

2016 IEEE 5th Asia-Pacific Conference on Antennas and Propagation (APCAP 2016)

**Kaohsiung, Taiwan
26-29 July 2016**



**IEEE Catalog Number: CFP1607S-POD
ISBN: 978-1-4673-7238-1**

**Copyright © 2016 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 publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1607S-POD
ISBN (Print-On-Demand):	978-1-4673-7238-1
ISBN (Online):	978-1-4673-7237-4
ISSN:	2381-5523

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

Paper No.	Paper Title	Authors and Contact Affiliation	Page
1WE1A-01	Propagation Modeling of an L-shaped Structure: What Happened When Its Width Shrank	S. Lim, Q. Soo, D. Lim, Univ. of Nottingham Malaysia Campus	pp. 1-2
1WE1A-02	Development and Performance Evaluations of Microwave Therapeutic Devices	K. Saito, K. Ito, Chiba Univ.	pp. 3-4
1WE1A-03	Research on Indoor Location Algorithm Using RFID	P. Xu, T. Jiang, Harbin Engineering Univ.	pp. 5-6
1WE1A-04	EM-Wave Transmission Characteristic of Periodically Perforated Metal Plates	S. Yamamoto, A. Hamano, K. Hatakeyama, T. Iwai, Univ. of Hyogo	pp. 7-8
1WE1B-01	A Modified U-Slot Patch Antenna with Full Polarization Agility	Y. Lu, S. Chen, National Taiwan Univ.	pp. 9-10
1WE1B-02	Two Element Wide-Band Frequency Reconfigurable MIMO Antenna System for 4G Applications	R. Hussain, M. Sharawi, King Fahd Univ. for Petroleum and Minerals	pp. 11-12
1WE1B-03	The Investigation of the Varactor Diode as Tuning Element on Reconfigurable Antenna	W. Sam, Z. Zakaria, Universiti Teknikal Malaysia Melaka	pp. 13-14
1WE1B-04	Design of Switched Multimode Antenna on Bug Platform by Using Characteristic Mode Analysis	J. Won, S. Nam, Seoul National Univ.	pp. 15-16
1WE1C-01	Single-layer Balanced Branch-line Coupler	J. Shi, J. Qiang, Q. Cao, Nantong Univ.	pp. 17-18
1WE1C-02	A Novel UWB Bandpass Filter with Dual Notched Bands Using Ring Resonator	X. Zheng ^{1,2} , X. Zhang ¹ , X. Yang ¹ , T. Jiang ¹ , ¹ Harbin Engineering Univ., ² Northeast Dianli Univ.	pp. 19-20
1WE1C-03	A Bandpass Filtering Balun Based on Circular Sector Patch	X. Ye, Y. Shi, E. Guo, S. Zheng, Sun Yat-sen Univ.	pp. 21-22
1WE1D-01	Design of a SiGe BiCMOS On-Chip Slot Antenna	X. Li, J. Xiao, W. Feng, N. Li, H. Zhu, L. Yao, Beijing Univ. of Posts and Telecommunications	pp. 25-26
1WE1D-02	W-Band High Gain Slot Array Antenna with Low Sidelobe Level	J. Wang, Y. Cheng, Univ. of Electronic Science and Technology of China	pp. 27-28
1WE1D-03	Compact UWB Slot Antenna with Wideband-notched Characteristics Based on Rectangular SRR	B. Xu ^{1,2} , Y. Zhao ¹ , Y. Zheng ¹ , L. Gu ¹ , ¹ Univ. of Electronic Science and Technology of China, ² Jimei Univ.	pp. 29-30
1WE1D-04	Dual-band Patch Antenna for WLAN Applications	T. Liao, I. Chen, C. Peng, H. Cheng, Jinwen Univ. of Science and Technology	pp. 31-32
1WE2A-01	A New High Transmittance Dipole Antenna	Y. Lin ¹ , Y. Chen ¹ , Z. Dai ² , S. Chiou ² , C. Hung ³ , H. Wu ² , S. Chang ¹ , Y. Su ¹ , ¹ National Cheng Kung Univ., ² Kun Shan Univ., ³ Metal Industries Research & Development Center	pp. 33-34
1WE2A-02	Wearable Belt Resonators Model for Wrist Detection	C. Lee, C. Wu, Y. Kuo, HTC Corporation	pp. 35-36

1WE2A-03	Transmission Characteristics of Multilayered Structures Using Negative Permittivity Materials and Dielectric Materials	M. Okita ¹ , S. Yamamoto ¹ , K. Hatakeyama ¹ , T. Tsutaoka ² , ¹ Univ. of Hyogo, ² Hiroshima Univ.	pp. 37-38
1WE2A-04	Single- and Multi-layered All-dielectric ENG, MNG, and DNG Material Parameter Extraction by Use of the S-parameter Method	Y. Wu ¹ , S. Arslanagić ² , ¹ Univ. of Electronic Science and Technology of China, ² Technical Univ. of Denmark	pp. 39-40
1WE2A-05	Open Slot Antenna for Smartwatch Application	Y. Yang, H. Chen, National Kaohsiung Normal Univ.	pp. 41-42
1WE2B-01	Dual Circular Polarized Array with Metal 3D Printing	S. Zhou ^{1,2} , G. Huang ¹ , T. Chio ¹ , ¹ National Univ. of Singapore, ² Northwestern Polytechnical Univ.	pp. 43-44
1WE2B-02	Substrate-Free Patch Antenna Array Realized by Metallic 3-D Printing	T. Chio ¹ , G. Huang ¹ , S. Zhou ^{1,2} , ¹ National Univ. of Singapore, ² Northwestern Polytechnical Univ.	pp. 45-46
1WE2B-03	3-D Printed Lightweight Microwave Waveguide Devices	C. Guo ^{1,2} , X. Shang ² , J. Li ¹ , M. Lancaster ² , J. Xu ¹ , ¹ Univ. of Electronic Science and Technology of China, ² Univ. of Birmingham	pp. 47-48
1WE2B-04	Design of Ka Band Diplexer	J. Li ¹ , Y. Qi ¹ , R. Xu ¹ , S. Zhou ^{1,2} , ¹ Northwestern Polytechnical Univ., ² National Univ. of Singapore	pp. 49-50
1WE2B-05	A Compact Wideband 16-Way Power Combiner Implemented via 3-D Metal Printing	G. Huang ¹ , S. Zhou ^{1,2} , T. Chio ¹ , ¹ National Univ. of Singapore, ² Northwestern Polytechnical Univ.	pp. 51-52
1WE2C-01	Broadband Waveguide Antenna Using L-shaped Probe for Wide-Angle Circular Polarization Radiation	T. Fukusako, R. Yamauchi, Kumamoto Univ.	pp. 53-54
1WE2C-02	A Compact Dual-Band Dual Circularly Polarized Aperture-Coupled Patch Antenna for RFID Application	X. Lin, Z. Xie, South China Univ. of Technology	pp. 55-56
1WE2C-03	A Novel Aperture-Coupled Circularly Polarized Square-Ring Patch Antenna for Wireless Communication Systems	C. Liao ¹ , Y. Lin ¹ , C. Chen ² , S. Kao ¹ , H. Chen ¹ , ¹ National Kaohsiung Univ. of Applied Sciences, ² R.O.C. Air Force Academy	pp. 57-58
1WE2C-04	Development of 5GHz Circularly Polarized Slot Antenna	K. Yamaguchi, K. Yoshitomi, H. Kanaya, Kyushu Univ.	pp. 59-60
1WE2C-05	Circularly Polarized Conical-Beam Patch Antenna with Frequency Agility	J. Yang, J. Row, National Changhua Univ. of Education	pp. 61-62
1WE2D-01	Design of Low Profile MIMO Antennas for Mobile Handset Using Characteristic Mode Theory	H. Li ¹ , B. Lau ² , ¹ Dalian Univ. of Technology, ² Lund Univ.	pp. 63-64
1WE2D-02	A Single-Band and Dual-Band Circular Polarized Antenna by Using Asymmetric-Circular Shaped Slots	Y. Li, Y. Wang, K. Yu, Harbin Engineering Univ.	pp. 65-66
1WE2D-03	Investigation on Beamwidth Reduction of Aperture Radiation with Anisotropic ENZ Metamaterials	S. Mao, J. Xiong, Univ. of Electronic Science and Technology of China	pp. 67-68
1WE2D-04	Netted Waveguide Antenna for UWB Wind Turbine Blade Deflection Monitoring	S. Zhang, G. Pedersen, Aalborg Univ.	pp. 69-70
1WE2D-05	Compact Notch Slot Antenna with Quasi-Isotropic Radiation for UHF RFID Tags	Q. Dai ¹ , Y. Yu ¹ , S. Zhang ² , H. Li ³ , ¹ No. 36 Research Institute of China	pp. 71-72

