

■ ANTENNAS

Andujar, Aurora, Jose L. Leiva, Jaume Anguera, Cor Schepens and Robert Gaddi
"Chip Antenna-Antenna Tuner Combo Cover LTE Bands," No. 1, p. 70.

Chen, Qiang, Hou Zhang, Xue-liang Min and Lu-Chun Yang
"Compact CPW-Fed Dual-Band Linearly and Circularly Polarized Monopole Antenna for WiMAX and WLAN," No. 5, p. 68.

Siwiak, Kazimierz and Ulrich L. Rohde
"Tuning Electrically Short Antennas for Field Operation," No. 5, p. 104.

Wang, Taili, Xi Wang, Rongwei Wang, Rensheng Xie, Dong Chen and Shouzheng Zhu
"Gain-Enhanced Antenna with Metamaterial Structure and Pin Array Reflector for WiMAX and WLAN Applications," No. 8, p. 134.

■ CAD/CAM

Patel, Hetvi, Kevin Kellogg, Hugo Morales, Larry Dunleavy, Rob Jones and Paul Head
"Nonlinear Modeling of a High Peak Power PIN Limiter," No. 1, p. 60.

■ COMPONENTS/SUBSYSTEMS

Barnett, Daniel and Hans-Ulrich Nickel
"1.35 mm Precision Coaxial Connector Enables High Performance E-Band Cable Assemblies," No. 10, p. 76.

Bay-Ramyon, Richard
"Design and Production Challenges of Wire-Wrapped Ferrite RF Passives for Broadband Applications," No. 5, p. 128.

Burke, Ian and Purna Subedi
"Compact, Low Loss Switched Filter Bank Using MEMS Switches," No. 11, p. 54.

Daryoush, Afshin S., Tianchi Sun, Nicholas Bromhead, Ajay K. Poddar and Ulrich L. Rohde
"Computer-Controlled K-Band Frequency Synthesizer Using Self-Injection Locked Phase-Locked Optoelectronic Oscillator: Part 1," No. 8, p. 90.

Daryoush, Afshin S., Tianchi Sun, Nicholas Bromhead, Ajay K. Poddar and Ulrich L. Rohde
"Computer-Controlled K-Band Frequency Synthesizer Using Self-Injection Locked Phase-Locked Optoelectronic Oscillator: Part 2," No. 9, p. 52.

Delos, Peter, Mike Jones and Mark Robertson
"RF Transceivers Enable Forced Spurious Decorrelation In Digital Beamforming Arrays," No. 4, p. 80.

Linstrom, Bill, Ron Parrott and Allen Sweet
"The Phase Noise Challenge Pacing the Race to 5G," No. 11, p. 82.

Matthews, Peter
"Approaching the 5G mmWave Filter Challenge," No. 5, p. 56.

Pino, Paul
"Reducing EMI/RFI in Microwave Cable Assemblies for A&D Systems," No. 11, p. 122.

Schindler, Fred, John Nielsen, Dennis Rosenauer and Tom Raschko
"A New Generation of Integratable Frequency Agile Bandpass Filters," No. 5, p. 86.

Tumbaga, Charles
"A Traceable K Connector for 43.5 GHz Measurements," No. 8, p. 120.

Yuri, Ivanov, Nikonov Arkady and Knyazeva Elvira
"Measuring Quartz Crystal Oscillator G-Sensitivity," No. 4, p. 90.

■ COVER FEATURES

Bencivenni, Carlo, Thomas Emanuelsson and Magnus Gustafsson
"Gapwaves Platform Integrates 5G mmWave Arrays," No. 2, p. 22.

Brunel, Valeria, Eric Leclerc and David Vye
"5G Power Amplifier Design and Modeling for mmWave GaN Devices," No. 7, p. 22.

Didier, Christophe, Eric Butaud and Sylvain Ballandras
"Piezo-On-Insulator Engineered Substrates for 4G/5G RF Front-End Filters," No. 10, p. 22.

Duncan, Helen
"Du Pain, Du Vin, Du Fromage, Des Microondes: EuMW En Route to the French Capital," No. 8, p. 22.

Ghosh, Amitava, Rapeepat Ratasuk and Anil M. Rao
"Industrial IoT Networks Powered by 5G New Radio," No. 12, p. 24.

