# **AMTA 2016 Proceedings**

Austin, Texas, USA 30 October – 3 November 2016



**IEEE Catalog Number: CFP16J49-POD ISBN**:

978-1-5090-5179-3

## Copyright © 2016, The Authors 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: CFP16J49-POD ISBN (Print-On-Demand): 978-1-5090-5179-3

#### **COPYRIGHT NOTICE:**

All technical papers are published, copied and distributed by AMTA with the express written permission of the primary author. The primary author has assumed responsibility to obtain any required clearances from other interested parties for AMTA to publish, copy and distribute the paper. However, please note that a paper may be protected by copyright and that copyright ownership has not been transferred to AMTA for any of the papers. You must contact the primary author for further information or permission to reprint a particular paper.

#### **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



### **Table of Contents**

#### **Session 1: General Antenna Measurement 1**

Chair: Jeffrey Bean (Georgia Tech Research Institute)

A16-0020: "Phase Error Characterization of a Space-Fed Array", Brian Holman, Jacob Houck, Philip Brady (Georgia Tech Research Institute).....N/A

A16-0049: "Efficient Diagnosis of Radiotelescopes Misalignments", Amedeo Capozzoli<sup>1</sup>, Angelo Liseno<sup>1</sup>, Claudio Curcio<sup>1</sup>, Salvatore Savarese<sup>1</sup>, Pietro Schipani<sup>2</sup> (<sup>1</sup>Dipartimento di Ingegneria Elettrica e Tecnologie dell'Informazione (DIETI), <sup>2</sup>INAF - Istituto Nazionale di Astrofisica).....1

A16-0118: "Precise Determination of Phase Centers and Its Application to Gain Measurement of Spacecraft-borne Antennas in an Anechoic Chamber", Yuzo Tamaki<sup>12</sup>, Takehiko Kobayashi<sup>1</sup>, Atsushi Tomiki<sup>2</sup>, (¹Tokyo Denki University, ²Japan Aerospace Exploration Agency).....N/A

#### Session 2: Extreme AMTA: Unique Challenges and Unique Solutions

Chair: Luca Salghetti Drioli (European Space Agency)

A16-0076: "Minimum Scattering Probe for High Accuracy Planar NF Measurements", Andrea Giacomini, Lars Foged, Roberto Morbidini, Luca Tancioni, John Estrada, Jim Acree (Microwave Vision Group).....N/A

A16-0021: "An Overview of Atom-Based SI-traceable Electric-Field Metrology", Joshua Gordon, Christopher Holloway, Matthew Simons (National Institute of Standards and Technology (NIST)).....N/A

A16-0042: "Meteosat Third Generation (MTG) DCS and GEOSAR Antenna Testing at ESA/ESTEC", Luis Rolo<sup>1</sup>, Luca Salghetti Drioli<sup>1</sup>, Damiano Trenta<sup>1</sup>, Eric van der Houwen<sup>1</sup>, Paolo Noschese<sup>2</sup>, Enrico D'Agostino<sup>2</sup>, Roberto Flamini<sup>2</sup>, Marcello Zolesi<sup>2</sup>, (<sup>1</sup>ESA-ESTEC, <sup>2</sup>Thales Alenia Space - Italy).....N/A

A16-0115: "Characterization of Dual-Band Circularly Polarized Active Electronically Scanned Arrays (AESA) Using Electro-Optic Field Probes", Kazem Sabet, Richard Darragh, Ali Sabet, Sean Hatch (EMAG Technologies Inc.).....N/A

#### **Session 3: Compact Range Measurement**

Chair: Ed Urbanik (BerrieHill Research Corporation)

A16-0018: "Investigation into Antenna Measurement Quality from a Large Compact Range Operating at Q-Band", James Stewart<sup>1</sup>, Brittany Wells<sup>1</sup>, George Kakas<sup>1</sup>, John Borger<sup>1</sup>, Sarah Terry<sup>2</sup>, Jarod Petry<sup>3</sup> (<sup>1</sup>Air Force Research Laboratory, <sup>2</sup>Riverside Research Institute, <sup>3</sup>Defense Engineering Corporation).....6

A16-0068: "Transfer Function Characterization for a Dual Reflector, Indoor Compact Range", Thomas Cowles, Lonny Walker (Raytheon Space and Airborne Systems).....N/A

