

2008 European Radar Conference

(EuRAD)

Amsterdam, Netherlands
30-31 October 2008



IEEE Catalog Number: CFP08590-PRT
ISBN: 978-2-8748-7009-5

TABLE OF CONTENTS

EURAD02: UWB RADAR SYSTEMS 1

Experimental Study on Human Breathing Cross Section Using UWB Impulse Radar	1
<i>Amer Nezirovic, Solomon Tesfay, Shenario Ezhil Valavan A., Alexander G. Yarovoy</i>	
Millimeter-Wave Imaging of Dielectric Objects Using First Order Scattering Models	5
<i>Sebastian Bertl, Jurgen Detlefsen</i>	
Noncoherent Integration of UWB RADAR Signals Using the Hough Transform	9
<i>Mohammadreza Malek Mohammadi, A. Moqiseh, Hamed Gheidi, M.M. Nayebi</i>	
Segmentation of GPR Images in the Case of Presence of the Error in Measured Time of Signal Arrival	13
<i>N.V. Verdenskaya, V.V. Sazonov, I.A. Ivanova, Alexander G. Yarovoy, L.P. Ligthart</i>	
Target Resolution Enhancement in UWB Radar for Security System	17
<i>Marina Gashinova, Liam Daniel, Zegang Ding, Mike Cherniakov</i>	

EURAD03: SYNTHETIC APERTURE RADAR

Efficient Spotlight SAR MIMO Linear Collection Geometries	21
<i>Bill Correll Jr.</i>	
Illumination Constraints for Forward-Looking Radar Receivers in Bistatic SAR Geometries	25
<i>Jens Balke, Dietmar Matthes, Torsten Mathy</i>	
High-Accuracy Doppler Measurements for Airborne SAR Applications	29
<i>O.O. Bezvesilniy, V.V. Vynogradov, D.M. Vavriv</i>	
Incoherent Polarimetric ISAR Decomposition for Target Classification	33
<i>R. Paladini, M. Martorella, F. Berizzi</i>	
Distributed ISAR for Enhanced Cross-Range Resolution with Formation Flying	37
<i>D. Pastina, P. Lombardo, F. Buratti</i>	

EURAD05: UWB RADAR SYSTEMS 2

Comparison Between 60-GHz UWB Frequency Modulation and UWB Impulse-Radio Location Systems	41
<i>M. Bocquet, N. Obeid, C. Loyez, C. Lethien, F. Boukour, Nathalie Rolland, M. Heddebaut</i>	
Detection Problem for Searching Survivors in Rubble with UWB Radars	44
<i>Victor Chernyak</i>	
Optimal Background Subtraction in GPR for Humanitarian Demining	48
<i>Alvaro Munoz Mayordomo, Alexander G. Yarovoy</i>	
Discussion on the Functions of Hadamard Phase Pattern in Millimeter Wave Imaging	52
<i>Feng Qi, V. Tavakol, Ilja Ocket, Dominique Schreurs, Bart Nauwelaers</i>	

System Modeling for Active mm-Wave Imaging Systems Using an Enhanced Calculation Method	56
<i>V. Tavakol, Q. Feng, Ilja Ocket, Dominique Schreurs, Bart Nauwelaers</i>	

EURAD06: NOVEL ARCHITECTURES AND PROCESSING

The Duty Cycle and Contrast Ratio Trade-Off in the Design of Interrupted HFSWR Waveform	60
<i>Rami Kassab, Marc Lesturgie, Jocelyn Fiorina</i>	
Real-Time Rapid Refractivity Retrieval Using the National Weather Radar Testbed Phased Array Radar	64
<i>Boon Leng Cheong, R.D. Palmer, Christopher Curtis, Tian-You Yu, Dusan Zrnic, Douglas Forsyth</i>	
Automatic Target Classification in a Low Frequency FSR Network	68
<i>N.E.A. Rashid, M. Antoniou, P. Jancovic, V. Sizov, R. Abdullah, Mike Cherniakov</i>	
Solving Doppler Ambiguity by Doppler Sensitive Pulse Compression Using Multi-Carrier Waveform	72
<i>R.F. Tigrek, W.J.A. de Heij, Piet van Genderen</i>	
Automatic Target Detection Using Wavelet Technique in Forward Scattering Radar	76
<i>Mohamed K.H., Mike Cherniakov, M.F.A. Rasid, R.S.A. Raja Abdullah</i>	

