

2020 30th International Conference Radioelektronika (RADIOELEKTRONIKA 2020)

**Bratislava, Slovakia
15 – 16 April 2020**



**IEEE Catalog Number: CFP2085B-POD
ISBN: 978-1-7281-6470-0**

**Copyright © 2020 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2085B-POD
ISBN (Print-On-Demand):	978-1-7281-6470-0
ISBN (Online):	978-1-7281-6469-4

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Kadera, Mikulasek, Hruska, Lacik: Hyperbolic Lens Horn Antenna for Fixed-Beam E-Band Communication	1
Božanić, Sinha: Methodologies for Design of Millimeter-Wave and Terahertz Integrated Circuits: An LNA Case Study	6
Mapfumo, Shongwe: Performance Comparison of FFT and DHT Hybrid PLC-VLC Systems Based on DCO-OFDM in Impulsive Noise	12
Mapfumo, Shongwe: A Comparison of FFT and DHT Hybrid PLC-VLC Systems Based on ACO-OFDM in Impulsive Noise	18
Rybina, Rybin: Effect Of The Etching Regimes On The Memristor Properties Of Al ₂ O ₃ Thin Layers	25
Janveja, Bikram, Trivedi, Vijayakanthi, Agrawal, Pidanič, Němec: Design of Efficient AES Architecture for Secure ECG Signal Transmission for Low-power IoT Applications	29
Serov, Shatokhin, Serov: Approximation of ADC Nonlinearity by a Random Function in the Case of Measurement of Electric Power Parameters	35
Baroud, Hasan, Shongwe: The Use of Multiclass Support Vector Machines and Probabilistic Neural Networks for Signal Classification and Noise Detection in PLC/OFDM Channels	41
Kadlec, Čapek, Rýmus, Marek, Štumpf, Jelínek, Mašek, Kotalík: Design of a Linear Antenna Array: Variable Number of Dimensions Approach	47
Polak, Milos: LTE and LoRa in the 2.4 GHz Band: Adjacent Channel Interference Issues	53
Stork, Houzar: Non-contact ECG Monitoring for Driver	57
Proskura, Vasilyeva, Fangfang, Lukin: Classification of Compressed Multichannel Images and Its Improvement	62
Hudcova, Wilfert: Determination of the Atmospheric Turbulence by the Analysis of the Optical Beam Deflection	68
Bilik: High-Power In-Line Waveguide to Coaxial Adapter	73
Ružička, Vološin, Gazda, Maksymyuk: The extension of existing end-user mobility dataset based on generative adversarial networks	77
Pecovsky, Sokol, Galajda: Integrated Low Pass Filter for M-Sequence UWB Radars	81
Skryja, Novak, Barcik, Kolka: Comparison of vibration measurement methods for FSO fixture	86
Langhammer, Sotner: Conversion of a MISO Filter into its Reconnectionless Reconfigurable Form with Complex Active Elements	90
Goswami, Bikram, Dutt, Trivedi: Comparative Review of Approximate Multipliers	94

Kaderka, Urbanec: Time and sample rate synchronization of RTL-SDR using a GPS receiver	100
Laban, Drutarovsky: Improved Efficiency of PUF Response Reconstruction Method	104
Lesnikov, Naumovich, Chastikov: Implementation of the Poles of IIR Digital Filters with a Declared Structural Precision	110
Serov, Serov, Makarychev: Comparative Analysis of the RMS Measurement Methods Based On the Averaging of the Squares of Samples	116
Sotner, Domansky, Langhammer, Petrzela: Comparison of Simple Design Methods for Voltage Controllable Resistance	122
Gotthans, Gotthans, Marsalek: Deep Convolutional Neural Network for Fire Detection	128
Loginov, Kholomina, Litvinov, Rybin, Semenov, Rybina: Comprehensive implementation of the magnetic contact reliability test method	134
Bonev, Petkov, Dimcheva: Modified Minkowski Fractal Yagi-Uda Antenna	139
Zedka, Götthans, Maršálek, Blumenstein, Bobula: SC-FDE and OFDM in MISO Frequency-Selective Fading Channels	143
Pitaš, Nguyen, Tran, Rejfek, Beran, Fišer: FMICW Radar Target Classification By Neural Network	148
Pitas, Fiser: On rainfall type classification to improve rain attenuation prediction	153
Sokol, Galajda, Pecovsky: Improving Input Circuits for 7-bit Flash AD Converter	157
Kovalchuk, Pitas, Fiser: Rain height study to predict satellite link rain attenuation	162
Dwivedi, Trivedi, Khijwania: Theoretical Study and Optimization of Apodized Fiber Bragg Grating for Single and Quasi-distributed Structural Health Monitoring	166
Šovčík, Stopjaková, Arbet, Potočný: Autonomous On-Chip Digital Calibration for Analog ICs in Nanotechnologies	172
Nagy, Chvala, Stopjakova: Low-Leakage ESD Structures in 130nm CMOS Technology	177
Potočný, Šovčík, Stopjaková: Development of test equipment for evaluation of low-power AC/DC converter ASIC	181
Podlucky, Vojs, Chovan, Řeháček, Kováč, Uherek: Optimization of SiON/SiO _x structures fabrication process for optical waveguides	186
Uhrina, Bienik, Mizdos: QoE on H.264 and H.265: Crowdsourcing versus Laboratory Testing	191
Kubinec, Púčik, Hagara, Cocherová, Ondráček: Successive Approximation Algorithm for Complex Number Magnitude and Argument Computation	197