		Electronics Technology Group Corporation, ² Aalborg Univ., ³ Dalian Univ. of Technology	
1WE3A-01	Wideband Circular Polarized Antenna and Its Array	R. Xu, J. Li, K. Wei, Northwestern Polytechnical Univ.	pp. 73-74
1WE3A-02	Miniaturized High Gain Slot Dipole Array Antenna for X-band Application	M. Koga, K. Yoshitomi, H. Kanaya, Kyushu Univ.	pp. 75-76
1WE3A-03	Miniaturized High-band UWB Monopole Antenna	F. Iwai, K. Yoshitomi, H. Kanaya, Kyushu Univ.	pp. 77-78
1WE3A-04	Compact Size UHF RFID Tag for Racing Pigeon Ring Applications	B. Chen, C. Sim, Feng Chia Univ.	pp. 79-80
1WE3A-05	A Real-Time/Low-Cost DOA Estimation System Based on Rotman Lens Array Antenna	Y. Lin, W. Liao, National Taiwan Univ. of Science and Technology	pp. 81-82
1WE3A-06	Exploiting Hi-Lo Inter-Digital DGS for High-Order Microstrip Bandpass Filters	Y. Chen, C. Liu, National Taiwan Univ.	pp. 83-84
1WE3A-07	On the Performance of Algebraic Reconstruction Technique Algorithm for Microwave Imaging	D. Elevani ¹ , R. Ramadhan ¹ , D. Parastika ¹ , B. Basari ¹ , A. Sanpanich ² , ¹ Univ. Indonesia, ² Mahidol Univ.	pp. 85-86
1WE3A-08	Real-Time Optimization of WiFi RF Signal Distribution in the Coverage of Smart Antenna System via the Cloud Database Computation	D. Cheng ¹ , H. Chou ² , Y. Kan ¹ , ¹ Yuan Ze Univ., ² National Taiwan Univ.	pp. 87-88
1WE3A-09	A Broadband Dual-Polarization Patch Array	C. Chiang, W. Liao, National Taiwan Univ. of Science and Technology	pp. 89-90
1WE3A-10	A Broadband Circularly Polarized Polygon Slot Antenna Design by Particle Swarm Optimization	M. Chang, W. Weng, National Chi Nan Univ.	pp. 91-92
1WE3A-11	A Dual Band Meandered Printed Dipole Antenna for RF Energy Harvesting Applications	S. Sen Sarma, M. Akhtar, Indian Institute of Technology Kanpur	pp. 93-94
1WE3A-12	Miniaturized Dual-Band Base-Station Array Using Filtering Antenna Elements	Y. Zhang, X. Zhang, L. Ye, Y. Pan, South China Univ. of Technology	pp. 95-96
1WE3A-13	Bandpass Filtering 180° Patch Coupler with Wide Suppression Band	B. Xiang, S. Zheng, Sun Yat-sen Univ.	pp. 97-98
1WE3A-14	A Zero-Phase-Shift Line (ZPSL) Grid Loop Antenna with Enhanced Magnetic Field Distribution	Y. Zeng ^{1,3} , Z. Chen ^{1,2} , X. Qing ¹ , J. Jin ³ , ¹ Institute for Infocomm Research, ² National Univ. of Singapore, ³ Univ. of Illinois at Urbana-Champaign	pp. 99-100
1WE3B-01	Side-Edge LTE Hybrid Open-Slot/Inverted-F Antenna with a Narrow Ground Clearance for the Smartphone	C. Huang, K. Wong, National Sun Yat-sen Univ.	pp. 101-102
1WE3B-02	A Wideband Circularly Polarized Rectangular Dielectric Resonator Antenna with Monofilar-Spiral-Slot Fed by Microstrip Line	Q. Li, B. Li, X. Wang, Beijing Institute of Technology	pp. 103-104
1WE3B-03	Self-complementary Antenna for Ultra-wideband Applications	C. Lin ¹ , C. Huang ² , ¹ R.O.C. Air Force Academy, ² National Kaohsiung Normal Univ.	pp. 105-106
1WE3B-05	Microstrip Antennas for Smart Watch	S. Lin ¹ , Y. Lin ² , J. Peng ¹ , Y. Tuan ¹ , ¹ Cheng Shiu Univ., ² Metal Industries Research &	pp. 109-110