Hindle, Patrick
"Test & Measurement Industry Tackles 5G Over-The-Air Testing," No. 3, p. 20.

Hindle, Patrick
"Extremely High-Power GaN Devices," No. 9, p. 20.

Integra Technologies
"Pioneering High Voltage GaN to Replace Vacuum Electron Devices," No. 9, p. 20

Huncharenko, Walter
"Sub-6 GHz mMIMO Base Stations Meet 5G's Size and Weight Challenges," No. 2, p. 40.

La Marche, Mario
"GaN SSPA Technology for Space-Based Applications," No. 4, p. 20.

Madden, Joe
"mmWave Will Be the Critical 5G Link," No. 5, p. 24.

Marsh, Philbert F., Christopher Rutherglen, Alexander A. Kane, Tyler A. Cain, Kosmas Galatsis, Stephen A. Maas and Mohammed R. AlShareef
"Solving the Linearity and Power Conundrum: Carbon Nanotube RF Amplifiers," No. 6, p. 22.

Mizerak, Jordan
"New Thermal Interface for High-Power Density GaN Devices in Space," No. 11, p. 22.

Qorvo
"160 W GaN PA Conquers the Thermal Challenges of SMT Packaging," No. 9, p. 24.

Shamblin, Jeff
"Client Software-Defined Antennas Improve Link Margins, Reduce Interference," No. 1, p. 22.

■ DESIGN

Cheng, Zhiqun, Lei Xu, Guohua Liu, Han Feng and Steven Gao
"Design of a Broadband, Harmonically-Tuned Power Amplifier with Gate-Source Parasitic Compensation," No. 11, p. 96.

Das, Tim
"Designing Wide Instantaneous Bandwidth Doherty PAs for Cellular," No. 5, p. 168.

Langdon, Scott
"Using CDF to Assess 5G Antenna Directionality," No. 8, p. 126.

Liu, Gang, Fuqi Mu, Yongqing Leng, Yang Li and Xinli Cui
"Broadband Power Amplifier Design Using Extended Resistive-Reactive Continuous Class F Modes," No. 6, p. 60.

Vye, David, John Dunn, Dan Swanson, Jim Assurian, Ray Hashemi and Philip Jobson
"Designing a Narrowband 28 GHz Bandpass Filter for 5G Applications," No. 4, p. 48.

Zhan, Lamin, Yang Pei, Zuwei Li and Wenguang Li
"Dual-Band Resistive Third Harmonic Continuous Inverse Class F Mode Power Amplifier," No. 8, p. 144.

■ DEVICES

Lloyd, Gareth
"Optimizing the Perennial Doherty Power Amplifier," No. 3, p. 56.

Porterfield, Jr., David W.
"Recent Advancements in mmWave Isolator Technology," No. 3, p. 72.

Remillard, Grace, Charles Trantanella and Michael Megan
"Removing MMIC Outliers in Production Test Using Real-Time Principal Component Analysis," No. 11, p. 66.

Stacker, Marc
"High Speed Data Converters Enable Flexible RF Sampling Architectures," No. 3, p. 86.

Thomas, Ben
"Global 5G Rush But No Global 5G Handsets," No. 2, p. 98.

Zhang, Jincan, Min Liu, Jinchang Wang, Liwen Zhang and Bo Liu
"Modeling of InP HBTs with an Improved Keysight HBT Model," No. 7, p. 56.

■ GUEST EDITORIALS

Getto, Luke
"The Challenges of 5G Network Densification," No. 5, p. 136.

Hindle, Patrick
"The First Year of 5G," No. 12, p. 20.

■ INSTRUMENTS/MEASUREMENTS

Buber, Tekamul, Pragti Narang, Giampiero Esposito, Sathya Padmanabhan and Markus Zeier
"Characterizing Uncertainty in S-Parameter Measurements," No. 10, p. 88.

Garcia-Fernandez, Miguel A. and David A. Sanchez-Hernandez
"Challenges for Effective and Realistic 5G OTA Testing," No. 2, p. 70.

Hamze, Kassem, Edouard De Ledinghen, Daniel Pasquet and Philippe Decamps
"Analytical Calculations for TRL Calibration," No. 3, p. 96.

Liu, Wei
"Wideband, High-Resolution Phase-Amplitude Control Test System for 5G," No. 12, p. 60.

