible to design new devices applied almost in various spheres, including telecommunications. Today, the issue of replacing integrated circuits produced in the USA and the countries of the European Union with Russian counterparts in telecommunication systems is becoming more and more urgent due to the sanctions imposed by these countries against Russia. Thus, it is necessary to create a new structural scheme and a new electric schematic diagram for a wireless control module with applying both Russian and foreign integrated circuits.

Due to features of Russian microcontrollers, including their programming and using UART interface instead of USB one, a flash memory and a USB to UART interface converter are added to a structural scheme including a transceiver, an antenna and an external connector in a structural scheme. Moreover, an electric schematic diagram based on this structural scheme was developed.

Later, an experimental research of a designed wireless control module was performed. As a characteristic that evaluates the experiment results, the number of successfully sent messages to the total number of sent messages ratio function described by a formula was used:

 (1)

where *k* is a general number of sent messages, n*is* is a general number of sent messages during the i-th send, n*jss* is a number of successfully sent messages during the j-th send, n*js* is a general number of sent messages during the j-th send [1, p. 532].

As the result of the experiment, the value of the function mentioned the above was calculated according to (1) [1, p. 536]. Its value is 89.25 percent for the created wireless control module, and it equals 80.54 percent for modules XBee Series 2 [2].

In the future, it is planned to create a printed circuit board based on the developed structural scheme and the electric schematic diagram, produce it and do a new experimental research with it.

**Literature**

1. **Egorov N.I.** Development of a high-speed radiofrequency control module for wireless communication with packet duplication protection // Proceedings of Universities. Electronics. 2022. Vol. 27. No. 4.
2. XBee Series 2 OEM RF Modules // URL: https://www.farnell.com/datasheets/27606.pdf (date of access - 17.11.2023).