		Development Center	
1WE3B-06	Slot Type MIMO Antennas with Enhancing Isolation	S. Lin ¹ , Y. Lin ² , J. Wang ¹ , Y. Tuan ¹ , ¹ Cheng Shiu Univ., ² Metal Industries Research & Development Center	pp. 111-112
1WE3B-07	LTE/WWAN Monopole Antenna Integration with Hinge Slot Region in the Laptop Computer	S. Chen, Y. Tsou, C. Huang, National Defense Univ.	pp. 113-114
1WE3B-08	Monopole Antenna Integrated with Keyboard Ground Plane in a Laptop Computer	S. Chen ¹ , Y. Lee ¹ , C. Liou ² , P. Wu ² , ¹ National Defense Univ., ² National Yunlin Univ. of Science and Technology	pp. 115-116
1WE3B-09	DOA Estimation Based on Combined ESPRIT for Co-prime Array	J. Li, M. Shen, D. Jiang, Hohai Univ.	pp. 117-118
1WE3B-10	A Circularly Polarized Square-Ring Patch Tag Antenna Mounted on Metallic Plane	W. Chen, H. Chen, Y. Lin, Y. Lu, National Kaohsiung Univ. of Applied Sciences	pp. 119-120
1WE3B-11	Capacitive Coupling-Feed Circularly Polarized RFID Tag Antenna Mounted on Metallic Plane	W. Chen, H. Chen, Y. Lin, National Kaohsiung Univ. of Applied Sciences	pp. 121-122
1WE3B-12	The Design of Helix Antenna on Low Profile and Wide Band	X. Qu, Z. Yang, Shandong Aerospace Electro-technology Institute	pp. 123-124
1WE3B-13	A Printed 16 Ports Massive MIMO Antenna System with Directive Port Beams	M. Al-Tarifi ¹ , Y. Faouri ² , M. Sharawi ¹ , ¹ King Fahd Univ. for Petroleum and Minerals, ² Univ. of Jordan	pp. 125-126
1WE3B-14	Compact Design of Printed Antenna with a Ground Slot for USB Applications	W. Chen, C. Yang, G. Lin, Southern Taiwan Univ. of Science and Technology	pp. 127-128
1WE3B-15	Broadband Probe-Fed 4×4 Array Antenna	C. Hsu ¹ , L. Hwang ¹ , F. Chang ² , S. Wang ² , C. Liu ² , J. Ji ² , ¹ National Sun Yat-Sen Univ., ² Cheng Shiu Univ.	pp. 129-130
1WE3B-16	A Novel Compact Single Layer Semi-Ring Slot Yagi-Like Antenna with High Front-to-Back Ratio	S. Jehangir, M. Sharawi, King Fahd Univ. for Petroleum and Minerals	pp. 131-132
1WE3B-17	Dual-Band Circularly Polarized Metamaterial Radome for Antenna Gain Enhancement	H. Su, H. Huang, National Pingtung Univ.	pp. 133-134
1WE3B-18	An Open Slot Handsets Antenna with a Capacitor and Shorting Feed for LTE/GPS Operation	W. Hsu ¹ , S. Pan ¹ , Z. Li ¹ , C. Tang ² , ¹ Shu-Te Univ., ² Auden Techno Corp.	pp. 135-136
1WE3B-19	A Triple-Strip Monopole Antenna with Dual-Band Circular Polarization	C. Hsu, M. Shih, C. Wang, National Univ. of Tainan	pp. 137-138
1WE3B-20	A Low-Profile Curl Antenna with Parasitic Curl	C. Zhang, J. Shi, Q. Cao, Nantong Univ.	pp. 139-140
1WE3B-21	Coupled-fed LTE Antenna Design for Tablet Applications	W. Chen ¹ , Y. Chi ¹ , F. Chang ² , C. Hsu ¹ , ¹ Southern Taiwan Univ. of Science and Technology, ² Cheng Shiu Univ.	pp. 141-141
1WE3B-22	Component Effects to the Antenna Design in Mobile Devices	C. Hsu, Y. Chen, T. Chiou, Hongbo Wireless Communication Technology Co.	pp. 142-143
1WE3B-23	Multiband Slot Antenna with Passive	Y. Shih ¹ , H. Tung ² , T. Chiou ³ ,	pp. 144-145

	Components for 4G Application	¹ BWANT Corporation, ² Qisda Corporation, ³ Hongbo Technology Group	
1WE3B-24	Circularly-Polarized Slotted-Patch Antennas Fed with Microstrip- to-Slotline Baluns	Y. Lin, J. Row, National Changhua Univ. of Education	pp. 146-147
1WE3B-25	Beamwidth Reconfigurable Slotted-Patch Antennas	C. Tsai, J. Row, National Changhua Univ. of Education	pp. 148-149
1WE3B-26	A Dual-band Embedded Inverted T-slot Circular Microstrip Patch Antenna	X. Guo, W. Liao, Q. Zhang, Y. Chen, South Univ. of Science and Technology of China	pp. 150-151
1WE3B-27	Small Size Circularly Polarized Patch Antenna for 2.4 GHz WLAN Applications	J. Yang, T. Tsai, C. Chan, C. Sim, Feng Chia Univ.	pp. 152-153
1WE3B-28	Beamforming and Scanning Lens Based on Ferroelectric Material for Millimeter-wave Application	R. Platonov, A. Altyinnikov, V. Medvedeva, A. Yastrebov, Saint Petersburg Electrotechnical Univ.	pp. 154-156
1WE3B-29	Koch Fractalized Compact Spiral Antenna Based on Fibonacci Sequence	C. Sharma, D. Kumar V., PDPM Indian institute of Information Technology Design and Manufacturing	pp. 157-158
1WE3C-01	A Minimized Dual-Band Bandpass Filter using Series $\lambda/4$ Resonators and Open Stub Line	L. Chen, K. Lin, National Sun Yat-Sen Univ.	pp. 159-160
1WE3C-02	280 GHz Tunable Waveguide Bandpass Filter with MEMS Tuning Elements	Z. Xuan, J. Hu, S. Liu, Z. Zheng, Univ. of Electronic Science and Technology of China	pp. 161-162
1WE3C-03	Closed-form Dispersion and Loss Models for Multilayer Coplanar Striplines	P. Majumdar ^{1,3} , A. Verma ^{2,3} , ¹ Kuang-Chi Institute of Advanced Technology, ² Macquarie Univ., ³ Univ. of Delhi, South Campus	pp. 163-164
1WE3C-04	WR-1.5 Suspended Silicon Waveguide	S. Liu, J. Hu, Z. Xuan, Y. Zhang, R. Xu, Univ. of Electronic Science and Technology of China	pp. 165-166
1WE3C-05	The Investigation of Reconfigurable SIW Filter using Varactor Diodes	W. Sam, Z. Zakaria, M. Mutalib, Universiti Teknikal Malaysia Melaka	pp. 167-168
2TH1A-01	Treatment of the Boundary Between Two Different Dispersion Models for the Frequency-Dependent FDTD Analysis	J. Shibayama, K. Shimizu, J. Yamauchi, H. Nakano, Hosei Univ.	pp. 169-170
2TH1A-02	Fast Direct Solution of Dielectric Array Using Adaptive Cross Approximation With Sherman-Morrison-Woodbury Formula	Y. Zhang ¹ , X. Chen ^{1,2} , C. Fei ¹ , Z. Li ^{1,2} , C. Gu ¹ , ¹ Nanjing Univ. of Aeronautics and Astronautics, ² Southeast Univ.	pp. 171-172
2TH1A-03	Accelerated Iterative Solution of Volume Integral Equation Using Sparsified Adaptive Cross Approximation Algorithm	C. Fei ¹ , X. Chen ^{1,2} , Y. Zhang ¹ , Z. Li ^{1,2} , C. Gu ¹ , ¹ Nanjing Univ. of Aeronautics and Astronautics, ² Southeast Univ.	pp. 173-174
2TH1A-04	Planning and Extension of Simulation Area for Electromagnetic Computation on the Sea Surface	S. Gao, T. Jiang, S. Hao, Harbin Engineering Univ.	pp. 175-176
2TH1A-05	An Efficient Matrix Fill-in Scheme for Surface Integral Equation with Higher Order Hierarchical Vector Basis Functions	Z. Zhang, Y. Zhao, Q. Cai, Y. Zheng, L. Gu, Z. Nie, Univ. of Electronic Science and Technology of China	pp. 177-178
2TH1B-01	Circuit Applications of Patch Elements	S. Zheng, Sun Yat-sen Univ.	pp. 179-180

