Wednesday, September 23, 2009

09:00 – 09:15
OPENING SESSION
Opening Remarks by:
- Frank Gargione, Space Systems Consultant, USA
- Franco Marconicchio, Space Consultant, Italy
Special Remarks by:
- Enrico Saggese, President of the Italian Space Agency (ASI), Italy

09:15 – 09:30 – Room A
invited Speech:
Historical Perspective: The SIRIO-1 Satellite, A Precursor of the Commercial Ku-Ka Band Satellite Communications
Giorgio Perrotta, SpaceSys, Italy

09:30 – 10:45 – Room A
SESSION 1: Earth Observation Systems I
Chair: Luciano Guerriero, University of Bari, Italy

COSMO-SKYMED Operative Qualification: Objectives, Methodologies, Results
Enrico Zampolini Faustini, Andrea Galton, Thales Alenia Space, Italy
Claudia Fiorentino, Giuseppe Francesco De Luca, Italian Space Agency (ASI), Italy
Graziano Marano, Italian Ministry of Defense, SGD-DNA, Italy

SAR Data Characterization and Engineering Algorithms: COSMO-SkyMed Image Performance Frontier
Fabrizio Impagnatiello, Thales Alenia Space, Italy

Francesco Caltagirone, Italian Space Agency (ASI), Italy
Graziano Marano, Italian Ministry of Defense, SGD-DNA, Italy
Giuseppe Angino, Fabrizio Impagnatiello, Thales Alenia Space, Italy

COSMO-SkyMed: End-to-End Management Process for Anomaly Tracing and Solving
Mario Profili, Francesca Spataro, Thales Alenia Space, Italy
Giuseppe Francesco De Luca, Gianni Casonato, Italian Space Agency (ASI), Italy
Graziano Marano, Italian Ministry of Defense, SGD-DNA, Italy

COSMO-SkyMed Power Subsystem Technology, Models and in Orbit Results
Edmondo Scorzafava, Italian Space Agency (ASI), Italy
Giorgio Daprati, Marco Manfreda, Stefano Costantini, Gioia Perrone, Diego Antongirolami, Thales Alenia Space, Italy

11:15 – 12:45 – Room A
SESSION 2: Ka Band Becoming Reality for Consumer and Professional Services
Chair: Arduino Patacchini, Eutelsat, France

Ka Band Becoming Reality for Consumer and Professional Services
Guillaume Benoit, Stefano Pezzana, Eutelsat, France

Network Requirements for Next Generation IP Based Satellite Services
Peter C. Tomsu, George Tupy, Mark Noe, CISCO Systems, France
The KA-SAT System
Hector Fenech, Emmanuel Lance, Alessia Tomatis, Maria Kalama, *Eutelsat, France*

Ka-band Geosynchronous Satellites: 100 Gbps and Beyond
Marc Agnew, ViaSat, USA

Tooway plus. Study and Implementation of Advanced Applications in Ka Band
Luca Camiello, Opensky-Italy, *Italy*

Satellite News Gathering Based on Tooway System and Service Improvements by IP Multicast
Matteo Maglioli, Roberto Borri, *CSP, Italy*

14:30 – 17:45 – Room A

7th BROADSKY WORKSHOP - Is Space Safe Enough?
Chair: Hajime Fukuchi, Tokyo Metropolitan University, *Japan*

14:30 – 15:45 – Room B

SESSION 3: Military and Dual Use Systems and Applications I
Chair: Pietro Finocchio, *Italian Ministry of Defence, TELEDIFE, Italy*

The German Space Based Radar Reconnaissance System SAR- Lupe
Fritz Merkle, OHB System, *Germany*

Constellation of Small Satellites in Intermediate Circular Orbits (ICO) for Dual-use Data Relay System
Giorgio Perrotta, *SpaceSys, Italy*

The COSMO-SkyMed Seconda Generazione (CSG) Program
Claudio Galeazzi, Mario Cosmo, Arnaldo Capuzi, Agenzia Spaziale Italiana (ASI), *Italy*
Graziano Marano, *Italian Ministry of Defense, SGD-DNA, Italy*
Lucio Bianchi, *Italian Ministry of Defence, Italy*

