

7M  
1-63/4m1

# IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES

A PUBLICATION OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY



NOVEMBER 2014      VOLUME 62      NUMBER 11      IETMAB      (ISSN 0018-9480)

## MINI-SPECIAL ISSUE ON 2014 INTERNATIONAL WORKSHOP ON INTEGRATED NONLINEAR MICROWAVE AND MILLIMETRE-WAVE CIRCUITS (INMMiC)

Guest Editorial ..... *G. Crupi and A. Raffo*      2497

### MINI-SPECIAL ISSUE PAPERS

Output-Controllable Partial Inverse Digital Predistortion for RF Power Amplifiers .....	<i>C. Yu, M. Allegue-Martinez, Y. Guo, and A. Zhu</i>	2499
Operating Modes of Dynamic Power Supply Transmitter Amplifiers .....	<i>E. McCune</i>	2511
K-Band GaAs MMIC Doherty Power Amplifier for Microwave Radio With Optimized Driver .....	<i>R. Quaglia, V. Camarchia, T. Jiang, M. Pirola, S. Donati Guerrieri, and B. Lorán</i>	2518
Millimeter-Wave FET Nonlinear Modelling Based on the Dynamic-Bias Measurement Technique .....	<i>G. Avolio, A. Raffo, I. Angelov, V. Vadalà, G. Crupi, A. Caddemi, G. Vannini, and D. M. M.-P. Schreurs</i>	2526

### REGULAR PAPERS

#### EM Theory and Analysis Techniques

An Explicit and Unconditionally Stable FDTD Method for Electromagnetic Analysis .....	<i>Md. Gaffar and D. Jiao</i>	2538
Numerical Separation of Vector Wave Equation in a 2-D Doubly Connected Domain .....	<i>E. Khodapanah</i>	2551
Surface-Volume-Surface Electric Field Integral Equation for Magneto-Quasi-Static Analysis of Complex 3-D Interconnects ..	<i>A. Menshov and V. I. Okhmatovski</i>	2563
Sum Rules for Parallel-Plate Waveguides: Experimental Results and Theory .....	<i>I. Vakili, M. Gustafsson, D. Sjöberg, R. Seviour, M. Nilsson, and S. Nordebo</i>	2574

#### Devices and Modeling

Digital Predistortion of LTE-A Power Amplifiers Using Compressed-Sampling-Based Unstructured Pruning of Volterra Series .....	<i>A. Abdelhafiz, A. Kwan, O. Hammi, and F. M. Ghannouchi</i>	2583
Baseband Equivalent Volterra Series for Behavioral Modeling and Digital Predistortion of Power Amplifiers Driven With Wideband Carrier Aggregated Signals .....	<i>B. Fehri and S. Boumaiza</i>	2594
Novel Technique for Wideband Digital Predistortion of Power Amplifiers With an Under-Sampling ADC .....	<i>Y. Liu, J. J. Yan, H.-T. Dabag, and P. M. Asbeck</i>	2604

(Contents Continued on Back Cover)





# IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES

A PUBLICATION OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY



JUNE 2015

VOLUME 63

NUMBER 6

IETMAB

(ISSN 0018-9480)

---

PAPERS

**EM Theory and Analysis Techniques**

Resonant Modes of Disk-Loaded Cylindrical Structures With Open Boundaries .....	1781
..... <i>I. G. Chelis, K. A. Avramidis, and J. L. Vomvoridis</i>	
Dispersion Modeling and Analysis for Multilayered Open Coaxial Waveguides .....	1791
..... <i>S. Nordebo, G. Cinar, S. Gustafsson, and B. Nilsson</i>	
An Analysis of Multistrip Line Configuration on Elliptical Cylinder .....	1800
..... <i>A. Kusiek, R. Lech, W. Marynowski, and J. Mazur</i>	
Physics-Based Via and Waveguide Models for Efficient SIW Simulations in Multilayer Substrates .....	1809
..... <i>J. B. Preibisch, A. Hardock, and C. Schuster</i>	
Design and Modeling of Spoof Surface Plasmon Modes-Based Microwave Slow-Wave Transmission Line .....	1817
..... <i>A. Kianinejad, Z. N. Chen, and C.-W. Qiu</i>	

**Devices and Modeling**

A Memoryless Semi-Physical Power Amplifier Behavioral Model Based on the Correlation Between AM-AM and AM-PM Distortions .....	1826
..... <i>S. Glock, J. Rascher, B. Sogl, T. Ussmueller, J.-E. Mueller, and R. Weigel</i>	
High-Speed Signal Transmission at W-Band Over Dielectric-Coated Metallic Hollow Fiber .....	1836
..... <i>J. Yu, X. Li, X. Tang, H. Zhang, N. Chi, and Y. Shi</i>	