EURAD07: FOCUSSED SESSION: POLARIMETRIC RADAR

Adaptive Ground Clutter and Noise Filter Based on Dual-Polarization Spectral Decompositions	80
<i>Dmitri N. Moisseev, V. Chandrasekar</i>	
The PARSAX --- Full Polarimetric FMCW Radar with Dual-Orthogonal Signals	84
<i>Oleg A. Krasnov, L.P. Ligthart, Zhijian Li, Pidio Lys, Fred van der Zwan</i>	
Hydrometeor Type and Turbulence Intensity Recognition with Doppler-Polarimetric Radar	88
<i>Felix Yanovsky, Yaroslav Ostrovsky, Vitaly Marchuk</i>	
Matched NLFM Pulse Compression Method with Ultra-Low Sidelobes	92
<i>Zhiqiang Ge, Peikang Huang, Weining Lu</i>	
Polarimetric Synthetic Range Profile Autofocusing via Contrast Optimization	96
<i>A. Cacciamano, E. Giusti, A. Capria, M. Martorella, F. Berizzi</i>	

EURAD08: RADAR SYSTEMS

Ka-Band Seeker with Adaptive Beam Forming Using MEMS Phase Shifters	100
<i>C. Neumann, S. Schutz, F. Wolschendorf, Y. Venot</i>	
Reconfigurable L-Band Radar	104
<i>Rafael F. Rincon</i>	
Digital Front-End Design for Space-Borne C-Band SAR	108
<i>Paula Saameno, Michael Ludwig</i>	
A Compact mm-Wave Spaceborne SAR Concept	112
<i>M.P.G. Otten, H.J. Crujssen, G.J. Vollmuller, R. Grooters</i>	

Radar Sensor for Detection of Anti-Armour Missiles	116
<i>Premysl Hudec, Karel Hoffmann, Martin Randus, Martin Rynes, Jiri Raboch, Milan Svanda, Milan Polivka</i>	

EURAD09: SIGNAL PROCESSING

Strong Complex Echo Removal in Noise Radar	120
<i>Jacek Misiurewicz, Krzysztof Kulpa</i>	
Fusion of FMCW Secondary Radar Signal Beat Frequency and Phase Estimations for High Precision Distance Measurement	124
<i>Stephan Max, Martin Vossiek, Peter Gulden</i>	
Wideband Ambiguity Matrix of LFM-Signals Used in Polarimetric Radar Allowing Simultaneous Measurement of Scattering Matrix Elements	128
<i>G.P. Babur, L.P. Ligthart</i>	
Performance of Reiterated LMMSE Filtering and Coded Radar Waveforms	132
<i>Mayazzurra Ruggiano, Emiel Stolp, Piet van Genderen</i>	
Range Doppler Dynamic Range Considerations for Dechirp on Receive Radar	136
<i>Josias J. de Witt, Willem A.J. Nel</i>	

EURAD10: FOCUSSED SESSION: UWB RADAR IMAGING

Comparison of Basic Inversion Techniques for Through-Wall Imaging Using UWB Radar	140
<i>N.T. Thanh, L. van Kempen, Timofey G. Savelyev, X. Zhuge, M. Aftanas, E. Zaikov, M. Drutarovsky, H. Sahli</i>	
Investigation of Time-Reversal Processing for Surface-Penetrating Radar Detection in a Multiple-Target Configuration	144
<i>A. Cresp, I. Aliferis, M.J. Yedlin, Ch. Pichot, J.-Y. Dauvignac</i>	
Human Body Imaging by Microwave UWB Radar	148
<i>X. Zhuge, Timofey G. Savelyev, Alexander G. Yarovoy, L.P. Ligthart, J. Matuzas, B. Levitas</i>	
Coherent Multistatic SAR Collections and Target Phenomenology	152
<i>Patrick K. Rennich, Mark D. Casciato, A.M. Chan, Sean D. Eye</i>	
High Resolution Millimeter-wave Imaging Radar Using Inline Tx/Rx Antennas	156
<i>Fuminori Sakai, Hirotsuke Suzuki, Hiroyasu Sato, Kunio Sawaya, Koji Mizuno</i>	

EURAD11: CW AND CODED WAVEFORMS FOR RADAR

The Performance of a Novel Three-Pulse Radar Waveform for Marine Radar Systems	160
<i>Stephen Harman</i>	
A New 77 GHz Automotive Phase Coded CW Multi-Port Radar Sensor Architecture	164
<i>R.I. Cojocaru, E. Moldovan, B. Boukari, S. Affes, S.O. Tatu</i>	
Indirect Holographic Imaging at 310 GHz	168
<i>Aleksi Tamminen, Juha Ala-Laurinaho, Antti V. Raisanen</i>	
Position Finding Based on Multiple Doppler Sensors	172
<i>Simon Schelkshorn, Jurgen Detlefsen</i>	

