31st Antenna Measurement Techniques Association Annual Symposium 2009

(AMTA 2009)

Salt Lake City, Utah, USA
1-6 November 2009

TABLE OF CONTENTS

SESSION 1 – SPECIALIZED ANTENNA MEASUREMENTS

A09-0073, Numerical Calibration of Standard Gain Horns and OEWG Probes ................................................................. 1
  Donald G. Bodnar
A09-0064, Wireless Unpowered Temperature And Strain Sensing In A Running Jet Engine ............................................. 5
  Eric Walton, Yakup Bayram
A09-0094, Dual Polarised Corrugated Horns For Advanced Measurement Applications .............................................. 9
  Lars Foged, Andrea Giacomini, Roberto Morbidini
A09-0139, Electronically Scanned Arrays For Fast Testing of Large Antennas ............................................................ 14
  Ludovic Durand, Lars Foged, Luc Duchesne, John Aubin, Per O. Iversen

SESSION 2 – MODELING AND MEASUREMENT TOPICS

A09-0023, Near-Field Electromagnetic Holography In Conductive Media ................................................................. 20
  Earl G. Williams
A09-0111, Imaging By Near-Field Measurements ............................................................................................................. 26
  George G. Cheng, Jan Grzesik, Yong Zhu
A09-0069, An Accurate And Efficient Error Predictor Tool For CATR Measurements .............................................. 31
  Cecilia Cappellin, Stig Bask Sørensen, Allan Ostergaard, Maurice Paquay
A09-0071, Accurate Radar Distance Measurements In Dispersive Circular Waveguides Considering Multimode Propagation Effects ......................................................................................................................... 37
  Eckhard Denicke, Gunnar Armbricht, Ilona Rolfs
A09-0127, Modeling And Measurements On Multiple Antennas On A Platform .......................................................... 43
  Jeff Kemp, Juan Santamaria, Mitch Cole, Ralph Herkert, Romon Neely, Victor Tripp

SESSION 3 – ANTENNA DESIGN TOPICS

A09-0075, Identifying Pointing Errors for the NIST 18 Term Error Technique ........................................................... 51
  Zachary Newbold, Allen Newell, Bruce Williams
A09-0076, Compact 11-Ellipse Inverted-Hat Antenna for UWB Operations ................................................................. 56
  Jing Zhao, Shenario Ezhil Valavan, Chi-Chih Chen, John L. Volakis
A09-0115, Systematic Design Approach For Diversity Antenna Systems ............................................................................. 61
  Gil-Young Lee, Dimitris Psychoudakis, Chi-Chih Chen, John L. Volakis
A09-0117, An Integrated UWB Dual Polarized Chamber Feed Design Example .......................................................... 65
  Mustafa Kuloglu, Chi-Chih Chen, Mark Winebrand, John Aubin

SESSION 4 – MEASUREMENT FACILITIES

A09-0003, Building A Low Cost Radiosonde Radio Frequency Measurement Chamber ........................................... 72
  Joseph Friedel, Anton Rabovianski, David Desrosiers
A09-0021, Accurate Radiation Pattern Measurements in a Time-Reversal Electromagnetic Chamber .................. 78
  Andrea Cozza, Abd El-Bassir Abou El-Aileh
A09-0047, Back Wall Design Trade-Offs In High Performance VHF/UHF Chambers ........................................... 84
  John Aubin, Mark Winebrand
A09-0051, Test Zone Performance Enhancement In Anechoic Chambers Using Two-Level GTD Principles ............. 90
  Mark Winebrand, John Aubin, Marcel Boumans
A09-0052, Best-Fit Adjustments of The Reflectors In Compact Range ................................................................ 96
  Frank Jensen, Per Heighwood Nielsen, Luca Salghetti Drioli, Maurice Paquay
A09-0060, Globalstar II RX L-Band Antenna Spherical Near Field Measurement ................................................ 103
  Damiano Trenta, Diego Vicentini
SESSION 5 – NEAR FIELD RANGE TOPICS I

A09-0022, A Novel Phaseless Spherical Near-Field Antenna Measurement Including The Issue of Robustness
Carsten Schmidt, Thomas Eibert, Yahya Rahmat-Samii