A16-0074: "Correcting Polarization Distortion in a Compact Range Feed", Brett Walkenhorst, David Tammen (NSI-MI Technologies).....12

A16-0086: "Inverse Scattering and Imaging of Compensated Compact Ranges by Plane Wave Analysis", Engin Gülten<sup>1</sup>, Josef Migl<sup>1</sup>, Thomas Eibert<sup>2</sup> (<sup>1</sup>Airbus DS GmbH, <sup>2</sup>Technical University of Munich).....18

A16-0098: "A Very Large Measurement System of Compact Range", Zhi Ping Li<sup>1</sup>, Jian Hua Wu<sup>1</sup>, Zheng Peng Wang<sup>1</sup>, Hai Bo Chen<sup>2</sup>, Guo Yu He<sup>2</sup> (<sup>1</sup>BeiHang University, <sup>2</sup>Guoyu Microwave Technology Co., Ltd).....N/A

#### **Session 4: RCS Measurement**

Chair: Christer Larsson (Saab Dynamics and Lund University)

A16-0045: "BIANCHA: A Spherical Indoor Facility for Bistatic Electromagnetic Tests", Patricia López-Rodríguez, Olga Hernán-Vega, David Poyatos-Martínez, David Escot-Bocanegra (Spanish National Institute for Aerospace Technology (INTA)).....24

A16-0046: "Efficient Full-Wave Algorithms for Monostatic RCS of Electrically Large Structures", Oscar Borries, Erik Jørgensen, Peter Meincke (TICRA).....N/A

A16-0089: "Near to Far Field Transformation of RCS Using a Compressive Sensing Method", Christer Larsson (Lund University and Saab Dynamics).....30

A16-0120: "Utilization of an Octocopter as a Two-Way Field Probe for Electro-Magnetic Field Measurements at an Outdoor Radar Cross Section Range", Andrew J. Knisely, Peter J. Collins (Air Force Institute of Technology).....36

A16-0121: "A New Bi-static RCS measurement Technique for Compact Antenna Test Ranges", Rakesh Kumar Singh<sup>12</sup>, N.V.S.N. Sarma<sup>2</sup>, DR Jahagirdar<sup>1</sup> (<sup>1</sup>Research Centre Imarat, Defence Research & Development Organisation, Hyderabad <sup>2</sup>National Institute of Technology, Warangal).....N/A

#### **Session 5: Novel Antenna Design**

Chair: Lars Foged (Microwave Vision Group)

A16-0032: "Comparative Analysis of Dual Band Elevated Antenna on a Silicon Base", SSS Kalyan, Sarat K. Kotamraju, K. Ch. Sri Kavya (KL University).....42

A16-0088: "A Novel Customized Spline-Profiled mm-Wave Horn Antenna for Emerging High Performance CubeSats", Vignesh Manohar, Joshua Kovitz, Yahya Rahmat-Samii (University of California, Los Angeles).....N/A

A16-0063: "A Reconfigurable Antenna Construction Toolkit with Modular Slotted Waveguide Elements for Arbitrary Pattern Designs", R. Geise<sup>1</sup>, G. Zimmer<sup>1</sup>, B. Neubauer<sup>1</sup>, E. Gülten<sup>2</sup>, A. Geise<sup>2</sup> (<sup>1</sup>University of Braunschweig, <sup>2</sup>Airbus DS GmbH).....46

A16-0128: "Measurement Uncertainties in Millimeter Wave "On-Chip" Antenna Measurements", Edward Szpindor, Wenji Zhang, Per Iversen (MVG-Orbit/FR).....N/A

A16-0097: **"60 GHz Reference Chip Antenna for Gain Verification of Test Chambers"**, William McKinzie<sup>1</sup>, Per Iverson<sup>2</sup>, Edward Szpindor<sup>2</sup>, Michael Smith<sup>3</sup>, Bradley Thrasher<sup>3</sup> (<sup>1</sup>WEMTEC, Inc., <sup>2</sup>Orbit/FR, <sup>3</sup>DuPont Microcircuit Materials).....52

#### Session 6: Range Design and Quiet Zone

Chair: Chi-Chih Chen (The Ohio State University)

A16-0094: "Improving Test Efficiency on a Limited Budget – A Measurement Timing Case Study", Steven Nichols, Rick Burge, Steve Stafford (NSI-MI Technologies).....57