ATHENA FIDUS Satellite: a Flexible System to Insure Broadband Communication Capabilities to Italian and French Government Institutions
Enrico Russo, Agenzia Spaziale Italiana, *Italy*
G.B. Durando, *Italian Ministry of Defense, TELEDIFE, Italy*
J.P. Diris, P. Dumont, CNES, *France*

An IP-based Cognitive Architecture for the Italian SatCom Dual Use Infrastructure
Giacinto Losquadro, Giuseppe Tomasicchio, Paolo Conforto, *Thales Alenia Space, Italy*

16:15 – 17:45 – Room B

SESSION 4: Propagation and Fade Mitigation
Chair: Aldo Paraboni, Polytechnic of Milan, *Italy*

Verification of Propagation Impairment Mitigation Techniques
Carlo Capsoni, Aldo Paraboni, Carlo Riva, Emilio Matricciani, Lorenzo Luini, Polytechnic of Milan, *Italy*
Laurent Castanet, Nicolas Jeannin, Guillaume Carrie, ONERA, *France*
Piero Gabellini, Gennaro Gallinaro, Nicola Gatti, Space Engineering, *Italy*
Antonio Martellucci, Juan Rivera Castro, ESA/ESTEC, *The Netherlands*

Ka-band Measurements on DVB-S2 ACM System
Pascal Hoarau, Patricia Inigo, Nicolas Girault, EADS Astrium, *France*
Cédric Le Guern, Assystem, *France*

Real-Time Fade Mitigation Using Radiometric Measurements for Future Ka-Band Services at DLR
Yunir Gataullin, *German Space Operations Center (DLR), Germany*

VCM Techniques for Ka-Band LEO Satellites
Mario Cossu, Domenico Giancristofaro, Michelangelo L’Abbate, Emiliano Ricciardi, Carlo Svara, Paolo Venditti, *Thales Alenia Space, Italy*
Aldo Paraboni, Carlo Riva, Polytechnic of Milan, *Italy*
Josep Rosello, Antonio Martellucci, European Space Agency (ESA), *The Netherlands*
Using GNU-Radio for Satellite Beacon Detector
Emanuel Rodrigues, Armando Rocha, University of Aveiro, Portugal
Adrian David, Technical University of Cluj-Napoca, Romania 153

Identification of the Propagation Depolarization Matrix at 50 Ghz using Italsat Data
Aldo Paraboni, Carlo Capsoni, Carlo Riva, Politecnico of Milan, Italy
Antonio Martellucci, ESA/ESTEC, The Netherlands 161

Thursday, September 24, 2009

09:00 – 10:00 – Room A
SESSION 5: Earth Observation Applications
Chair: Lanfranco Zucconi, Carlo Gavazzi Space, Italy

Damage Assessment after the Earthquake in L'Aquila. Use of the COSMO-SkyMed Products
Giovanni Valentini, Fabio Covello, Alessandro Coletta, Gemma Manoni, Fabrizio Battazza,
ASI (Italian Space Agency), Italy
Stefano Salvi, Marco Chini, Simone Atzori, INGV, Italy 173

Distributed Power Grid Management Based on Space Technologies
L. Tampellini, Carlo Gavazzi Space, Italy
F. Ongaro, ESA, France
S. Tselepts, Centre for Renewable Energy Sources, Greece
M. Schroeder-Homscheidt, C. Hoyer-Klick, German Aerospace Center (DLR), Germany
E. Vallucci, TERNA, Italy
C. Hasager, RISOE Wind Energy Department, Denmark 179

A Telecom Compatible Geosynchronous SAR System
Andrea Monti Guarnieri, Fabio Rocca, Politecnico of Milan, Italy 185

Meteorology and Climatology Through GNSS Signal Radio Occultation
Valeria Catalano, Vittorio De Cosmo, Francesco Vespe, ASI (Italian Space Agency), Italy 193