Martens, Jon, Tom Roberts, Andrej Rumiantzev and KooHo Jung
"Design of an Integrated VNA Covering 70 kHz to 220 GHz," No. 10, p. 64.

Mikhailov, Yassen
"DRFM Jammer Test Solutions," No. 11, p. 110.

Strickler, Walt
"Using RF Power Meters for PAPR Analysis and Reduction," No. 1, p. 80.

■ mmWAVE

Ahmed, Sherif and Andreas Schiessl
"mmWave Technology Enables Faster, Safer, Privacy-Conscious Travel," No. 9, p. 10.

Coonrod, John
"Characterizing Circuit Materials at mmWave Frequencies," No. 5, p. 152.

Kappes, Mike
"All-Digital Antennas for mmWave Systems," No. 6, p. 84.

■ PRODUCT FEATURES

Akash Systems Inc.
"GaN on Diamond PAs for CubeSat Radios," No. 4, p. 112.

Albrecht Telecommunications GmbH
"Customizable 2 kW Broadband Jammer Covers HF to Microwave," No. 11, p. 133.

AMCAD Engineering
"IQSTAR Simplifies Test Setup and Data Analysis," No. 7, p. 82.

Analog Devices Inc.
"Bits to Beams: Chipset for 5G mmWave Radio," No. 8, p. 158.

Analog Devices Inc.
"22 to 44 GHz Up- & Down-Converters Boost Radio Performance, Reduce Size," No. 9, p. 104.

Analog Devices Inc.
"RF Front-End Family Enables Compact 5G Massive MIMO Network Radios," No. 10, p. 120.

AnaPico Ltd. and BNC
"Ultra-Low Phase Noise, Multi-Channel Source with Phase Coherent Switching," No. 9, p. 50.

Ancortek Inc.
"K-Band SDR Kit Supports Digital Beamforming and MIMO," No. 7, p. 90.