A16-0034: "Improved Clutter Removal for Measuring Wall Reflectivity Using the RCS Technique", Marc Dirix <sup>1</sup>, Amin Enayati<sup>2</sup>, Joachim van Wesemael<sup>2</sup>, Pawel Bajurko<sup>3</sup> (<sup>1</sup>Marc Dirix / RF, <sup>2</sup>Emerson & Cuming Anechoic Chambers, <sup>3</sup>Warsaw University of Technology).....63

A16-0061: "Limitations of the Free Space VSWR Measurements for Chamber Validations", Zhong Chen<sup>1</sup>, Zubiao Xiong<sup>2</sup>, Amin Enayati<sup>3</sup> (<sup>1</sup>ETS-Lindgren, Inc., <sup>2</sup>University of Houston, <sup>3</sup>Emerson & Cuming Anechoic Chambers).....68

A16-0075: "Enabling Extremely High Dynamic Range Measurements using a Simple Correlator", Brett Walkenhorst (NSI-MI Technologies).....73

A16-0090: "A Polynomial Approximation for the Prediction of Reflected Energy from Pyramidal RF Absorbers", Vince Rodriguez, Edwin Barry (NSI-MI Technologies).....79

#### **Session 7: Spherical Near-Field Measurement**

Chair: Sergiy Pivnenko (Antenna Systems Solutions)

A16-0024: "Spherical Field Transformation for Hemispherical Antenna Measurements above Perfectly Conducting Ground Planes", Raimund Mauermayer, Thomas Eibert (Technical University of Munich).....85

A16-0041: "Nonredundant NF-FF Transformation with Spherical Scan Accounting for an Offset Mounting of a Long AUT", Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, Massimo Migliozzi (University of Salerno).....89

A16-0043: "Insights Into Spherical Near Field Probe Correction Gained From Examining the Probe Response Constants", Jason Jerauld (Raytheon Company).....N/A

A16-0070: "Echo Reduction with Minimum Sampling in Spherical Near Field Measurements using Translated-SWE Algorithm", Francesco Saccardi<sup>1</sup>, Lars Foged<sup>1</sup>, Francesca Mioc<sup>1</sup>, Per Iversen<sup>2</sup> (<sup>1</sup>Microwave Vision Italy, <sup>2</sup>Orbit/FR).....N/A

A16-0085: "Spherical Near-Field Alignment Sensitivity for Polar and Equatorial Antenna Measurements", Patrick Pelland, Greg Hindman, Daniël Janse van Rensburg (NSI-MI Technologies) .....95

#### **Session 8: Poster Session I**

Chair: Brian Fischer, Co-Chairs: Teh-Hong Lee, Ivan LaHaie (Integrity Applications Inc., The Ohio State University, Integrity Applications Inc.)

A16-0013: "Determination of the Far Field Radiation Pattern of an Antenna from a Set of Sparse Near Field Measurements", Scott Kordella<sup>1</sup>, Kenneth Grimm<sup>2</sup> (<sup>1</sup>MITRE, <sup>2</sup>Consultant Gainesville, Virginia, USA).....101

A16-0022: "Dual Band Dually Polarized Minkowski Fractal Boundary Patch Antenna Based on Epsilon-Negative Transmission Line", Suman Nelaturi, N.V.S.N. Sarma (National Institute of Technology, Warangal).....N/A

A16-0028: "Far Field Uncertainty Due to Noise and Receiver Nonlinearity in Planar-Near Field Measurements", Serge Balma<sup>12</sup>, Dominique Picard<sup>1</sup>, Pascal Meisse<sup>2</sup> (<sup>1</sup>Université Paris-Sud, Université Pierre et Marie Curie, <sup>2</sup>Intespace).....107

A16-0040: "Nonredundant NF-FF Transformation with Bi-Polar Scanning: Experimental Testing", Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero, Massimo Migliozzi (University of Salerno).....113

A16-0054: "A 6-40 GHz Antenna System for CubeSat Radiometer", Jiu-Kun Che, Chi-Chih Chen (The Ohio State University).....119

A16-0084: "Millimeter-wave Antenna Measurements Using a Novel Approach", Tom Newman, Joe Chandler (Millitech, Inc.).....123

A16-0108: "Dependence of Antenna Cross-polarization Performance on Waveguide-to-Coaxial Adapter Design", Vince Rodriguez, Edwin Barry, Steven Nichols (NSI-MI Technologies).....126