09:00 – 10:00 – Room B
SESSION 6: Navigation: Galileo/GPS Applications I
Chair: Cosimo La Rocca, Finmeccanica, Italy

Selecting Satellites to Track in MEOSAR Next Generation Search and Rescue Satellite System
Richard Paiement, Mario Caron, Communications Research Centre, Canada 203

Implementation of a GALILEO Receiver Aimed at Estimating the Navigation Payload Signal
Generator Performances
Carlo Cornacchini, Paolo Tabacco, Space Engineering, Italy 211

GIOVE Signal-in-Space measurements at Thales Alenia Space Facility
Salvatore Corvo, Vittorio Valle, Monica Gotta, Francesco Pasquale Martinino, Mauro Marinelli, F. Paggi,
Thales Alenia Space, Italy 219

PVT Performances of Combined Satellite Constellations
Daniele Cretoni, Vittorio Valle, Monica Gotta, Thales Alenia Space, Italy 221

10:00 – 11:00 – Room A
SESSION 7: Earth Observation Applications II
Chair: Fausto Perri, e-GEOS, Italy

GlobVolcano Project Overview
L. Tampellini, R. Ratti, Carlo Gavazzi Space, Italy,
S. Borgström, INGV - Osservatorio Vesuviano Naples, Italy
Frank Martin Seifert, ESA/ESRIN, Italy 235

XIII
Satellite Derived Air Quality Products Developed in QUITSAT Project
Walter Di Nicolantonio, Alessandra Cacciari, Carlo Gavazzi Space at ISAC-CNR, Italy
Andrea Petritoli, Claudio Tomasi, Institute of Atmospheric Science and Climate, ISAC-CNR, Italy
Claudio Carnevale, Enrico Pisoni, Maria Luisa Volta, University of Brescia, Italy
Paolo Stocchi, Gabriele Curci, CETEMPS, Department of Physics, University of L'Aquila, Italy
Ezio Boltzacchini, Luca Ferrero, University of Milano Bicocca, Italy
Cristina Ananasso, ASI (Italian Space Agency), Italy
243

COSMO-SkyMed for Emergencies: the Abruzzo Case
Marina Doubell, Vita Antonia Lore, Antonio Valentino, INNOVA Consorzio per l'Informatica e la Telematica, Italy
Giovanni Milillo, ASI-CGS, Italy
251

Current status and applications of COSMO-SkyMed Satellite Mission During 2008 and 2009
Fabio Covello, Fabrizio Battazza, Alessandro Coletta, Gemma Manoni, Giovanni Valentini,
ASI (Italian Space Agency), Italy
259

10:00 – 11:00 – Room B
SESSION 8: Military and Dual Use Systems and Applications II
Chair: Thomas Butash, BAE Systems, USA

Advanced Hybrid-ARQ for Robust Satellite Communications in Stressed Environments
Mario Bianco, MITRE Corp., USA
269

Dual Use Unmanned Aerial Vehicles and Mobile Satellite Services Cooperative Mission Perspective: a Study Case
Vincenzo Schena, Thales Alenia Space, Italy
279

European Data Relay System: Modular Conception for an Evolving Ka Band Infrastructure
Paole Conforto, Giaocinto Losquadrato, Roberto Winkler, Thales Alenia Space, Italy
287

Communication Services exploiting ATHENA-FIDUS Ka Regenerative and Transparent Transponders
Marco Brancati, Antonio Ceccarelli, Marco Cortelli, Ennio Guarino, Telespazio, Italy
295

11:30 – 12:15 – Room A
SESSION 9: Broadband Network Systems
Chair: Richard Gedney, ECC / ViaSat, USA

Proof of concept of a High-Throughput Processor for Broadband Access Networks
Stephen Brown, David Howe, Robert Hughes, Astrium Ltd., United Kingdom
Giuseppe Chiassarini, Daniele Gianfelli, Paolo Altamura, Space Engineering, Italy
Piero Angeletti, European Space Agency, The Netherlands
305