2TH1B-02	Dual-Polarized Multi-Layer Patch Antenna with Pattern Reconfigurable Characteristic	X. Yang, W. Deng, C. Shen, B. Wang, Univ. of Electronic Science and Technology of China	pp. 181-182
2TH1B-03	Wideband Terahertz Frequency-Scanning Reflectarray	Y. Liu, S. Qu, S. Yang, Univ. of Electronic Science and Technology of China	pp. 183-184
2TH1B-04	Dual-band Filtering Antenna with Controllable Frequencies and Bandwidths	Y. Zhang, X. Zhang, B. Li, South China Univ. of Technology	pp. 185-186
2TH1C-01	Resonant Structures for Handset Antenna Design	H. Wang, H. Xu, Huawei Technologies	pp. 187-188
2TH1C-02	Very-Low-Profile, Stand-Alone, Tri-Band WLAN Antenna Design for Laptop-Tablet Computer with Complete Metal-Backed Cover	C. Lee, S. Su, ASUSTek Computer Inc.	pp. 189-190
2TH1C-03	Multi-Band LTE-Advanced Antenna Design for Mobile Phone	T. Kang, S. Yeh, MediaTek Inc.	pp. 191-192
2TH1C-04	Efficiency Analysis of Capacitive-Coupled Chassis Antenna Based on Characteristic Modes	C. Chiu ¹ , S. Chiu ² , S. Yang ² , W. Hsieh ² , S. Chen ¹ , ¹ National Taiwan Univ., ² ASUSTek Computer Inc.	pp. 193-194
2TH1C-05	Eight-Port Dual-Polarized MIMO Antenna for 5G Smartphone Applications	M. Li, Z. Xu, Y. Ban, Q. Yang, Q. Zhou, Univ. of Electronic Science and Technology of China	pp. 195-196
2TH1D-01	Emerging MIMO Antenna Systems for Future Handheld Devices: Possibilities and Challenges	M. Sharawi, King Fahd Univ. for Petroleum and Minerals	pp. 197-198
2TH1D-02	A 4G MIMO Antenna System with Dual Function Ground Slots	M. Ikram, R. Hussain, M. Sharawi, King Fahd Univ. for Petroleum and Minerals	pp. 199-200
2TH1D-03	Design of Phased Array Antenna for 5G mm-wave Beamforming System	J. Kim, J. Han, J. Park, J. Kim, Kwangwoon Univ.	pp. 201-202
2TH1D-04	A 28 GHz Four Channel T/R Chipset in 65 nm CMOS Technology	J. Han, J. Kim, J. Park, J. Kim, Kwangwoon Univ.	pp. 203-204
2TH1D-05	Flat Rotman Lens for 5G Beamforming Antenna	M. Khattak, C. Lee, D. Han, S. Kahng, Incheon National Univ.	pp. 205-206
2TH2A-01	Directivity and Gain Enhancement of Rectangular Waveguides with Near Zero Refractive Index Superstrates	N. Homsup, P. Boonek, W. Silabut, V. Kesornpatumanun, W. Kuhirun, Kasetsart Univ.	pp. 207-208
2TH2A-02	Wideband RCS Reduction of Microstrip Antenna Based on 2.5-dimension Miniaturized Frequency Selective Surface	J. Xue, W. Jiang, S. Gong, Xidian Univ.	pp. 209-210
2TH2A-03	Characteristic Recognition of the Fingerprints of Wireless Channel	C. Jiang, Z. Li, Guangxi Univ. of Science and Technology	pp. 211-212
2TH2A-04	A Compact 8-way Power Divider	Y. Yan, I. Chen, C. Peng, W. Lin, Jinwen Univ. of Science and Technology	pp. 213-214
2TH2A-05	Full Polarization High-Resolution Radar Imaging Based on Multichannel Joint Sparse Recovery	C. Sun, B. Wang, Y. Fang, Z. Song, Northwestern Polytechnical Univ.	pp. 215-216
2TH2A-06	Near-Field Electromagnetic Scattering Measurement and Imaging Approach Based on Compressed Sensing	Y. Fang, B. Wang, C. Sun, Z. Song, Northwestern Polytechnical Univ.	pp. 217-218
2TH2A-07	Automatic PCB-EMI Evaluation System with High-Efficiency Image Mapping	J. Fan ¹ , X. Liu ² , D. Xie ³ , ¹ Suzhou Vocational Univ., ² Soochow Univ.,	pp. 219-220