Monitoring of Bridges Using Coherent Radar: Detection of Longitudinal and Torsional Modes	176
<i>Massimiliano Pieraccini, Matteo Fratini, Filippo Parrini, Carlo Atzeni</i>	

EURAD12: FOCUSED SESSION: AIR TRAFFIC CONTROL AND WEATHER NETWORKED SENSORS

Designing Dense Radar Networks for Weather Surveillance in Tropical Regions	180
<i>Pravas R. Mahapatra</i>	
Enhanced Weather Information for Air Traffic Controllers Using Comprehensive Sensor and Data Assimilation Procedures	184
<i>Andre Weipert, Ronald Hannesen</i>	
Multiradar Tracking in PHOENIX and its Extension to Fusion with ADS-B and Multilateration	188
<i>Ralf Heidger, Adolf Mathias</i>	
Networking of SSR Mode S and Related Clustering Problems	192
<i>M. Caramia, E.G. Piracci, G. Galati, S. Gelli</i>	
Multilateration (Local and Wide Area) as a Distributed Sensor System: Lower Bounds of Accuracy	196
<i>G. Galati, M. Leonardi, M. Tosti</i>	

EURAD13: ANTENNAS FOR RADAR APPLICATIONS

An M-Band Differentially Fed, Aperture Coupled Stacked Patch Antenna in LTCC	200
<i>Shenario Ezhil Valavan A., B. Yang, Alexander G. Yarovoy, L.P. Ligthart</i>	
Full-Wave Analysis of Cavity-Backed Resistively Loaded Bow-Tie Antennas for GPR Applications	204
<i>Diego Caratelli, Alexander G. Yarovoy, L.P. Ligthart</i>	
Combined Antennas for Radiating Ultrawideband Short Pulses	208
<i>Yu.A. Andreev, V.I. Koshelev, V.V. Plisko</i>	
Slot Radiators in a Rectangular Waveguide Partly Filled with Dielectric	212
<i>Natalya Blinova, Andrey Lyakhovsky, Ludmila Yatsuk</i>	
Complementarity Based Design of Antenna Systems for FMCW Radar	216
<i>Christian Trampuz, Massimiliano Simeoni, Ioan E. Lager, L.P. Ligthart</i>	

EURAD14: DETECTION AND RECOGNITION

Robustness of Polarimetric Detection Algorithms Against Steering Mismatches	220
<i>Vsevolod Kovalenko, Piet van Genderen</i>	
Use of HRR Data for Target Acceleration Estimation: A Simple but Effective Approach	224
<i>Enrico Tilli, Francesco Prodi</i>	
Object Recognition Based on Estimation of Ultrawideband Reflected Pulse Complex Spectra	228
<i>V.I. Koshelev, V.T. Sarychev, P.A. Konkov, S.E. Shipilov</i>	

Suboptimal Method of UWB Signal Detection at Noise, Interference and Clutter Environment	232
<i>V.I. Koshelev, S.E. Shipilov, V.T. Sarychev</i>	

Derivative Constrained Capon Estimator Using Integrated Mode Vector	236
<i>Masaru Ogawa, Nobuyoshi Kikuma, Kazuo Sato, Hiroshi Hirayama, Kumio Sakakibara</i>	

EURAD15: SYSTEM MODELLING AND PERFORMANCE ANALYSES

The Concept of Simple MIMO PCL Radar	240
<i>Krzysztof Kulpa, Mateusz Malanowski</i>	

Clutter Mitigation Using Auxiliary Elements for the NWRP Phased Array Radar	244
<i>K.D. Le, R.D. Palmer, Boon Leng Cheong, Tian-You Yu, G. Zhang, S.M. Torres</i>	

2-D Direction Finding with Subarray-Based Antenna Arrays	248
<i>Volodymyr Vasylyshyn</i>	

Direction of Arrival Estimation from Secondary Surveillance Radar Signals in Presence of Hardware Imperfections	252
<i>C. Reck, U. Berold, Jochen Weinzierl, Lorenz-Peter Schmidt</i>	

Tracking Based ICA Permutation and its Experiment on Blind Radio Source Separation	256
<i>Takeshi Amishima, Atsushi Okamura, Shinichi Morita, Tetsuo Kirimoto</i>	