A Game - Theoretic Approach of Power Control Schemes in Satellite Communication Networks
Stavroula Vassaki, Athanasios D. Panagopoulos, Philip Constantinou, ICCS-National Technical University of Athens, Greece
313

Design Concepts for the Polar Communications and Weather Mission
Jaafar Cherkaoou, Mark Wlodyky, Arthur Baylis, MDA, Canada
321

1244 Mbps High-Speed Network for Winds Bent-Pipe-Relay Mode
Mitsugu Ohkawa, Akira Akaishi, Takashi Takahashi, NICT, Japan
Hissanori Tsuji, Susume Kitazume, Jepico, Japan
Sameep Dave, Amit Dugar, Richard Gedney, Efficient Channel Coding (ECC)/ViaSat, USA
329

11:30 – 12:45 – Room B
SESSION 10: Communication Protocols I
Chair: Antonio Vernucci, Space Engineering, Italy

Rate-Control System with Heterogeneous Time-varying Delays in Broadband Satellite Networks
Hui Zeng, Michael Hadjilithodiosiou, John S. Baras, HyNet, University of Maryland, USA
339
An Adaptive Multi-carrier Channel Allocation Technique for Making Maximum Use of Satellite Resources
Katsuya Nakahira, Kiyoshi Kobayashi, NTT Access Network Service Systems Laboratories, Japan 341

Satellite Terminal Quality of Service Management with AQM Control
Romain Delpoux, CNRS-LAAS, France and Chalmers University, Goteborg, Sweden
Pascal Berthou, Frederic Gouaisbaut, Yann Labit, CNRS-LAAS and Toulouse University of Science, France 349

Probabilistic Non-Repudiation for Source Authentication with TESLA Certificates in Hybrid Satellite/Wireless Networks and Performance Analysis of the Authentication Protocol
Ayan Roy-Chowdhury, John S. Baras, HyNet, University of Maryland, USA 359

14:30 – 15:45 – Room A
SESSION 11: Earth Observation Systems II
Chair: Giuseppe Angino, Thales Alenia Space, Italy

The PRISMA Program
Claudio Galeazzi, ASI (Italian Space Agency), Italy
Paolo Sabatini, Carlo Gavazzi Space, Italy
Andrea Cisbani, Galileo Avionica, Italy
Gianni Babini, Rheinmetall Italia, Italy 369

COSMO-SkyMed: Image quality achievements
Andrea Torre, Diego Calabresa, Thales Alenia Space, Italy
Manfredi Porﬁlio, ASI (Italian Space Agency), Italy
Graziano Marano, Italian Ministry of Defense, SGD-DNA, Italy 383

COSMO-SkyMed System/Service Availability Evaluation Method
Edmondo Scorzaﬁava, Giuseppe Francesco De Luca, ASI (Italian Space Agency), Italy
Anna Croce, Danilo Vicari, Thales Alenia Space, Italy 393

COSMO-SKYMED: End-to-End Verification
Enrico Zampolini Faustini, Elvira Callò, Thales Alenia Space, Italy
Gianni Casonato, Fabio Covello, Giuseppe Francesco De Luca, Manfredi Porﬁlio, Edmondo Scorzaﬁava, ASI (Italian Space Agency), Italy 399

COSMO-SKYMED End to End System Calibration Strategies and Evolution
Valerio Grimani, Alessandro Cricenti, Thales Alenia Space, Italy
Claudia Fiorentino, Manfredi Porﬁlio, ASI (Italian Space Agency), Italy 407

14:30 – 15:45 – Room B
SESSION 12: Navigation: Galileo/GPS Applications II
Chair: Mario Blanco, The Mitre Corp., USA

Localization & Communication Integrated Application for Safety and Security
Marco Manca, Luca Bocci, Manuela Rossi, Telespazio, Italy 417

Application Platforms for the Management of Maritime Navigation
Mario Gaetano Di Dio, Giuseppe Vinni, ITS-Information Technology Services, Italy 425