A16-0016: "Practical Considerations for Coordinate System Rotations in Mode-Space", Ryan Cutshall, Jason Jerauld, Justin Dobbins (Raytheon Company).....131

A16-0051: "Measurements and Numerical Simulations to Enhance the Assessment of Antenna Coupling", Lars Foged, Lucia Scialacqua, Andrea Giacomini, Francesco Saccardi, Francesca Mioc (Microwave Vision Italy).....N/A

A16-0071: "Probe Correction Technique of Arbitrary Order for High Accuracy Spherical Near Field Antenna Measurements", Francesco Saccardi, Andrea Giacomini, Lars Foged (Microwave Vision Italy).....N/A

#### **Session 9: Measurements for Automotive Applications**

Chair: Zhong Chen (ETS – Lindgren, Inc.)

A16-0027: "A Radar Echo Emulator for the Evaluation of Automotive Radar Sensors", Domenic Belgiovane, Chi-Chih Chen, J. Landon Garry (The Ohio State University).....138

A16-0119: "Automotive Antenna Evaluation", Garth D'Abreu (ETS-Lindgren, Inc.).....144

A16-0023: "The Measurement of Horizontal Magnetic Dipole Moment at a Conducting Ground Plane Using a Modified Van Veen Loop", James McLean, Robert Sutton (TDK R&D Corp.).....N/A

#### **Session 10: Measurements for Wireless Applications**

Chair: Christian Bornkessel (Technical University of Ilmenau)

A16-0106: "Advances in MIMO Over-the-Air Testing Techniques for Massive MIMO and other 5G Requirements", Michael Foegelle (ETS-Lindgren, Inc.).....150

A16-0107: "Advances in Over-the-Air Performance Testing Methods for mmWave Devices and 5G Communications", Michael Foegelle (ETS-Lindgren, Inc.).....155

A16-0117: "**Instantaneous TRP Measurements**", James Huff (The Howland Company, Inc.)....N/A

A16-0125: "Detailed Uncertainty Analysis of the Electrically Small Antenna Efficiency Measurement", Abdul Sattar Kaddour<sup>1</sup>, Essia Benabdallah<sup>1</sup>, Serge Bories<sup>1</sup>, Christophe Delaveaud<sup>1</sup>, Anthony Bellion<sup>2</sup> (<sup>1</sup>CEA LETI, <sup>2</sup>CNES).....159

A16-0078: "A Dual U Slot Conformal Antenna for Wi-Fi Application", Ratikanta Sahoo, D. Vakula, N.V.S.N. Sarma (National Institute of Technology, Warangal).....164

#### **Session 11: General Antenna Measurement 2**

Chair: Peter Collins (Air Force Institute of Technology)

A16-0109: "A Tetherless, Absolute-Time Channel Sounder; Processing and Results for a Complex Environment", David Novotny, Alexandra Curtin, Jeanne Quimby, Kate Remley, Peter Papazian, Richard Candell (National Institute of Standards and Technology (NIST)).....N/A

A16-0026: "Gain Comparison of 3D Printed Horns and an Electroformed Horn of the Same Size and Shape", Michael Francis, David Novotny, Joshua Gordon, Alexandra Curtin, Ronald Wittmann (National Institute of Standards and Technology (NIST)).....N/A

A16-0035: "A Rotating Source Polarization Measurement Technique Using Two Circularly Polarized Antennas", Herbert Aumann<sup>1</sup>, Kristan Tuttle<sup>2</sup> (<sup>1</sup>University of Maine, <sup>2</sup>MIT Lincoln Laboratory).....168

A16-0123: "In-situ Diagnosis of Direction Finding Antenna using Optically-fed Transmitting Miniature Probes", Serge Bories, Lama Ghattas, Dominique Picard (CEA LETI).....N/A

A16-0048: "Gain Antenna Measurement Using Single Cut Near Field Measurements", Manuel Sierra Castañer<sup>1</sup>, Francesco Saccardi<sup>2</sup>, Lars Foged<sup>2</sup> (<sup>1</sup>Universidad Politécnica de Madrid (UPM), <sup>2</sup>Microwave Vision Italy).....172

#### Session 12: Poster Session II

Chair: Justin Dobbins, Co-Chairs: Francesco D'Agostino, David A. Tonn, Raimund Mauermayer (Raytheon Company, University of Salerno, Naval Undersea Warfare Center, Technical University of Munich)