	Method	³ Univ. of Macau	
2TH2A-08	A Novel On-Board and Amplitude-only Measurement Method for Phase Array Calibration	B. Chen, J. Ouyang, G. Wu, R. Long, Univ. of Electronic Science and Technology of China	pp. 221-222
2TH2A-09	Heat Transfer Performance Between Dielectric Loss Calculation and Molecular Dynamics Simulation of Microwave Heating on Water	Y. Zhang, J. Li, B. Wang, Univ. of Electronic Science and Technology of China	pp. 223-224
2TH2A-10	Electromagnetic Compatibility Designs for Electronic Circuits in Electric Vehicles	W. Weng, H. Ye, National Chi Nan Univ.	pp. 225-226
2TH2A-11	Fast Analysis of RCS Over a Frequency and Material Band Using JVIE with Taylor Expansion	Q. Cai, Y. Zhao, Z. Zhang, Z. Nie, Univ. of Electronic Science and Technology of China	pp. 227-228
2TH2B-01	Compact Sequential-Phase Feeding Network with Frequency Agility	C. Tsai, Y. Lin, J. Yang, J. Row, National Changhua Univ. of Education	pp. 229-230
2TH2B-02	Coupled-fed Antenna Design Integrated with the Hinge of Notebook	Z. Hu ¹ , C. Wei ² , D. Mo ¹ , Y. Chang ² , ¹ LENOVO (Beijing), ² Hongbo Wireless Communication Technology Co.	pp. 231-232
2TH2B-03	Radiation Characteristics of Vivaldi Antenna on the Surface of the Wedge-Cylinder Adjunction	Yukhanov Yu.V., Gevorkyan A.V., and Privalova T.Yu., Southern Federal Univ.	pp. 233-234
2TH2B-04	Synthesis of Impedance Polarization Rotator of Reflective Type	Privalova T.Yu., Southern Federal Univ.	pp. 235-236
2TH2B-05	Two-Layer Miniaturized-Element Metasurface for Broadband RCS Reduction	M. Long, W. Jiang, S. Gong, Xidian Univ.	pp. 237-238
2TH2B-06	Design of the Circularly Polarized Antenna on Composite Substrate	C. Wu ¹ , C. Liao ² , H. Chen ² , C. Yang ³ , C. Su ¹ , C. Chen ⁴ , ¹ Kao Yuan Univ., ² National Kaohsiung Univ. of Applied Sciences, ³ National Univ. of Kaohsiung, ⁴ R.O.C. Air Force Academy	pp. 239-240
2TH2B-07	LTE/WWAN Monopole Antenna with Band-Stop Matching Circuit for Tablet Computer	C. Chen, Y. Lee, R Tsai, H. Chen, National Kaohsiung Normal Univ.	pp. 241-242
2TH2B-09	MIMO Antenna Array for Wireless Local Area Network in a Laptop Computer	S. Chen, C. Fu, National Defense Univ.	pp. 245-246
2TH2B-10	Propagation Characteristics of a Time Reversal Ultra-wideband System in an Enclosed T-structure Metal Chamber	Z. Hu, X. Yang, B. Wang, Univ. of Electronic Science and Technology of China	pp. 247-248
2TH2B-11	Rectangular Textile Patch Antenna Integrated in Three Dimensional Orthogonal Woven Fabrics	C. Du ¹ , Y. Wang ¹ , F. Yang ² , S. Zhing ³ , ¹ Shanghai Univ. of Electric Power, ² CETC Shanghai Microwave Communication Co., ³ Shanghai Univ.	pp. 249-250
2TH2B-12	A Ka-band Open-Ended Waveguide Linear Array Radiator with Integrated Couple	Z. Sun ¹ , L. Xue ¹ , J. Zhang ¹ , H. Wang ¹ , L. Li ¹ , C. Du ² , ¹ Shanghai Aerospace Electronics and Communication Equipment Research Institute, ² Shanghai Univ. of Electric Power	pp. 251-252
2TH2B-13	Dual-Polarized Quasi-Cubic Dielectric	S. Xie ¹ , L. Kong ² , C. Du ³ , S.	pp. 253-254

	Resonator Antenna Array	Zhong ⁴ , ¹ Shanghai Academy of Spaceflight Technology, ² Shanghai Aerospace Electronic Technology Institute, ³ Shanghai Univ. of Electric Power, ⁴ Shanghai Univ.	
2TH2B-14	Dual Polarized Dielectric Resonator Antenna for WLAN Application	H. Tang, J. Chen, H. Chu, Q. Lu, Nantong Univ.	pp. 255-256
2TH2B-15	Closed Loop Antenna Tuning: Why, What, Where	G. Weale, P. McIntosh, S. Haddow, ON Semiconductor	pp. 257-258
2TH2B-16	Broadband RCS Reduction Based on AMC Technology for MMW Applications	M. Akbari, A. Sebak, Concordia Univ.	pp. 259-260
2TH2B-17	Comparison between Circularly-Polarized Hybrid DR/Conical Horn and Hybrid DR/spherical Lens Antennas in Millimeter Wave	M. Akbari, A. Sebak, Concordia Univ.	pp. 261-262
2TH2B-18	Frequency Agile Bowtie Antenna	W. Liao ¹ , N. Chen ² , ¹ Compal Electronics Inc., ² Yuan Ze Univ.	pp. 263-264
2TH2C-01	Spiral-type Monopole Antennas for WLAN MIMO Systems	W. Chen, H. Hsu, K. Liao, Southern Taiwan Univ. of Science and Technology	pp. 265-266
2TH2C-02	Broadband Three-element MIMO Antennas for IEEE802.11ac	W. Chen ¹ , C. Hsu ¹ , F. Chang ² , ¹ Southern Taiwan Univ. of Science and Technology, ² Cheng Shiu Univ.	pp. 267-268
2TH2C-03	Analysis of Dual-polarized Stacked Patch Antenna Based on Theory of Characteristic Modes	D. Yang, H. Zeng, Y. Wen, M. Chen, Univ. of Electronic Science and Technology of China	pp. 269-270
2TH2C-04	Compact Triple-band-notched UWB Planar Monopole Antenna Based on Modified CSRR	X. Cai, L. Jin, M. Li, Q. Zhou, Q. Yang, Univ. of Electronic Science and Technology of China	pp. 271-272
2TH2C-05	A Compact Dual Band Four Element MIMO Antenna for Pattern Diversity Applications	D. Sarkar, K. Saurav, K. Srivastava, Indian Institute of Technology Kanpur	pp. 273-274
2TH2C-06	Compact Asymmetric Dipole Antenna with U-shape Structure for Wireless Cable Modem Application	S. Ke ¹ , W. Chen ¹ , S. Chao ² , ¹ Southern Taiwan Univ. of Science and Technology, ² Hongbo Wireless Communication Technology Co.	pp. 275-276
2TH2C-07	Multilayer Broadband High Gain Ultralow Sidelobe Antenna with EBG for mm-Wave Applications	A. Kandwal, National Electronics and Computer Technology Center	pp. 277-278
2TH2C-10	Wearable Button Antenna Array for V Band Application	Karthikeya G.S ¹ , K Kaushik Devaiah ² , S. Ganesh Sharma R ² , M. Patel ² , N. Mandi ² , Thyagaraj T ² , ¹ Dayananda Sagar College of Engineering, ² BMSIT&M	pp. 283-284
2TH2C-11	A Conformal UHF Antenna for Cargo Helicopter Belly	Karthikeya G.S ¹ , N. Agnihotri ¹ , S. Siddiq ¹ , Mehul K.S ¹ , Thyagaraj T ² , ¹ Dayananda Sagar College of Engineering of India, ² BMSIT&M	pp. 285-286
2TH2C-12	Synthesis of Cylindrical Antenna Arrays Using Rotation Properties of the Feeding Excitations	Z. Medina ¹ , M. Panduro ² , A. Reyna ¹ , A. Mendez ¹ , ¹ Universidad Autonoma de Tamaulipas (UAT), ² CICESE Research Center	pp. 287-288
2TH2C-13	A Small Flexible Anti-metal RFID Tag Antenna	G. Wu, J. Ouyang, B. Chen, L. Jin, R. Long, Univ. of Electronic Science and Technology of China	pp. 289-290

