

Contents

Part I Electromagnetic Theory and Modeling

Modeling of Electromagnetic Wave Propagation in Flows of Turbulent Plasma Inhomogeneities	3
V. Spitsyn and I. Fedotov	
Ultra-wideband Propagation Loss Around a Human Body in Various Surrounding Environments	11
H. Yamamoto and T. Kobayashi	
Optimizing the Positioning of MIMO and SISO Systems in Indoor Environments	19
P. Bechet, I. Bouleanu, A. Neagu, R. Helbet, and A. Hangan	
Analysis of Ultra-wideband Impulse Radio Over Multimode Fiber Ranging System . .	27
J. George, D. Thelen, A. Chamarti, A. Ng'oma, and M. Sauer	
Time Domain Transition Zone Diffraction on Convex Obstacles	37
P. Górnjak and W. Bandurski	
Benchmark Problems for Coupling and Scattering with Cavities of General Form	47
P.D. Smith, E.D. Vinogradova, S.B. Panin, Y.A. Tuchkin, and S.V. Vinogradov	
Accurate Modelling of Ultra-short Electromagnetic Pulse Scattering Using a Locally Conformal Finite-Difference Time-Domain Scheme	55
D. Caratelli, R. Cicchetti, M. Simeoni, and A. Yarovoy	
Rigorous Modeling of Electromagnetic Wave Interactions with Large Dense Systems of Discrete Scatterers	65
E.H. Bleszynski, M.K. Bleszynski, and T. Jaroszewicz	
A Hybrid Method for Solving 2-D Inverse Scattering Problems	79
A. Semnani and M. Kamyab	

Part II Time-Domain Computational Techniques

Time-Reversal-Based Signal Processing Techniques for Ultra-wideband Electromagnetic Imaging	89
M.E. Yavuz and F.L. Teixeira	

Imaging of Distributed Objects in UWB Sensor Networks	97
R. Zetik and R.S. Thomä	
Advanced Imaging by Space–Time Deconvolution in Array GPR	105
T.G. Savelyev, N.T. van Tol, A.G. Yarovoy, and L.P. Ligthart	
Time-Domain Characterization of Asymptotic Conical Monopole	113
Dhiraj Kumar Singh and Devendra Chandra Pande	
A TDFEM-Employed Temporal Second-Order Lagrange Interpolation for Three-Dimensional EM Radiation Problems	121
X. Wu and L. Zhou	
TLM Simulation of Wave Envelopes Using Dynamic Phasors	131
D.W.P. Thomas, J.D. Paul, and C. Christopoulos	
Part III Modeling	
Analysis of Anisotropic Microwave Circuits with Several Metallized Interfaces	139
C. Boularak, M.L. Tounsi, A. Khodja, R. Touhami, and M.C.E. Yagoub	
A Novel High-Miniaturized Semi-fractal Branch-Line Coupler Using Loaded Coupled Transmission Lines	151
M. Nosrati and M.S. Fealy	
New Coplanar Low-Pass Defected Ground Structure (DGS) Filter	157
A. Batmanov, A. Boutejdar, A. Balalem, A. Omar, and E. Burte	
Bandwidth Enhancement and Further Size Reduction of a Class of Miniaturized Elliptic-Function Low-Pass Filter	165
M. Nosrati, S. Abbaspour, and A. Najafi	
A Miniature 3.1 GHz Microstrip Bandpass Filter with Suppression of Spurious Harmonics Using Multilayer Technique and Defected Ground Structure Open-Loop Ring	171
A. Boutejdar, A. Batmanov, A. Omar, and E. Burte	
Modeling Broadband Antennas for Hot Electron Bolometers at Terahertz Frequencies .	179
I. Türer, X. Gaztelu, N. Ribière-Tharaud, A.F. Dégardin, and A.J. Kreisler	
Part IV Antennas	
Investigation on the Phase Center of Ultra-wideband Monopole Antennas with Band-Stop Functions	191
A. Mohamed and L. Shafai	
Improvements to the Time-Domain Response of the Double-Ridged Horn	199
J.S. McLean and R. Sutton	
The Folded Horn Antenna	207
E.G. Farr, L.H. Bowen, C.E. Baum, and W.D. Prather	
Numerical Analysis of Small Slotted Ultra-wideband Antenna Based on Current Distribution for Bandwidth Enhancement	215
Y.R. Naumar, T.A. Rahman, R. Ngah, and P.S. Hall	