**Passive Circuits**

Simple and Compact Balanced Bandpass Filters Based on Magnetically Coupled Resonators .....	1843
..... <i>A. Fernández-Prieto, A. Lujambio, J. Martel, F. Medina, F. Mesa, and R. R. Boix</i>	
Tunable 500–1200-MHz Dual-Band and Wide Bandwidth Notch Filters Using RF Transformers .....	1854
..... <i>C.-H. Ko, A. Tran, and G. M. Rebeiz</i>	
Wideband Excitation Technology of TE <sub>20</sub> Mode Substrate Integrated Waveguide (SIW) and Its Applications .....	1863
..... <i>P. Wu, J. Liu, and Q. Xue</i>	
A New Compact High-Power Microwave Phase Shifter .....	1875
..... <i>C. Chang, L. Guo, S. G. Tantawi, Y. Liu, J. Li, C. Chen, and W. Huang</i>	

---

(Contents Continued on Back Cover)



---

Design of Compact Reflection-Type Phase Shifters With High Figure-of-Merit .....	1883
..... <i>F. Burdin, Z. Iskandar, F. Podevin, and P. Ferrari</i>	
A New Broadband Common-Mode Noise Absorption Circuit for High-Speed Differential Digital Systems .....	1894
..... <i>C.-Y. Hsiao, C.-H. Cheng, and T.-L. Wu</i>	
Wideband Microstrip-to-Microstrip Vertical Transitions Via Multiresonant Modes in a Slotline Resonator .....	1902
..... <i>X. Guo, L. Zhu, J. Wang, and W. Wu</i>	
<b>Hybrid and Monolithic RF Integrated Circuits</b>	
Millimeter-Wave Low-Noise Amplifier Design in 28-nm Low-Power Digital CMOS .....	1910
..... <i>D. Fritsche, G. Tretter, C. Carta, and F. Ellinger</i>	
Experimental Control and Design of Low-Frequency Bias Networks for Dynamically Biased Amplifiers .....	1923
..... <i>J. Pelaz, J.-M. Collantes, N. Otegi, A. Anakabe, and G. Collins</i>	
Q-Band Spatially Combined Power Amplifier Arrays in 45-nm CMOS SOI .....	1937
..... <i>B. Hanafi, O. Gürbüz, H. Dabag, J. F. Buckwalter, G. Rebeiz, and P. Asbeck</i>	
Electrothermal Effects on Performance of GaAs HBT Power Amplifier During Power Versus Time (PVT) Variation at GSM/DCS Bands .....	1951
..... <i>L. Lin, L. Zhou, R. Wang, L. Tong, and W.-Y. Yin</i>	
A Stacked-FET Linear SOI CMOS Cellular Antenna Switch With an Extremely Low-Power Biasing Strategy .....	1964
..... <i>D. Im, B.-K. Kim, D.-K. Im, and K. Lee</i>	
Digitally Equalized Doherty RF Front-End Architecture for Broadband and Multistandard Wireless Transmitters .....	1978
..... <i>R. Darraji, A. K. Kwan, F. M. G. Ghannouchi, and M. Helaloui</i>	
W-Band Dual-Polarization Phased-Array Transceiver Front-End in SiGe BiCMOS .....	1989
..... <i>A. Natarajan, A. Valdes-Garcia, B. Sadhu, S. K. Reynolds, and B. D. Parker</i>	
<b>Instrumentation and Measurement Techniques</b>	
Whispering-Gallery-Mode Resonator Technique With Microfluidic Channel for Permittivity Measurement of Liquids ..	2003
..... <i>A. I. Gubin, A. A. Barannik, N. T. Cherpak, I. A. Protsenko, S. Pud, A. Offenhüsser, and S. A. Vitusevich</i>	
Single-Compound Complementary Split-Ring Resonator for Simultaneously Measuring the Permittivity and Thickness of Dual-Layer Dielectric Materials .....	2010
..... <i>C.-S. Lee and C.-L. Yang</i>	
Broadband Dielectric Spectroscopy of Composites Filled With Various Carbon Materials .....	2024
..... <i>S. Bellucci, S. Bistarelli, A. Cataldo, F. Micciulla, I. Kranauskaite, J. Macutkevici, J. Banys, N. Volynets, A. Paddubskaya, D. Bychanok, P. Kuzhir, S. Maksimenko, V. Fierro, and A. Celzard</i>	
<b>RF Systems and Applications</b>	
Electrical Analysis of Cell Membrane Poration by an Intense Nanosecond Pulsed Electric Field Using an Atomistic-to-Continuum Method .....	2032
..... <i>S. Kohler, Z. A. Levine, M. Á. García-Fernández, M.-C. Ho, P. T. Vernier, P. Leveque, and D. Arnaud-Cormos</i>	
The Development of Forceps-Type Microwave Tissue Coagulator for Surgical Operation .....	2041
..... <i>Y. Endo, K. Saito, and K. Ito</i>	
Millimeter-Wave Near-Field Probe Designed for High-Resolution Skin Cancer Diagnosis .....	2050
..... <i>F. Töpfer, S. Dudorov, and J. Oberhammer</i>	
A High-Sensitivity Fully Passive Neurosensing System for Wireless Brain Signal Monitoring .....	2060
..... <i>C. W. L. Lee, A. Kiourti, J. Chae, and J. L. Volakis</i>	
Concurrent Detection of Vibration and Distance Using Unmodulated CW Doppler Vibration Radar With An Adaptive Beam-Steering Antenna .....	2069
..... <i>C.-M. Nieh, C. Wei, and J. Lin</i>	

---