2TH2C-14	Design of a Dual-Band Patch Antenna with Peano-Gosper Fractal Slot	W. Kuhirun, W. Silabut, V. Kesornpatumanun, P. Boonek, Kasetsart Univ.	pp. 291-292
2TH2C-17	Hybrid Antenna Design Integrated with the Metal Cover of Notebook	Z. Hu ¹ , J. Wei ² , X. Shen ¹ , T. Chiou ² , ¹ LENOVO (Beijing), ² Hongbo Wireless Communication Technology Co.	pp. 297-298
2TH2C-18	Penta-band Active Integrated Spiral Antenna	R. Vijay, T. Rao, R. Venkataraman, SRM Univ.	pp. 299-300
2TH2C-19	An Ultra-Wideband Vivaldi Antenna Array in L and S Bands	Y. Yue, Y. Dong, J. Zhou, Southeast Univ.	pp. 301-302
2TH3A-01	Design for Back Lobe Improvement of Spiral Antenna with Conical Wall	K. Min, Korea Maritime and Ocean Univ.	pp. 303-304
2TH3A-02	Metaspiral Antenna Using Stubs	H. Nakano, K. Anjo, J. Yamauchi, Hosei Univ.	pp. 305-306
2TH3A-03	Multi Element Square Spiral Aluminium Nantenna for Solar Energy Harvesting	T. Satitchantrakul, A. Saeaug, R. Silapunt, King Mongkut's Univ. of Technology Thonburi	pp. 307-308
2TH3A-04	Design of SIW-fed Antipodal Linearly Tapered Slot Antennas with Curved and Hat Shaped Dielectric Loadings at 60 GHz for Wireless Communications	T. Rao ¹ , C. Sarat ¹ , N. Tiwari ¹ , R. Jyoti ² , ¹ SRM Univ., ² ISRO	pp. 309-310
2TH3B-01	Single/Dual Polarized Filtering Patch Antennas without Using Extra Circuits	X. Zhang, W. Duan, Y. Pan, South China Univ. of Technology	pp. 311-312
2TH3B-02	A Dual Band-Notched UWB-MIMO Antenna Using Slot and Stub Techniques	Y. Li, Y. Kong, K. Yu, Harbin Engineering Univ.	pp. 313-314
2TH3B-03	Parasitic Patch Antenna with Filtering Response	Y. Pan, P. Hu, X. Zhang, South China Univ. of Technology	pp. 315-316
2TH3B-04	Folded Magic-Tee Integrated with Filtering Structure for RF System Integration Application	G. Huang ¹ , S. Zhou ^{1,2} , T. Chio ¹ , ¹ National Univ. of Singapore, ² Northwestern Polytechnical Univ.	pp. 317-318
2TH3B-05	A Near-Field Focused Array Antenna with Reconfigurable Elements	L. Sun, P. Li, S. Qu, S. Yang, Univ. of Electronic Science and Technology of China	pp. 319-320
2TH3C-01	Comparison Tests and Hand Phantom Standardization for Multi-Probe Based MIMO OTA	X. Wu ¹ , N. Wang ² , Z. Zhang ³ , N. Kuster ⁴ , W. Wang ⁵ , ¹ Academy of Broadcasting Planning, ² China Academy of Information and Communication Technology, ³ Hwa-Tech Co., ⁴ SPEAG Co., ⁵ Beijing Univ. of Posts and Telecommunications	pp. 321-322
2TH3C-02	Compact Eight-Antenna Array in the Smartphone for the 3.5-GHz LTE 8 × 8 MIMO Operation	J. Lu ¹ , K. Wong ¹ , W. Li ² , ¹ National Sun Yat-Sen Univ., ² Industrial Technology Research Institute	pp. 323-324
2TH3C-03	Four LTE Low-Band MIMO Antennas for the Smartphone	Y. Chen ¹ , K. Wong ¹ , W. Li ² , ¹ National Sun Yat-sen Univ., ² Industrial Technology Research Institute	pp. 325-326
2TH3C-04	A Compact High Gain Patch Antenna Array for IEEE 802.11ac MIMO Application	C. Cheng ¹ , H. Huxie ¹ , H. Su ² , ¹ MW Technology Group, ² National Pingtung Univ.	pp. 327-328
2TH3C-05	Evaluation of Performance of Space limited MIMO Antenna Using a Specialized MIMO System	X. Shi, M. Zhang, D. Liu, S. Xu, D. Qin, H. Wen, J. Wang, Huawei Technologies	pp. 329-330