Design and Experiment of an Ultra-wideband Dual-Pulse Radiating Antenna	225
Z. Sitao, L. Guozhi, Y. Chaolong, S. Xiaoxin, F. Yajun, S. Lei, X. Wenfeng, and Z. Yufeng	
A Novel UWB Planar Antenna with Notch Cut for Wireless Communications	233
A. Alshehri and A.R. Sebak	
Ultra-wideband 4 × 4 Phased Array Containing Exponentially Tapered Slot Antennas and a True-Time Delay Phase Shifter at UHF	241
J. Schmitz, M. Jung, J. Bonney, R. Caspary, J. Schüür, and J. Schöbel	
Planar Elliptical Differential Antenna for UWB Applications	249
G. Quintero, J.F. Zürcher, and A.K. Skrivervik	
Array Antenna for Directed Radiation of High-Power Ultra-wideband Pulses	259
V.I. Koshelev, V.V. Plisko, and K.N. Sukhushin	
Ultra-wideband Active Receiving Array Antenna with Dual Polarization	269
V.I. Koshelev, E.V. Balzovsky, and Yu. I. Buyanov	
Modeling of Broadband Antennas for Room Temperature Terahertz Detectors	277
Alexander Scheuring, Ibrahim Türer, Nicolas Ribière-Tharaud, Annick F. Dégardin, and Alain J. Kreisler	
100 THz Broadband High-Power Antennas – Results of Modeling and Antennas Future Applications	287
A. Podgorski, W. Prather, S. Yakura, and J. MacGillivray	
Part V Pulsed Power	
Traveling-Wave Switches and Marx Generators	297
C.E. Baum	
High-Voltage and High-PRF FID Pulse Generators	301
V.M. Efanov, M.V. Efanov, A.V. Komashko, A.V. Kriklenko, P.M. Yarin, and S.V. Zazoulin	
Experimental and Theoretical Investigation of Directional Wideband Electromagnetic Pulse Photoemission Generator	307
P.V. Petrov, V.I. Afonin, D.O. Zamuraev, E.V. Zavolokov, N.V. Kupyryin, Yu. N. Lazarev, Yu. O. Romanov, Yu. G. Syrtsova, I.A. Sorokin, A.S. Tischenko, G.I. Brukhnevich, N.P. Voronkova, L.Z. Pekarskaya, and V.S. Belolipetskiy	
The GIMLI: A Compact High-Power UWB Radiation Source	315
P. Delmote and B. Martin	
Part VI UWB Interaction	
Classification of Electromagnetic Effects at System Level	325
F. Sabath	
Measurement of EM Field Inside a Cruising Aircraft: Potential Problems for the Use of Mobile Phones on Board	335
A. Kohmura, J. Picard, N. Yonemoto, and K. Yamamoto	

A New Method of Interference Evaluation Between UWB System and Wireless LAN Using a GTEM Cell	343
Shinobu Ishigami, Masashi Yamada, Kaoru Gotoh, Yasushi Matsumoto, and Masamitsu Tokuda	
Simulation of the Effects of Radiation on a Satellite Memory and Improving Its Fault-Tolerant Ability, Using SIHFT	351
S.M. Nematollahzadeh and A.A. Jamshidifar	
Investigations of Electromagnetic Behavior and Interaction of Motion Control Electronic Devices	361
J.-M. Dienot	
Wunsch–Bell Criterial Dependence for Si and GaAs Schottky-Barrier Field-Effect Transistors	369
G.I. Churyumov, M.P. Gribskii, V.V. Starostenko, V. Yr. Tereshenko, D.A. Unzhakov, and S.A. Zuev	
RF Breakdown Prediction for Microwave Passive Components in Multi-carrier Operation	375
S. Anza, M. Mattes, J. Armendariz, J. Gil, C. Vicente, B. Gimeno, V.E. Boria, and D. Raboso	
Part VII Radar Systems	
UWB Radar: Mechanical Scanning and Signal Processing for Through-the-Wall Imaging	385
C. Liebe, A. Gaugue, J. Khamlichi, M. Menard, and J.-M. Ogier	
Radar Observation of Objects, Which Fulfill Back-and-Forth Motion	395
I. Immoreev	
Human Being Imaging with cm-Wave UWB Radar	405
A. Yarovoy, X. Zhuge, T. Savelyev, J. Matuzas, and B. Levitas	
A Metallic Wire Electromagnetic Crystal Structure for Radar Applications	413
F. Ghanem, G.Y. Delisle, T.A. Denidni, and K. Ghanem	
Part VIII UWB Communication	
Small Printed Ultra-Wideband Antennas Combining Electric- and Magnetic-Type Radiators	425
D.-H. Kwon, E.V. Balzovsky, Y.I. Buyanov, Y. Kim, and V.I. Koshelev	
A Bandwidth Reconfigurable Antenna for Cognitive Radios	433
F. Ghanem and P.S. Hall	
A Long-Range UWB Channel Sounding System Exploiting UWB over Fibre Technology	439
A. Kavatjikidis, D.J. Edwards, and C.J. Stevens	
UWB Antennas Integration Effects for Wireless Communication Applications	449
M.-A. Mellah, C. Roblin, and A. Sibille	

Bit Error Rate of a Non-ideal Impulse Radio System 457
 J. Timmermann, E. Pancera, P. Walk, W. Wiesbeck, and T. Zwick

Part IX Broadband Systems and Components

Integrated cm- and mm-Wave UWB Transceiver for M-Sequence-Based Sensors 467
 M. Kmec, J. Müller, P. Rauschenbach, S. Rentsch, J. Sachs, and B. Yang

Experimental Focal Waveforms of a Prolate-Spheroidal Impulse-Radiating Antenna . . 475
 S. Altunc, C.E. Baum, C.G. Christodoulou, and E. Schamiloglu

Development of a Resonant Chamber Microwave Tomography System 481
 C. Kaye, C. Gilmore, P. Mojabi, D. Firsov, and J. LoVetri

Index 489