A09-0026, Reflection Suppression In Cylindrical Near-Field Antenna Measurement Systems – Cylindrical MARS
Stuart Gregson, Allen Newell, Greg Hindman

A09-0029, Near-Field Spherical Scanning: Test-Zone Field Evaluation
Randal Direen, Michael Francis, Ronald Wittmann

A09-0045, Single Antenna Method For Determining The Gain of Near-Field Waveguide Probes
Russell J. Soerens

A09-0100, Random Noise In Spherical Near Field Systems
L. Foged, M. Faliero, P. O. Iversen

A09-0070, A Nonredundant NF-FF Transformation With Spherical Spiral Scanning Using A Flexible AUT Model

A09-0080, Antenna Diagnostics For Low And Medium Directivity Antennas Based On Equivalent Current Approach
M. A. Francavilla, J. L. Araque Quijano, G. Vecchi, A. Giacomini, L. Foged

A09-0081, The Effect of The Absorber Collar On Open Ended Waveguide Probes
Allen Newell, Stuart Gregson, David Gentle, Philip Miller

SESSION 6 – RANGE/MEASUREMENT UNCERTAINTY

A09-0119, Improving and Extending the MARS Technique to Reduce Scattering Errors
Greg Hindman, Allen Newell

A09-0065, Annual Update of the National Radar Cross Section Measurement Facilities Certification Program
Roger Davis

A09-0091, New Applications of Diagnostic Techniques in Antenna Measurements
Francisco Cano-Facíl, M. Sierra-Castañer, J. L. Besada

A09-0110, Error Analyses for Radio Source Measurements
Bob Dybdal

SESSION 7 – PHASED ARRAY DESIGN/MEASUREMENTS

A09-0058, Fault Monitoring of Patch Antenna Array Using Neural Networks
Damera Vakula, Nvsn Sarma

A09-0063, The Software Defined Antenna™ Programming And Testing The Prototype
Eric K. Walton, Claude Harton, Derek Reese, Eugene Lee, Steve Gemeny, Ryan Tokola

A09-0078, TELA Testbed Time Delay Beam Steering Demonstration
Matthew Longbrake, John McCann, Jonathan Buck, Paul Watson, Peter Buxa, Robert Neidhard, Kyle Zeller, Thomas Dalrymple, Brian Garber, Dave Kuhl

A09-0098, An Evaluation of the Aperture Backprojection Technique Using Measurements Made on a Flat Plate Array with a Spherical Near-Field Arch
Doren Hess, Scott McBride

A09-0145, FCC Certification Issues
Jeffrey E. Rummel, Jeffrey W. Kemp, Tracy H. Johnson

SESSION 8 – ANTENNA MEASUREMENT TOPICS – SPECIAL SESSION FOR STUDENT DAY

A09-0046, Some Considerations for the Measurement and Analysis of Circularly Polarized Antennas Using a Linearly Polarized Feed/Probe
Russell J. Soerens
SESSION 9 – GENERAL ANTENNA AND RF MEASUREMENTS

A09-0001, Measurements of Power Handling of RF Absorber Materials: Creation of A Medium Power Absorber By Mechanical Means ................................................................. 218
  Vince Rodriguez, Garth D'Abreu, Kefeng Liu
A09-0105, Two Dimensional Scattering Analysis of Data-Linked Support Strings for Bistatic Measurement Systems ........................................................................................................... 223
  William Keichel, Michael Havrilla, Michael Saville, Peter Collins
A09-0079, Accurate Infinite Groundplane Antenna Measurements .................................................. 229
  L. J. Foged, F. Mioc, B. Bencivenga, M. Sabbadini, E. Di Giampaolo
A09-0089, Interferometer Antenna Calibration By Centered Element Diagram Measurements ................................................................................................................................. 234
  Håkan Eriksson, Marcel Boumans, Pernilla Löfgren, Jan Söderlund, Per Strömback
A09-0086, Distributed RF Systems For Antenna Measurements ...................................................... 240
  Bert Schluper, David S. Fooshe
A09-0099, W-Band Antenna Gain Calibration In Extrapolation Range Using Time-Domain Gating ................................................................. 246
  Michitaka Ameya, Manabu Hirose, Satoru Kurokawa
A09-0104, Effective 2D Generalised Plane Wave Synthesizers: Experimental Validation ............... 252
  A. Capozzoli, C. Curcio, G. D’Elia, G. Iannucci, A. Liseno, P. Vinetti
A09-0144, Characterization of Outdoor Range 2-3 Utilizing the NEC-Basic Scattering Code .......... 259
  David Leblanc, Jacob Kim, Thomas Proctor, William Skalenda