2TH3D-01	Approaches of Power Combining at THz Bands	W. Dou, H. Meng, L. Wang, L. Zhang, L. Huang, Southeast Univ.	pp. 331-332
2TH3D-02	Study of Millimeter Wave Spatial Beam Synthesis Based on Quasi-optical Technology	L. Wang, W. Dou, H. Meng, Southeast Univ.	pp. 333-334
2TH3D-03	The Properties of Beams Transmitting Through the Convex Lens	H. Meng ¹ , L. Wang ¹ , T. Li ¹ , W. Dou ¹ , B. Xiang ² , Y. Yu ³ , ¹ Southeast Univ., ² Nanjing Electronic Equipment Institute, ³ Quanzhou Normal Univ.	pp. 335-336
2TH3D-04	Generation of Multiple Optical Needles Using Radiation Pattern from Sectional-Uniform Line Source Antenna	Y. Yu, J. Gao, J. Gao, J. Chen, Quanzhou Normal Univ.	pp. 337-338
2TH3D-05	Comparisons of Properties among Three Type Bessel Resonators at MM- and SubMM-Wavelengths	Y. Yu, L. Wu, Y. Xiao, H. Huang, Quanzhou Normal Univ.	pp. 339-340
2TH4A-01	Millimetre-wave Broadband Circularly Polarized Stacked Microstrip Antenna for Satellite Applications	Nasimuddin ¹ , X. Qing ¹ , Z. Chen ^{1,2} , ¹ Institute for Infocomm Research, ² National Univ. of Singapore	pp. 341-342
2TH4A-02	A Wideband Circularly Polarized Antenna for GNSS	D. Chang, H. Lee, Oriental Institute of Technology	pp. 343-344
2TH4A-03	Planar Broadband Annular-Ring Antenna with Circular Polarization for RFID System	J. Lu, S. Lin, P. Huang, National Kaohsiung Marine Univ.	pp. 345-346
2TH4A-04	A Wideband Microstrip Two-Finger Antenna for Applications of Multi-System Integration	K. Li, Y. Cheng, C. Wang, National Univ. of Tainan	pp. 347-348
2TH4A-05	A Small Low-Multipath GNSS Antenna Using Annular Slot Loaded Ground Plane	P. Yang, F. Yan, L. Zhou, M. Gao, F. Yang, Univ. of Electronic Science and Technology of China	pp. 349-350
2TH4B-01	Designs of Flat Reflectarray and Transmitarray Antennas Using the Fresnel Zone Principle	Y. Ge ^{1,2} , Y. Chen ² , Y. Liu ¹ , L. Chen ¹ , ¹ Huaqiao Univ., ² Southeast Univ.	pp. 351-352
2TH4B-02	Design of a Two-Dimension Monopulse Antenna at Sub-millimeter Wavelengths Based on Quasi-optical Technology	L. Zhang, W. Dou, Southeast Univ.	pp. 353-354
2TH4B-03	Broadband Fabry-Perot Cavity Leaky Wave Antenna with Parabolic-Shape Reflector	Z. Liu, Southeast Univ.	pp. 355-356
2TH4B-04	A Terahertz Polarization Rotator Based on Reflective Planar Groove Grating	Z. Wang, H. Wang, H. Meng, Southeast Univ.	pp. 357-358
2TH4C-01	Low-SAR Metasurface-Based Dipole and Its Beamforming Array	D. Han, C. Lee, M. Khattak, H. Park, S. Kahng, Incheon National Univ.	pp. 359-360
2TH4C-02	Study on the Scattering Property of Square Patch Gradient Index Metasurfaces	H. Hou, J. Wang, Beijing Jiaotong Univ.	pp. 361-362
2TH4C-03	Modeling of Anisotropic Binary Structures with Impedance Metasurfaces for RCS Reduction	A. Semenikhin, D. Semenikhina, Y. Yukhanov, Southern Federal Univ.	pp. 363-364
2TH4C-04	Miniaturized Broadband Metasurface Antenna Using Stepped Impedance Resonators	W. Liu ¹ , Z. Chen ^{1,2} , X. Qing ² , ¹ National Univ. of Singapore, ² Institute for Infocomm Research	pp. 365-366
2TH4C-05	An Ultralow-profile Lens Antenna Based on All-dielectric Metasurfaces	Z. Wang ^{1,3} , H. Wu ¹ , J. Chen ¹ , Z. Wu ¹ , Y. Feng ² , ¹ Nanjing Univ. of	pp. 367-368

		Posts and Telecommunications, ² Nanjing Univ., ³ State Key Laboratory of Millimeter Waves	
2TH4D-01	38 GHz Folded Reflectarray Antenna for Point-to-Point 5G Communications	Y. Shen, S. Hu, W. Dou, Southeast Univ.	pp. 369-370
2TH4D-02	Investigation of A Broadband Bi-directional Metamaterial Absorber	Z. Cao, S. Fu, T. Ji, Southeast Univ.	pp. 371-372
2TH4D-03	A Monopulse Slot Array Antenna Based on Dual-layer Substrate Integrated Waveguide (SIW)	T. Li, W. Dou, H. Meng, Southeast Univ.	pp. 373-374
2TH4D-04	Low-Cost Horn with Unique Radiation to Evaluate Probe-Fed Antenna Measurement Setup	S. Hu, Y. Shen, H. Meng, W. Dou, Southeast Univ.	pp. 375-376
2TH4D-05	Triple-band Power Divider Design Using M-shaped Inverters	Y. Liu, X. Miao, S. Zhu, S. Jiang, Nanjing Univ. of Aeronautics and Astronautics	pp. 377-378
3FR1A-01	Planar Dual-band Dipole Array for LTE Access Points	J. Lu, W. Chou, C. Lin, National Kaohsiung Marine Univ.	pp. 379-380
3FR1A-02	Planar Multi-Band LTE/WWAN Antenna for Internal Mobile Phone	J. Lu, J. Guo, Y. Zhang, National Kaohsiung Marine Univ.	pp. 381-382
3FR1A-03	Optimal Design of a Wideband Bandpass Filter Using Particle Swarm Optimization	M. Chen, W. Weng, National Chi Nan Univ.	pp. 383-384
3FR1A-04	Design and Analysis of a Tri-band Notched UWB Monopole Antenna	W. Liu, T. Jiang, Harbin Engineering Univ.	pp. 385-386
3FR1A-05	Design of Waveguide Bandpass Filter Using Cascade Inductive and Capacitive Irises	S. Akatimagool ¹ , N. Intarawiset ¹ , S. Inchan ² , ¹ King Mongkut's Univ. of Technology North Bangkok, ² Muban Chombueng Rajabhat Univ.	pp. 387-388
3FR1B-01	Mutual Coupling Reduction of Microstrip Antenna Array by Periodic Defected Ground Structures	K. Wei, J. Li, L. Wang, Z. Xing, R. Xu, Northwestern Polytechnical Univ.	pp. 389-390
3FR1B-02	An Approach for Fast Evaluation of Reflectarray Antenna Bandwidth	T. Chia ^{1,2} , T. Chio ^{1,2} , ¹ Temasek Laboratories, ² DSO National Laboratories	pp. 391-392
3FR1B-03	A Wideband Dual-Polarized Antenna Array for Multifunction Radar	Y. Yue, J. Zhou, Southeast Univ.	pp. 393-394
3FR1B-04	Design of 3D Cubic Antenna Arrays with Low Side Lobe Level During Beam-Scanning	J. Garza ¹ , M. Panduro ² , A. Reyna ¹ , Aldo Mendez ¹ , D. Covarrubias ² , ¹ Universidad Autónoma de Tamaulipas (UAT), ² CICESE Research Center	pp. 395-396
3FR1B-05	Synthesis of Planar Sparse Arrays with Multiple Patterns Using Perturbed Compressive Sampling Framework	F. Yan, P. Yang, F. Yang, M. Gao, L. Zhou, Univ. of Electronic Science and Technology of China	pp. 397-398
3FR1C-01	Tunable Loop Antenna Having a Ground-Strip for LTE Mobile Phone with Metallic Housing	S. Yeh, C. Tai, MediaTek Inc.	pp. 399-400
3FR1C-02	Simple Tunable Inverted-F Antenna for LTE/WWAN Mobile Handset Applications	C. Chang, C. Lee, H. Wang, Huawei Technologies	pp. 401-402
3FR1C-03	Dual-Wideband LTE/WWAN Antenna for Notebooks with Plastic-Clad Metal Cover	C. Lee ¹ , S. Su ¹ , Y. Hsiao ¹ , F. Chang ² , ¹ ASUSTek Computer Inc, ² Cheng Shiu Univ.	pp. 403-404