Anritsu
"High Performance Spectrum Analyzer for 5G OTA Testing," No. 3, p. 104

- Comtech PST**
"100 W, 6 to 18 GHz GaN PA," No. 3, p. 110.
- Comtech PST**
"8kW X-Band PA Powered by GaN," No. 6, p. 52.
- Copper Mountain Technologies and Compass Technology Group**
"Epsilon Meter Measures Dielectric Properties to 6 GHz," No. 4, p. 112.
- Custom MMIC**
"DC to 67 GHz GaAs MMIC Simplifies Broadband Designs," No. 9, p. 44.
- Daico Industries Inc.**
"30 kW Solid-State HPA for P-Band Radar," No. 11, p. 131.
- Dassault Systemes SIMULIA**
"Simulation for Tomorrow's Industrial Design Flows," No. 1, p. 94.
- Delta Electronics MFG. Corp.**
"Microwave and mmWave Interconnects," No. 3, p. 36.
- Empower RF Systems Inc.**
"High-Power Emitters for Open Air Range Threat Simulation," No. 11, p. 132.
- Exceed Microwave**
"4.2 to 5 GHz Isolator with < 0.1 dB Insertion Loss," No. 1, p. 106.
- Exodus Advanced Communications**
"3 to 10 W Solid-State Power Amplifiers for K- and Ka-Band," No. 2, p. 114.
- Fairview Microwave**
"Hi-Rel Limiters Protect Sensitive RF Receivers," No. 12, p. 96.
- Guzik Technical Enterprises**
"100 kHz to 18 GHz Programmable Integer Frequency Divider," No. 8, p. 164.
- Holzworth Instrumentation**
"10 MHz to 40 GHz Phase Noise Analyzer," No. 11, p. 130.
- HUBER + SUHNER AG**
"Rotary Swaging Combines Low Loss with High Flexibility," No. 8, p. 156.
- HYPERLABS Inc.**
"1 MHz to 18 GHz SMT Balun with Tight Matching," No. 8, p. 164.
- In-Phase Technologies**
"Pre-Configured Core Test Sets," No. 9, p. 58.
- Junkosha**
"70 GHz Cabling Solutions for 5G and Beyond," No. 3, p. 34.
- Junkosha USA Inc.**
"67 GHz Cabling Interconnect Solution," No. 10, p. 124.
- KRYTAR Inc.**
"10 dB Directional Coupler Covers 10 to 110 GHz," No. 6, p. 108.
- LPKF Laser & Electronics AG**
"Fabricate PCBs at Your Desk," No. 6, p. 104.
- M Wave Design**
"Low Loss Circulators for UHF, L-, S-, C- and X-Band AESAs," No. 6, p. 55.
- Marki Microwave**
"High Linearity mmWave Mixer and LO Driver for EW Receivers," No. 7, p. 88.
- Maury Microwave**
"A Paradigm Shift in VNA Calibration and Validation Enables Better Decisions," No. 9, p. 92.
- Maury Microwave and Vertigo Technologies**
"mmWave and THz Gain Compression and Active Load-Pull," No. 12, p. 86.
- MCV Microwave**
"27 to 67 GHz Interconnect Solutions," No. 5, p. 194.
- Mercury Systems**
"Modular, Open Architecture Transceivers Enable Next-Generation EW Systems," No. 5, p. 186.
- MilesTek**
"RoHS and REACH Compliant MIL-STD-1553B Bus Couplers," No. 6, p. 52.
- Narda Safety Test Solutions**
"Automatic Direction-Finding Antenna," No. 3, p. 110.
- Narda Safety Test Solutions**
"Real-Time Remote Analyzer Based on SignalShark," No. 4, p. 106.
- Networks International Corp.**
"Custom Thin Film Filters and Switched Filter Banks," No. 10, p. 126.
- Norsat International**
"1.8 m Commercial Drive-Away Antenna," No. 2, p. 114.
- OML Inc.**
"Economic Spectrum Analysis for 5G mmWave," No. 6, p. 100.
- Pasternack**
"40 GHz RF Probes for RF and Signal Integrity Testing," No. 1, p. 104.
- Pasternack**
"Waveguide Antenna Family Covers 40 to 220 GHz," No. 9, p. 110.
- Pentek**
"RFSoC SoM for SWaP Critical Environments," No. 1, p. 108.
- Quarterwave**
"6 to 18 GHz, 100 W TWT PA," No. 5, p. 192.
- Remcom, Inc.**
"Improved EM Simulation of 5G mmWave Arrays," No. 3, p. 112.
- Remcom Inc.**
"Time Domain Simulation of Electrostatic Discharge Testing," No. 7, p. 74.
- Remcom Inc.**
"Ray-Tracing EM Simulation Speeds Auto Radar Design," No. 9, p. 112.
- RFHIC Corp.**
"5 kW GaN Transmitter for C-Band Radar," No. 2, p. 104.
- RFHIC Corp.**
"50% Smaller GaN PAs for 5G mMIMO and Small Cells," No. 4, p. 110.
- RF Savvy**
"Antenna Coupler for Smart City Street Lights: 5G NB IoT Ready," No. 10, p. 116.
- Rogers Corp.**
"Laminate Materials Simultaneously Increase μ and ϵ Reducing Antenna Size," No. 4, p. 102.
- Rohde & Schwarz**
"New Vector Network Analyzer Masters Complex Measurements," No. 5, p. 180.
- Rohde & Schwarz**
"Easy Measurement of Radar Pulse Stability," No. 8, p. 154.