EURAD16: WAVE PROPAGATION AND SCATTERING

A Statistical Model of the Effects of Angular Fluctuations of Multi-Point Scatterer Targets on Radar Detection and Tracking Performances	260
<i>J.J. Reijmers, E.G. Pusone, A. Coccia, L.P. Ligthart</i>	

RADARSTATION: A Site-Specific Tool for Simulating Clutter-Limited Radar Systems	264
<i>Beatriz Cobo, Luis Valle, Rafael P. Torres</i>	

Turbulence Detection by Doppler Spectrum Shape Analysis	268
<i>Yaroslav Ostrovsky, Felix Yanovsky</i>	

Design of Novel Fractal Based Geometry for Backscattering Reduction	272
<i>Raja Kumar, Yogesh B. Thakare, P. Malathi</i>	

Automotive Radar Technology for Detecting Road Conditions: Backscattering Properties of Dry, Wet, and Icy Asphalt	276
<i>Ville Viikari, Timo Varpula, Mikko Kantanen</i>	

EURAD17: FOCUSED SESSION: GROUND PENETRATING RADAR (GPR)

A Review of Landmine Detection Using GPR	280
<i>David J. Daniels</i>	

ALIS Development for Humanitarian Demining and its Evaluation Tests	284
<i>Motoyuki Sato, Kazunori Takahashi</i>	

Performance of UWB Array-Based Radar Sensor in a Multi-Sensor Vehicle-Based Suit for Landmine Detection	288
<i>Alexander G. Yarovoy, Timofey G. Savelyev, X. Zhuge, Pascal Aubry, L.P. Ligthart, John Schavemaker, Peter Tettelaar, Eric den Breejen</i>	

Simulation of GPR Returns from Finite-Length Dielectric Cylinders	292
<i>B.T. Burganov, A.G. Vinogradov, V.V. Sazonov, Alexander G. Yarovoy, L.P. Ligthart</i>	
Multi-Channel Ultra-Wideband Short-Pulse Ground Penetrating Radar	296
<i>A.Yu. Grinev, V.N. Sablin, D.V. Bagno, V.S. Temchenko</i>	

EURAD18: FOCUSED SESSION: MULTI-PLATFORM ENGAGEMENT CAPABILITIES

Multisensor Data Fusion Architectures for NCO	300
<i>Felix Opitz</i>	
Sensor Tasking Management in a Networked Force	304
<i>Maurice Houtsma</i>	
Networked Adaptive Interactive Hybrid Systems (NAIHS) for Multiplatform Engagement Capability	308
<i>Leon Kester</i>	
A Cognitive Radar Network: Architecture and Application to Multiplatform Radar Management	312
<i>Felix Smits, Albert Huizing, Wim van Rossum, Peter Hiemstra</i>	
Maritime Target Cross Section Estimation for an Ultra-Wideband Forward Scatter Radar Network	316
<i>Liam Daniel, Marina Gashinova, Mike Cherniakov</i>	

EURADPOSTER01: EURAD POSTER SESSION

Fractal Convolution Techniques for Speckle Noise Reduction	320
<i>Juan-Antonio Martinez-Rojas, Rocio Sanchez-Montero, Jesus Alpuente-Hermosilla, Pablo Lopez-Espi</i>	
Coherent Calibration Techniques for Multistatic SAR Image Formation	324
<i>A.M. Chan, Mark D. Casciato, Patrick K. Rennich</i>	
C-Band Transceiver Testbed with Substrate Integrated Waveguide (SIW) Filter for Ultra-Wideband (UWB) Communications	328
<i>Christoph Seifarth, Robert Draheim, Gerd Scholl</i>	
Hough Detector with an OS CFAR Processor in Presence of Randomly Arriving Impulse Interference	332
<i>Lyubka Doukovska, Christo Kabakchiev, Vladimir Kyovtorov, Ivan Garvanov</i>	
Optimizing Two-Tone Spurious-Free Dynamic Range for Polarimetric Agile Radar Receivers	336
<i>Zhijian Li, L.P. Ligthart, Peikang Huang, Weining Lu, Fred van der Zwan, Oleg A. Krasnov, E.P. Lys</i>	
Traffic Intensity Estimation via PHD Filtering	340
<i>G. Battistelli, L. Chisci, S. Morrocchi, F. Papi, A. Benavoli, A. Di Lallo, A. Farina, A. Graziano</i>	
Why Should We Use Particle Filtering in FM Band Passive Radars?	344
<i>A. Benavoli, A. Di Lallo</i>	
K-Band/S-Band Satellite Transponder System for On-Orbit Evaluation of LTCC Technology	348
<i>Torben Baras, Sascha Brosius, Arne F. Jacob</i>	