3FR1C-04	Multi-Antenna System Designed in Metal Frame with Metal Back Cover for LTE/GPS Application	P. Lin, ASUSTek Computer Inc.	pp. 405-406
3FR1D-01	Using Open Complementary Split-Ring Resonators for Blood Coagulation Detection	Y. Wang, C. Yang, National Cheng Kung Univ.	pp. 407-408
3FR1D-02	LTCC Based Patch Antenna for Biomedical Applications at ISM Band	A. Mohamed, M. Sharawi, King Fahd Univ. of Petroleum and Minerals	pp. 409-410
3FR1D-04	Butler Matrix Beamforming Network Based on Substrate Integrated Technology for 5G Mobile Devices	Q. Yang, Y. Ban, Q. Zhou, M. Li, Univ. of Electronic Science and Technology of China	pp. 413-414
3FR2A-01	A Wideband Slot antenna for Mobile Phone Applications	X. Xiao ¹ , W. Zong ¹ , S. Li ¹ , X. Wei ² , X. Qu ³ , ¹ Qingdao Univ., ² Goertek Inc., ³ China Aerospace Science and Technology Corporation	pp. 417-418
3FR2A-02	Cellular Antenna Design with Metallic Housing for Wearable Device	C. Hong, S. Yeh, MediaTek Inc.	pp. 419-420
3FR2A-03	A LTE Antenna Design with Metal-Bezel Structure for Mobile Phone Application	C. Hong, S. Huang, S. Yeh, MediaTek Inc.	pp. 421-422
3FR2A-04	Simple Open Slot Antenna for LTE/WWAN Smartphone with Metallic Frame	H. Yang ¹ , H. Chen ¹ , T. Huang ¹ , C. Kuo ² , ¹ National Kaohsiung Normal Univ., ² Telecom Technology Center	pp. 423-424
3FR2A-05	Common-Metal-Rim Dual-WiFi Antennas for Smartphone Applications	Q. Zhou, Z. Xu, Y. Ban, M. Li, Q. Yang, Univ. of Electronic Science and Technology of China	pp. 425-426
3FR2B-01	Frequency Reconfigurable Self-oscillating Active Integrated Antenna using Metamaterial Resonators	Z. Liu, Y. Chang, T. Ma, National Taiwan Univ. of Science and Technology	pp. 427-428
3FR2B-02	Moving Impedance Matching Analysis for Three-coil Wireless Power Transfer System in Mid-range	W. Wang, X. Huang, S. Pan, J. Guo, Southeast Univ.	pp. 429-430
3FR2B-03	A Low Mutual Coupling Antenna Array Using Alternating-Direction S-shaped Defected Ground Structures	T. Jiao, T. Jiang, Y. Li, Harbin Engineering Univ.	pp. 431-432
3FR2B-04	Time Reversal of Electromagnetic Signals with Time-Varying Transmission Lines	C. Sun ^{1,2} , J. Li ¹ , Z. Ji ¹ , B. Wang ¹ , ¹ Univ. of Electronic Science and Technology of China, ² Tianjin Univ. of Technology and Education	pp. 433-434
3FR2B-05	A Novel UWB Antenna with Good Characteristics for Microwave Imaging System	S. Hao, T. Jiang, Harbin Engineering Univ.	pp. 435-436
3FR2C-01	ACON'S Novel Antenna Technologies Development	F. Hsiao ¹ , W. Li ² , M. Huang ² , ¹ Advanced-Connectek Inc., ² Industrial Technology Research Institute	pp. 437-438
3FR2C-02	Novel Laser-Induced Integrated Thin-Film Antenna Technologies Applied to WWAN/LTE Compact Multi-Layer Mobile Phone Antenna Designs	W. Li ¹ , F. Hsiao ² , W. Chung ¹ , M. Huang ¹ , M. Chang ³ , T. Kao ¹ , M. Chou ¹ , ¹ Industrial Technology Research Institute, ² Advanced-Connectek Inc., ³ National Kaohsiung Univ. of Applied Sciences	pp. 439-440
3FR2C-03	Design of EMI/RFI Suppression on LCD Panel Flexible Printed Circuit Board for	S. Yang, J. Li, S. Guan, Y. Hung, Y. Huang, C. Tsai, Himax	pp. 441-442

	Smartphones	Technologies, Inc.	
3FR2C-04	Novel Laser Induced Metallization Technologies for Compact Antenna Designs in Mobile Phones	M. Chou¹, T. Kao¹, M. Huang¹, W. Li¹, F. Hsiao², W. Zhang¹, W. Chung¹, ¹Industrial Technology Research Institute, ²Advanced-Connectek Inc.	pp. 443-444
3FR2C-05	Houchi's R&D in LITA Colloid and Selection of Dispersing Agent	C. Chan¹, T. Kao², M. Chou², L. Liu¹, ¹Houchi Chemical Co., ²Industrial Technology Research Institute	pp. 445-446
3FR2D-01	Planar Circular Tag Antenna with Broadband Operation for UHF RFID System	J. Lu, G. Zheng, C. Cheng, National Kaohsiung Marine Univ.	pp. 447-448
3FR2D-02	Broadband Circular Tag Antenna Attachable on the Metallic Objects	J. Lu, K. Hung, H. Tian, National Kaohsiung Marine Univ.	pp. 449-450
3FR2D-03	Circularly Polarized UHF RFID Tag Antenna with Capacitive Loading Technique	C. Yeh, P. Ho, C. Lin, C. Sim, Feng Chia Univ.	pp. 451-452
3FR2D-04	Dual-band RFID Antenna for Near Field of 0.93 GHz and Far Field of 2.45GHz	Z. Xing, K. Wei, L. Wang, J. Li, Northwestern Polytechnical Univ.	pp. 453-454
3FR2D-05	Low-cost High-directivity RFID Tag Antennas Utilizing Dipole beyond One Wavelength	J. Xi, Hong Kong R&D Centre for Logistics and Supply Chain Management Enabling Technologies	pp. 455-456