

5th International Conference on **Wireless, Telecommunication & IoT**
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Spatial correlated microwave technologies: The future of the broadband mobile communications

Spatial correlated microwave technologies: The future of the broadband mobile communications is a concise and yet comprehensive report on the subject of proposed by the author two new beam-forming communication principles named Spatial Correlated Processing (SCP) and Random Phase Spread Coding (RPSC). The report is logically divided into two parts. The first is SCP and RPSC technology fundamentals and the second contains their applications. In introduction a short background for the importance, advantages and disadvantages of the Radio communications is given, as well as the authors proposals for solving the existing problems; In SCP technology the author discusses the fundamentals of the microwave high gain antenna systems, tracking communication satellites in angular coordinates (in receive mode). The basic principles of the proposed SCP beam-forming technology are considered too; In RPSC technology the author introduces an essential basic knowledge of the SCP technology in transmit mode (RPSC); The advantages over the conventional broadband spread spectrum and beam-forming principles for transmission of information, as well as description of the proposed RPSC Multiple Access techniques, are discussed too; SCP-RPSC technology in the next generation satellite broadcasting systems comprises all the particulars about the application of SCP technology in satellite broadcasting using Geostationary orbits (GSO) and Quasy-GEO orbits. These applications are particular useful for mobile TV reception and the developing countries; SCP-RPSC-the key technology in the next generation steerable lines for satellite communications describes the applications of SCP-RPSC approach in the steerable satellite feeder lines of the onboard public access broadband communications, in the steerable inter satellite and inter orbit feeder lines, as well as in the backbone of the terrestrial base stations for mobile communications and IP LAN; SCP-RPSC technology in the next generation Mobile Satellite Service (MSS) presents the application of SCP-RPSC principles, solving the problems of the Vehicle-Mounted Earth Stations (VMES), operating currently on conventional Ku and Ka frequency bands; SCP-RPSC technology in 5-G access strategies comments the possibilities and advantages of SCP-RPSC terrestrial and High Altitude Platform Systems (HAPS), used both in fixed and mobile communication environment. SCP-RPSC in 5-G Coherent Transponding Systems (CTS) gives a presentation of the 5-th generation short range mobile networks, applied for improved support of machine to machine communication (Internet of Things - IoT). Here the “magic” properties of the SCP-RPSC technology, applied in the future sophisticated CTS,s, are discussed.

Recent Publications

1. Demirev V (2017) SCP-RPSC Coherent transponding systems for IoT communications Industry 4.0, Year II , 1: 25-28.
2. Demirev V (2016) Spatial correlated radiocommunication technologies-the Bulgarian contribution for a better world. Science. Business.Society 1(1):18-21.

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3. Demirev V (2016) SCP-RPSC - the key technology in the next generation steerable lines for satellite communications. *Electrotechnica and Electronica E + E* 51(7-8):7-14.
4. Demirev V(2015) Recent trends and future developments of SCP-RPSC high altitude platform systems. *Elektrotechnica and Elektronika E+E* 50(1-2):30-36.
5. Demirev V (2015) SCP-RPSC-the key technology for the next generation microwave communication systems. *Machines, Technologies, Materials* 9(6): 13-16.

Biography

Veselin Borisov Demirev has completed his MS degree in radio-engineering, Higher Institute of Electrical and Mechanical Engineering (now Technical University-Sofia, TU-S with a specialization in the fields of microwaves, antennas and radar in 1971 and PhD degree in TU-S with thesis on "Radar signal processing antennas" in 1981. He has graduated a course in "Land mobile communications", USTTI and Motorola, USA in 1994 and many others. He was a Research Engineer at Institute for Radioelectronics and Optics, Sofia from 1973 to 1974; Researcher and Senior Researcher at Microwave Devices and Systems (MDS) research laboratory, TU-S from 1976 to 1993; Head of EMC and Radio-communication department at Committee of Post and Communications, Sofia from 1993 to 1998; Professor in Faculty of Communications, TU-S since 1998 and Research Project Manager in Sky Gate-BG Ltd. on second contract from 2001 to 2003. He has about 100 scientific reports and papers, 15 patents and is author and coauthor of 3 books in Bulgarian. He has been engaged for more than 47 years research and education activity in the field of Microwave devices and systems; Broadband mobile satellite and terrestrial communications; Radar and navigation systems; Signal processing antennas and Spread spectrum systems.

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