Range Resolution Improvement for FMCW Radars	352
<i>Hao-Hsien Ko, Kai-Wen Cheng, Hsuan-Jung Su</i>	
Wind Turbine Clutter Mitigation Using Fully Adaptive Arrays	356
<i>R.D. Palmer, K.D. Le, B. Isom</i>	
Parameter Estimation of Heavy-Tailed Rayleigh Prior Model from Observed SAR Amplitude Images	360
<i>Zengguo Sun, Ram M. Narayanan, Chongzhao Han</i>	
Analog Pulse Compressor for Radar System	364
<i>Sang Min Lee, Taejoong Song, Jongmin Park, Kyutae Lim, J. Laskar</i>	
A New Beam-Former Using a Multi-Layered Phase-Shifter for 60 GHz WPAN Applications	368
<i>Hong Yi Kim, Ki Chan Eun, Young Hwan Kim, Jung Han Choi, Sung Tae Choi, Dong(2) Hyun Lee, Chul Soon Park</i>	
Signal Processing to Eliminate Multi-Reflected Pulses for NRD Guide Pulse Radar at 60 GHz	372
<i>Kazuya Takayama, Futoshi Kuroki</i>	
Design of a 6--10-GHz Low LO-Power CMOS Folded-Mirror Mixer with Link-Budget Consideration for DS-UWB Receivers	376
<i>H.-W. Chung, J.-F. Yeh, P.-H. Lien, H.-C. Kuo, H.-R. Chuang</i>	
On-Board SAR Compression System Based on Back-Propagation Neural Network	380
<i>Navneet Agrawal, K. Venugopalan</i>	
Binary and Fuzzy Distributed CFAR Detectors	384
<i>Amir Zaibashi, Mohammad Reza Akhavan Saraf, Hamid Mirmohammad-Sadeghi</i>	
ISAR Imaging Based on Two-Dimensional GTD Scattering Model	388
<i>Anastasios V. Karakasiotis, Anton D. Lazarov, Panayiotis V. Frangos</i>	
Signal Detection Against the Background of Non Gaussian Clutter from Underlying Surface	392
<i>I.V. Lutsenko, V.I. Lutsenko, I.V. Popov</i>	
Illumination of Air Environment Using Radiation of SW Broadcasting Stations	396
<i>I.V. Lutsenko, V.I. Lutsenko, I.V. Popov</i>	

EURADPOSTER02: EUMC/EURAD INTERACTIVE POSTER SESSION

Towards a Lifecycle Test & Verification Environment for Sensor Systems	400
<i>David Murray</i>	
An Ultra-Wide Band Indoor Personnel Tracking System for Emergency Situations (Europcom)	404
<i>Dave Harmer, Alexander G. Yarovoy, Norbert Schmidt, Klaus Witrissal, Mark Russell, Ewan Frazer, Tim Bauge, Stuart Ingram, Amer Nezirovic, Anthony Lo, Liang Xia, Birgit Kull, Vedran Dizdarevic</i>	
Detection and Tracking of Moving or Trapped People Hidden by Obstacles Using Ultra-Wideband Pseudo-Noise Radar	408
<i>J. Sachs, M. Aftanas, S. Crabbe, M. Drutarovsky, R. Klukas, D. Kocur, T.T. Nguyen, P. Peyrel, J. Rovnakova, E. Zaikov</i>	
Multi-Mode FMCW Radar Array with Independent Digital Beam Steering for Transmit and Receive	412
<i>R. van Dijk, E.H. van der Houwen, A.P.M. Maas</i>	

Wideband Arbitrary Waveform Generator for Enhanced Spaceborne SAR	416
<i>N. Salerno, L. Simone, S. Cocchi, V. Piloni, M. Maffei, O. Cocciolillo</i>	
Radar Tube Crawler for Quality Assurance Measurements of Pipe Systems	420
<i>Frank Bonitz, J. Sachs, Ralf Herrmann, Michael Eidner</i>	