SESSION 10 – MEASUREMENT TOPICS

A09-0083, Radiation Pattern Measurements of NASA Mars Science Laboratory UHF Entry Antenna Using A Spherical Near-Field Range ................................................................. 269
  Paula R. Brown, David P. Farr, John Demas, Jesus Aguilar
A09-0093, Determination of Complex Permittivity of Molded Interconnect Device Materials At Microwave Frequencies ................................................................. 275
  Christian Orlob, Daniel Kornek, Ilona Rolfes
A09-0085, 3-D Antenna Radiation Pattern Measurement System Using Ultra Light Phantom ................................................................................................................................. 279
  Hiroyuki Arai, Toshiyasu Tanaka, Yuki Shimizu
A09-0061, Millimeter Wave Antenna Measurement System .......................................................... 284
  John Aubin, Chuck Arnold, Stuart Asp
A09-0092, Analysis And Design of Serrated Compact Range Reflectors For MM-Wave Measurement Applications ................................................................. 289
  Alfonso Muñoz-Acevedo, José Luis Besada, Manuel Sierra-Castañer
A09-0123, Characterization of Two Flare-Shaped UWB Antennas Dedicated To The Research of Alive Buried Victims ................................................................. 295

SESSION 11 – RCS MEASUREMENT TOPICS

A09-0009, Characterization of Space Shuttle Ascent Debris Based on Radar Scattering and Ballistic Properties Part I – Development of the NASA Debris Radar Project and Facilities ................................................................. 302
  Anthony D. Griffith Sr., Robert C. Scully, Brian M. Kent, Jeff Palumbo, Christopher G. Thomas, Martin H. Stuble, P. Michael Hardman
A09-0024, Nonlinear Calibration of Polarimetric Radar Cross Section Systems ................................ 308
  Lorant Math
A09-0025, Generalization of The Circular And Linear Image-Based NFFFTS to Off Waterline Collections ................................................................................................................................. 314
  Ivan Lahaie
A09-0066, Practical Polarimetric Calibration for RCS Systems .......................................................... 321
  Tai Kim, Kenneth Vaccaro, Dean Mensa
A09-0072, Application of DFT-Windows In RCS Measurements .......................................................... 327
Pax Wei

A09-0082, Method of Suppression of Not Cooperative Interferences During Measurements of RCS .......................................................... 332
Renaud Carion

A09-0087, Technique To Remove Cable Ringing From Short Range RCS Measurements .................. 338
Paul J. De Groot

A09-0134, Dynamic RCS Signature Measurements of Moving Targets In Clutter .......................... 344
Ali Moghaddar, R. Jerry Jost, Robert C. Reynolds

SESSION 12 – RFID/EMC MEASUREMENTS

A09-0055, Potential Interference Issues Between FCC Part 15 Compliant Emitter And Immunity Compliant Equipment .......................................................... 352
Jeff Guerrieri, Dan Kuester, David Novotny

A09-0002, RFID Testing In Anechoic Chambers: Design of A Chamber For ISO TR 18047-6 Testing of UHF... .......................................................... 358
Vince Rodriguez

A09-0121, Outdoor Electromagnetic Interference Measurements In Industrial Environments ............ 363
Carl Karlsson, Per Ångskog, Javier Ferrer Coll, José Chilo, Peter Stenumgaard

A09-0067, Radiation Pattern Measurement of Passive UHF RFID Tags ............................................. 367
Leena Ukkonen, Lauri Sydänheimo

SESSION 13 – NEAR FIELD RANGE TOPICS II

A09-0090, Improvement of the Signal to Noise in Spherical Near Field Antenna Measurement Through Mode Truncation And Spatial Filtering .......................................................... 375
Sara Burgos, Francisco Cano, José Luis Besada-Sanmartín, Manuel Sierra-Castuher