A16-0110: "Multiple Target, Dynamic RF Scene Generator", David Wayne, John McKenna, Scott McBride (NSI-MI Technologies).....N/A

A16-0031: "Effective Numerical Methods for Installed Performance of Antenna Arrays on Electrically-Large Platforms", Derek Campbell, C.J. Reddy (Altair Engineering, Inc.).....N/A

A16-0047: "Dual-polarized Monolithic Leaky Wave Antenna Enabled by Additive Manufacturing", Esteban Menargues<sup>1</sup>, Maria Garcia-Vigueras<sup>2</sup>, Emile de Rijk<sup>3</sup>, Juan R. Mosig<sup>1</sup> (<sup>1</sup>LEMA-EPFL, <sup>2</sup>Institut d'Electronique et de Télécommunications de Rennes (IETR), <sup>3</sup>SWISSto12).....N/A

A16-0080: "Indoor 3D Spherical Near Field RCS Measurement Facility: 3D RADAR Images from Simulated and Measured Data", Pierre Massaloux, Pierre Minvielle (CEA/CESTA).....N/A

A16-0087: "Quiet-Zone Qualification of a Very Large, Wideband Rolled-Edge Reflector", Anil Tellakula, William Griffin, Scott McBride (NSI-MI Technologies).....176

A16-0099: "Roughness Impact on the RCS of Simple Canonical Objects in the Terahertz Regime", Wei Gao<sup>1</sup>, Xiao-Lin Mi<sup>1</sup>, Yi Liao<sup>1</sup>, Xiao-Bing Wang<sup>2</sup> (<sup>1</sup>Shanghai Key Laboratory of Electromagnetic Environmental Effects for Aerospace Vehicle, <sup>2</sup>Science and Technology on Electromagnetic Scattering Laboratory).....N/A

A16-0116: "Extrapolation Range for D-band Standard Gain Horn Antenna Measurement", Jin-Seob Kang, Jeong-Hwan Kim (Korea Research Institute of Standards and Science (KRISS)).....N/A

A16-0077: "Gain Enhancement of Monopole Antenna using Broadband Artificial Material for UWB Application", Rahul Singha, D. Vakula, N.V.S.N. Sarma (National Institute of Technology, Warangal).....N/A

A16-0053: "Characterizing Multiple Coherent Signals Near 60 GHz Using Standard RF Hardware for MIMO and 5G Applications", Alexandra Curtin, David Novotny, Joshua Gordon (National Institute of Standards and Technology (NIST)).....N/A

#### **Session 13: RF Material Measurement**

Chair: Lydell Frasch (The Boeing Company)

A16-0030: "Implementation and Testing of Engineered Anisotropic Dielectric Materials", David Tonn<sup>1</sup>, Susan Safford<sup>1</sup>, Michael Lanagan<sup>2</sup>, Eugene Furman<sup>2</sup>, Stephen Perini<sup>2</sup> (<sup>1</sup>Naval Undersea Warfare Center, Division Newport, <sup>2</sup>The Pennsylvania State University).....N/A

A16-0039: "Correction of Transmission Line Induced Phase and Amplitude Errors in Reflection and Transmission Measurements", John Schultz, James Maloney (Compass Technology Group).....N/A

A16-0065: "Uniaxial Anisotropic Material Measurement using a Single Port Waveguide Probe", Alexander Knisely, Milo Hyde, Michael Havrilla, Peter Collins (Air Force Institute of Technology (AFIT)).....182

A16-0103: "Changes in the DO-213 Standard for Commercial Nose-Radome Testing", Scott McBride, Steven Nichols, Mike Murphy, Vince Rodriguez, George Cawthon (NSI-MI Technologies).....188

A16-0095: "A Study of the Low-frequency Coaxial Reflectometer Measurement Procedure for Evaluation of RF Absorbers' Reflectivity", Anoop Adhyapak, Zhong Chen (ETS-Lindgren, Inc.).....193

#### **Session 14: Innovative Approaches of Antenna Measurement**

Chair: David Novotny (National Institute of Standards and Technology)

A16-0036: "Towards Planar Phaseless Nearfield Measurements of ESA's JUICE Mission 600 GHz SWI Reflector Antenna", Javier Fernández Álvarez, Olav Breinbjerg (Technical University of Denmark (DTU)).....198