EUMC/EURAD01: UWB TECHNOLOGY

Sub-10ns Frequency Hopping Synthesizer Based on Injection-Locking	424
<i>Narasimha Lanka, Satwik Patnaik, Ramesh Harjani</i>	
A New Ultra-Wideband Monocycle Pulse Generator Using Second-Order Transient Circuit	428
<i>Wun-Bi Lin, Ying-Te Liu, Fu-Chiarng Chen</i>	
Ultra Wide Band -High Power Radar- Material Responses II (Waveform and Material Density)	432
<i>Rick L. Moore, John Meadors, Robert Rice</i>	
Measured and FDTD Calculated Ultra Wide Band (UWB) RCS for Treated Test Fixtures	436
<i>Stephen Blalock, James Davis, Doug Denison, James Fraley, Rick L. Moore, Robert Rice</i>	
The Nonuniform Nonlinear Transmission Line Based on Parallel-Plate Ferroelectric Capacitors	440
<i>A. Mikhailov, T. Samoilova, A.B. Kozyrev</i>	

EUMC/EURAD02: FMCW RADAR

INDRA: The Indonesian Maritime Radar	443
<i>A.A. Lestari, P. Hakkaart, J.H. Zijderveld, Fred van der Zwan, M. Hajian, L.P. Ligthart</i>	
A Versatile FMCW Radar System Simulator for Millimeter-Wave Applications	447
<i>Stefan Scheibhofer, Markus Treml, Stefan Schuster, Reinhard Feger, Andreas Stelzer</i>	
Foreign Objects Debris Detection (FOD) on Airport Runways Using a Broadband 78 GHz Sensor	451
<i>P. Feil, Wolfgang Menzel, T.P. Nguyen, Ch. Pichot, C. Migliaccio</i>	
A Highly Modular 77-GHz FMCW Radar Sensor Prototype for Multi Target Tracking Applications	455
<i>K. Pourvoyeur, Reinhard Feger, A. Haderer, C. Wagner, Andreas Stelzer, Linus Maurer</i>	
79GHz Automotive Short Range Radar Sensor Based on Single-Chip SiGe-Transceivers	459
<i>Volker Winkler, Reinhard Feger, Linus Maurer</i>	

EUMC/EURAD03: ANTENNA ARRAYS

UWB MIMO Antenna Array Topology Design Using PSO for Through Dress Near-Field Imaging	463
<i>B. Yang, X. Zhuge, Alexander G. Yarovoy, L.P. Ligthart</i>	
Projection Based Methodology for Designing Non-Periodic, Planar Arrays	467
<i>Maria Carolina Vigano, Ioan E. Lager, Giovanni Toso, Cyril Mangenot, Gerard Caille</i>	
Wide-Band Antenna Array	471
<i>R. Chernobrovkin, I. Ivanchenko, A. Korolev, L.P. Ligthart, N. Popenko, V. Pazynin</i>	

EUMC/EURAD04: FOCUSED SESSION: UAV SAR SYSTEMS

The ONERA Compact Ka-SAR	475
<i>J.F. Nouvel, S. Angelliaume, O. Ruault du Plessis</i>	
Second-Generation Ka-Band UAV SAR System	479
<i>Michael Edrich, Georg Weiss</i>	
Realization of a Scalable Airborne Radar	483
<i>D. van Halsema, R.V. de Jongh, J. van Es, M.P.G. Otten, B.C.B. Vermeulen, L.J. van Liempt</i>	
Gated FMCW SAR System	487
<i>Svein-Erik Hamran, Tor Berger, Leif Hanssen, Mats Jorgen Oyan</i>	

EUMC/EURAD05: FOCUSED SESSION: SOSTAR-X, THE EUROPEAN AIR TO GROUND SURVEILLANCE SYSTEM DEMONSTRATOR

The SOSTAR-X Program Achievements	491
<i>Peter Angenoorth, Luc Chabod, Peter Hoogeboom</i>	
SOSTAR-X Active Antenna: Results and Lessons Learned	494
<i>Luc Chabod, Christian Renard</i>	
Spectral Target Classification with SOSTAR-X	498
<i>M.P.G. Otten, E. de Koster, J.S. Groot, A.J. de Jong, M. van den Akker, P. Vriend</i>	
SOSTAR-X Program: SELEX GALILEO Contributions	502
<i>D. Zei, A. Delogu, A. Montanari, P. Tellini</i>	
SOSTAR-X System Integration and Flight Trials	506
<i>Martin Kirscht, Joachim Boukamp, Klaus Hoffmann, Franz Lang-Schnee, Kosmas Weidmann</i>	
SOSTAR-X Strip SAR Mode Validation Approach	510
<i>Isabel Gonzalez Hervas, David Felguera Martin, Mar Gonzalez Lopez</i>	
Abstracts	514
Author Index	