- Rohde & Schwarz**
"One Box Test Solution for 5G," No. 12, p. 92.
- SAGE Millimeter**
"Innovative Waveguide Connector Simplifies mmWave Packages," No. 11, p. 126.
- Signal Hound**
"Low-Cost 6 GHz Vector Signal Generator," No. 9, p. 54.
- Skyworks Solutions Inc.**
"LAA/Wi-Fi Front-End Modules for Smartphones," No. 2, p. 108.
- Skyworks Solutions, Inc.**
"High-Reliability Amplifiers for Aerospace and Defense," No. 9, p. 56.
- Southwest Microwave**
"Board-Mounted 1 mm Vertical Launch Connector," No. 3, p. 38.
- Spectrum Instrumentation GmbH**
"Digitizers with Ultra-Long Signal Averaging," No. 4, p. 110.
- Spectrum Instrumentation GmbH**
"AWGs Crunch Size, Deliver Performance," No. 6, p. 96.
- Spectrum Instrumentation GmbH**
"125 MSPS AWGs for Cost-Effective Multichannel Signal Generation," No. 10, p. 126.
- Syrlinks**
"OCXOs Reduce Power Consumption, Maintain Stability," No. 1, p. 100.
- Tektronix**
"Arbitrary Waveform Generator Accurately Simulates Fast-Changing Real-World Signals," No. 6, p. 48.
- Telegartner Karl Gartner GmbH**
"New Coax Connector: Excellent Performance for Confined Spaces," No. 9, p. 98.
- URAD**
"24 GHz Radar Works with Arduino and Raspberry Pi," No. 2, p. 116.
- Virginia Diodes**
"Full Band Waveguide Power Amplifiers," No. 8, p. 166.
- **SPECIAL REPORTS**
- Buritica, Alejandro**
"From Waveforms to MIMO: 5 Things for 5G New Radio," No. 5, p. 142.
- Madarasz, Tamas**
"Microwave Will Drive the Development of 5G," No. 7, p. 64.
- Sivers IMA**
"Adopting the 64 to 71 GHz Band for Fixed Wireless Applications," No. 6, p. 72.
- **SUPPLEMENT FEATURES**
- Andres, Mark and Heatherly Bucher**
"Product Development for the Defense Market—Do Not Forget ITAR and EAR," No. 9, p. 12.
- Anita, Yezdi, Sam Morrar and Dave Roos**
"JUPITER High Throughput Satellite System—500 Gbps from Space," No. 10, p. 106.
- Birch, Dan**
"Understanding Skew and Delay-Matched Coaxial Cables," No. 3, p. 14.
- Galla, Tim**
"Selecting Phase-Locked Oscillators for Frequency Synthesizers," No. 9, p. 28.
- Joshi, Varun**
"Thermal Power Handling and Testing of RF PCBs for Deep Space Communication," No. 6, p. 36.
- LaMarche, Mario**
"Agile IF Architectures Enable Flexible EW and ELINT Systems," No. 9, p. 6.
- Marin, Marko and Yuriy Shlepnev**
"40 GHz PCB Interconnect Validation: Expectations vs. Reality," No. 3, p. 20.
- Nano Dimension**
"Using Additive Manufacturing for Aerospace and Defense Applications," No. 9, p. 36.
- Pasternack**
"Mil-Spec Coax Cable Assemblies: The Shift from Custom Proprietary to COTS," No. 6, p. 20.
- Quarterwave**
"TWTAs Still Dominate High-Power and mmWave Applications," No. 9, p. 20.
- Smith, Robert, Liam Devlin, Kim Tran and Richard Martin**
"An Adaptable GaN Power Amplifier for S-Band Radar," No. 6, p. 6.
- Tumbaga, Charles**
"0.8 mm Connectors Enable D-Band Coaxial Measurements," No. 3, p. 6.
- **SYSTEMS**
- Giannini, Vito, Manju Hegde and Curtis Davis**
"Digital Code Modulation MIMO Radar Improves Automotive Safety," No. 8, p. 106.
- Muro, Thomas**
"Using a COTS SDR as a 5G Development Platform," No. 2, p. 82.
- O'Hara, Kenneth M. and Gregory J. Skidmore**
"Providing Narrowband IoT Coverage with Low Earth Orbit Satellites," No. 12, p. 74.
- Rodriguez-Morales, C. Carabajal, A. Paden, C. Leuschen, J. McDaniel, A. Wolf and S. Garrison**
"Prototyping an UWB Airborne Radar for Snow Probing Using Modular Building Blocks," No. 9, p. 78.
- Sikri, Divaydeep and Rajanik Mark Jayasuriya**
"Multi-Beam Phased Array with Full Digital Beamforming for SATCOM and 5G," No. 4, p. 64.

Tanis, Sefa

"Automotive Radar and Congested Spectrum: Potential Urban Electronic Battlefield," No. 1, p. 48.

Vaesen, K., A. Visweswaran, S. Sinha, A. Bourdoux, B. van Liempd and Piet Wambacq

"Integrated 140 GHz FMCW Radar for Vital Sign Monitoring and Gesture Recognition," No. 6, p. 50.

■ **TUTORIAL SERIES**

Yu, William and Urvashi Sengal

"Demystifying RF Transformers: A Primer on the Theory, Technologies and Applications," No. 10, p. 52.