A09-0129, Spherical Near-Field Antenna Measurements With Theta Scanning With Reduced Number of Phi Steps .......................................................... 381
Sergey Pivnenko, Tommi Laitinen

A09-0138, Phaseless Planar Spiral Near-Field Measurements For Circularly Polarized Antennas ............... 387
Farhad Razavi, Yahya Rahmat-Samii

A09-0130, Dielectric Probes, Compact Near-Field And Advanced Near-Field Far-Field Techniques .......................................................... 393
A. Capozzoli, C. Curcio, G. D’Elia, A. Liseno, P. Vinetti, M. Amey, M. Hirose, S. Kurokawa, K. Komiyama

A09-0106, An Innovative Alignment System In Near-Field Measurements .......................................................... 400
A. Capozzoli, C. Curcio, G. D’Elia, A. Liseno, P. Vinetti, G. Strazzullo

A09-0137, Rapid Linear Spiral Planar Near-Field Measurements for Millimeter-Wave Antennas .................. 406
Timothy Brockett, Yahya Rahmat-Samii

A09-0088, Implementation of Extrapolation And Planar Near Field Antenna Measurement System For W-Band Antennas .......................................................... 412
No-Weon Kang, Jin-Seob Kang, Tae-Weon Kang, Jeong-Hwan Kim

SESSION 14 – PCS, CELLULAR, AUTOMOTIVE APPLICATIONS/MEASUREMENTS

A09-0084, Quick Measurements of Commercially Available WiFi And WiMax Antennas ....................... 418
Al Torres, Chad Shaffer

A09-0126, A Novel Spherical Scanner System For Wireless Telematics Measurements ....................... 423
Carl W. Sirles, Beau J. Hart, John C. Mantovani, James D. Huff

A09-0097, MIMO Over-the-Air Testing of Wireless Units In Reverberation Chamber .......................... 427
Charlie Orlenius, Mats Andersson

A09-0109, Measured Multiuser MIMO Capacity in Small Aircraft .......................................................... 432
James R. Nagel, Alyssa Magleby, Cynthia M. Furse

A09-0125, Broadband Gain Standards For Wireless Measurements .......................................................... 438
James D. Huff, Carl W. Sirles
SESSION 15 – EM ALGORITHMS AND DATA PROCESSING/NUMERIC METHODS AND RANGE INSTRUMENTATION

A09-0008, Characterization of Space Shuttle Ascent Debris Based on Radar Scattering and Ballistic Properties Part II – Ascent Debris Analysis and Tool Development
  - 446

A09-0030, Nearly-Orthogonal Hierarchical Vector Basis Functions Employed for the Discretization of Inverse Equivalent Surface Currents
  Ismatullah Ismatullah, Thomas F. Eibert, C. H. Schmidt
  - 452

A09-0050, Modeling Techniques Used To Analyze Safety of Payloads for Generic Missile Type Weapons Systems During An Indirect Lightning Strike
  Michael P. Perkins, Mike M. Ong, Charles Brown Jr., Eric W. Crull
  - 458

A09-0101, Portable RF Target Simulator
  David Wayne, Andrew Schlegel, Steve Nichols, Don Bodnar, Doren Hess, George Cawthon, Anil Tellakula, Jeff Skinner, Trung Dam, Bill Myles, Harvey Gratt
  - 464

A09-0143, Agilent's New Microwave Receiver Reduces Antenna/RCS Measurement Times And Improves Economic Competitiveness
  John Swanstrom, Say Phommakesone, Jim Puri, Niels Jensen, Johan Ericsson, Alice Hughes, Sean Hubert
  - 470

SESSION 16 – RCS MEASUREMENTS AND RANGE INSTRUMENTATION

A09-0102, Noise Radar Correlation Patterns of Human And Non-Human Objects At Various Look Angles
  Ashley Schmitt, Andrew Terzuoli, Peter Collins, Steven Rogers
  - 478

A09-0103, Practical Illumination Uncertainty Assessment In Ground-Based Radar Measurements
  Brian Fischer, Gary Dester, Timothy Conn, Richard W. Hanberg II
  - 484

A09-0112, Blind And Semi-Blind Motion Compensation For Stepped-Chirp Dynamic RCS Measurements
  Louis Sheffield
  - 490

Author Index