

## OPINION

on dissertation work for obtaining  
educational and scientific degree "Doctor"

Author of the dissertation: **Krasimir Jivkov Terziev**

Title of the dissertation: **Modern satellite communication systems and innovative methods for increasing their efficiency**

Doctoral program: **Computer systems, complexes and networks**

Professional field **5.3. Communication and computer technology**

Member of scientific jury: **Prof. DSc Eng. Ivan Stoyanov Yatchev**

### 1. Relevance of the problem developed in the dissertation

The topic of the dissertation work is aimed at research in the field of satellite communication systems. Considering the rapid worldwide development of these systems, it can be said that the dissertation work is dedicated to solving an actual problem.

### 2. Degree of knowledge of the state of the art of the problem

The author has demonstrated a very good knowledge of the problem. A bibliographic reference of 100 sources is presented, of which 3 in Bulgarian and 97 in English, including 6 websites.

The aim of the dissertation work is to develop a project for the installation and configuration of a satellite ground antenna operating with satellites in low earth orbit, as well as to propose innovative methods for receiving, sending, processing and accessing satellite data by users. For its implementation, 4 tasks have been posed and solved.

### 3. Scientific-applied contributions of the dissertation work

Main scientific-applied contributions:

- A ground station for satellite communications for low-orbit satellites has been designed, which allows to support information services through low-orbit satellites.

- An antenna system has been developed for the ground station, which allows to achieve higher communication speed, greater signal gain for reception and transmission, greater overall functionality.
- Experimental studies have been carried out to evaluate the antenna part, achieving higher technological parameters than an existing prototype.

#### **4. Evaluation of publications on the dissertation work**

7 publications have been made on the dissertation work - one in a journal in Bulgaria, one in proceedings of international conference abroad and 5 at international conferences in Bulgaria. 2 of the publications are in English and 5 in Bulgarian. Two publications are with the PhD candidate being the only author, the rest are co-authored with the scientific supervisor, and in 4 of them the author of the dissertation is in first place. Two more publications accepted for publication that are not listed in the dissertation and not scored in a group of indicators  $\Gamma$  are listed in the reference for meeting the minimum requirements.

The minimum national requirements, those of PURPNSZAD of the BAS and the specific conditions of IICT are met, and for the indicators on group  $\Gamma$  there is a significant (more than 3 times) exceeding of the required minimum of 30 points.

#### **5. Critical remarks and recommendations**

The historical review made in chapter 1 has a predominant scientific-popular character.

It would be good if the list of literature was arranged in alphabetical order.

### **CONCLUSION**

Taking into account the results and contributions obtained in the dissertation, as well as the quantity and quality of the publications to it, I give a positive assessment of the dissertation and strongly suggest that Krasimir Jivkov Terziev be awarded the educational and scientific degree



"Doctor" in the field of higher education 5. Technical sciences, professional field 5.3. Communication and computer technology, doctoral program "Computer systems, complexes and networks".

**Date: 19 Feb 2024**

**MEMBER OF THE J**