A16-0052: "**Optimizing a CATR Quiet Zone using an Array Feed**", Clive Parini<sup>1</sup>, Rostyslav Dubrovka<sup>1</sup>, Stuart Gregson<sup>2</sup> (<sup>1</sup>Queen Mary University of London, <sup>2</sup>NSI-MI Technologies).....204

A16-0060: "The Effect of the Receiving-Antenna Pattern on the Results of the Free-Space VSWR Technique", Amin Enayati<sup>1</sup>, Zhong Chen<sup>2</sup> (<sup>1</sup>Emerson & Cuming Anechoic Chambers, <sup>2</sup>ETS-Lindgren, Inc.).....N/A

A16-0072: "Improving the Cross-Polar Discrimination of Compact Antenna Test Range using the CXR Feed", Andrea Giacomini<sup>1</sup>, Lars Foged<sup>1</sup>, Antonio Riccardi<sup>1</sup>, Jörg Pamp<sup>2</sup>, Rasmus Cornelius<sup>2</sup>, Dirk Heberling<sup>2</sup> (<sup>1</sup>Microwave Vision Group, <sup>2</sup>RWTH Aachen University).....N/A

A16-0102: "Implementation of a Combination Planar and Spherical Near-Field Antenna Measurement System using an Industrial 6-Axis Robot", John Hatzis, Patrick Pelland, Greg Hindman (NSI-MI Technologies).....210

#### **Session 15: General Near-Field Measurement**

Chair: Stuart Gregson (NSI-MI Technologies)

A16-0050: "Compact First-Order Probe for Spherical Near-Field Antenna Measurements at P-band", Oleksiy Kim (Technical University of Denmark (DTU)).....N/A

A16-0083: "Phaseless Near-Field Antenna Measurement Techniques – An Overview", Olav Breinbjerg, Javier Fernández Álvarez (Technical University of Denmark (DTU)).....N/A

A16-0111: "Experimental Validation of Simplified Probe Pattern Correction in Spherical Near-Field Antenna Measurements", Sergiy Pivnenko<sup>1</sup>, Enrique Venero<sup>1</sup>, Carlo Rizzo<sup>1</sup>, Belen Galocha<sup>2</sup> (<sup>1</sup>Antenna Systems Solutions S.L. (ASYSOL), <sup>2</sup>Universidad Politécnica de Madrid (UPM)).....N/A

A16-0114: "Phase-less Spherical Near-Field Antenna Characterization: A Case Study and Comparison", Hammam Shakhtour, Dirk Heberling (RWTH Aachen University).....N/A

A16-0081: "Implementation of a VHF Spherical Near-Field Measurement Facility at CNES", Gwenn Le Fu<sup>1</sup>, Guillaume Robin<sup>1</sup>, Nicolas Adnet<sup>1</sup>, Luc Duchesne<sup>1</sup>, Daniel Belot<sup>2</sup>, Lise Feat<sup>2</sup>, Kevin Elis<sup>2</sup>, Anthony Bellion<sup>2</sup>, Romain Contreres<sup>2</sup> (<sup>1</sup>MVG Industries, <sup>2</sup>CNES).....N/A

#### **Session 16: Numerical Methods and Data Processing**

Chair: C.J. Reddy (Applied EM)

A16-0029: "Radar Echoes from Metal Spheres Large and Small", Pax Wei (Boeing Company (retired)).....216

A16-0025: "Time Gating Based on Sparse Time Domain Signal Reconstruction from Limited Frequency Domain Information", Raimund Mauermayer, Thomas Eibert (Technical University of Munich).....222

A16-0058: "Study of PO Analytic Methods for Serrated CATR Quiet Zone Simulation", Fernando Rodríguez Varela, José Luis Besada Sanmartín, Belén Galocha Iragüen (Universidad Politécnica de Madrid (UPM)).....226

A16-0073: "Source Reconstruction by Far-Field Data for Imaging of Defects in Frequency Selective Radomes", Bjorn Widenberg<sup>1</sup>, Kristin Persson<sup>2</sup>, Mats Gustafsson<sup>2</sup>, Gerhard Kristensson<sup>2</sup> (<sup>1</sup>Radomes & Antennas, GKN Aerospace Applied Composites AB, <sup>2</sup>Lund University).....N/A