Navigation Applications of Vehicles Mobility
Gianluca Gargiulo, Luigi Mazzucchelli, Next Ingegneria dei Sistemi, Italy
Mario Caporale, Giancarlo Varacalli, ASI (Italian Space Agency), Italy 427

Navigation Applications Supporting the Mobility of Disabled People: the NADIA Project
Francesca Neccia, Roberto Muscinelli, Thales Alenia Space, Italy
Mario Caporale, Giancarlo Varacalli, ASI (Italian Space Agency), Italy 435

SENeca: Italian Programme for GNSS introduction in Civil Aviation
Ennio Episcopo, Antonio Salonico, Telespazio, Italy
Orlando Galliberti, Thales Alenia Space, Italy
Franco Romani, Seiex Sistemi Integrati, Italy
Bruno Casali, Ingegneria dei Sistemi, Italy
Giovanni Del Duca, ENAV, Italy 443

XV
16:15 – 17:30 – Room A

SESSION 13: Satellite Architectures
Chair: Wallace Dan Williams, Space Consultant, USA

**Tx Section Connectivity For Flexible Payload: Concepts and Strategies For Analysis**
Immacolata De Nunzio, Alessandro Pisano, Thales Alenia Space, Italy 453

**Geostationary Satellite Replacements with Brandon Molniya Systems**
Paul Christopher, PFC Associates, USA 461

**QoS Management in Integrated Satellite-Terrestrial Network for Distance Learning**
Rosalba Suffritti, Luca Simone Ronga, Enrico Del Re, CNIT University of Florence Research Unit, Italy
Amedeo Scarpello, Paolo Orefice, CNIT National Laboratory for Multimedia Communications, Italy 471

**Payload Flexibility For Secure Applications**
Silvio De Vita, Giampiero Di Paolo, Vincenzo Marziale, Alessandro Pisano, Thales Alenia Space, Italy 479

**Future EDRS System Architectures**
Hector Fenech, Maria Kalama, Alessia Tomatis, Emmanuel Lance, Eutelsat, France 481

16:15 – 17:30 – Room B

SESSION 14: Satellite-Aided Navigation
Chair: Mario Caron, Communications Research Center (CRC), Canada

**ESA Iris Programme: Satellite System for the European Air Traffic Management**
Domenico Mignolo, Nathalie Ricard, Salvatore D’Addio, Alfredo Vernucci, Catherine Morlet, European Space Agency (ESA), The Netherlands 491

**Effects of Payload And Receiver Distortions On GNSS Signal Performance**
Piero Angeletti, Marco Lisi, Manuela Rapisarda, European Space Agency (ESA), The Netherlands 499

**Regulatory Issues for Aeronautical and Maritime Mobile Satellite Systems using Fixed Satellite Service bands**
Guy Christiansen, CGP Solutions, Italy 501

**Analysis of Performances of NIORAIM Algorithm Implementation in a GNSS Monitoring System: Verification of RAIM Availability in Various Phases of Flight**
Paola Madonna, Sabina Viola, Luca Sfarzo, TRS, Italy 509

**NavCom Space-Based Systems**
Giuseppe De Franco, Francesco Pasquale Martinino, Thales Alenia Space, Italy 517
Friday, September 25, 2009

09:00 – 10:30 – Room A
SESSION 15: Optical Communications
Chair: Naoto Kadowaki, NICT, Japan

Fine Tracking System for Aeronautical FSO Links
Christian Fuchs, German Aerospace Center (DLR), Germany

JAXA’s Activities for Next Generation Inter-Orbit Optical Communication System
Shiro Yamakawa, Japan Aerospace Exploration Agency (JAXA), Japan

Assessment of Experiment Windows for Optical Communication Between OICETS and Ground Stations
Yoishiyuki Tashima, Space Engineering Development Co., Ltd., Japan
Yoshihisa Takayama, NICT, Japan
Minoru Sakaue, Japan Aerospace Exploration Agency (JAXA), Japan

Status and Outlook on High Data Rate Optical Inter-Satellite Links Verified in Orbit
Robert Lange, Frank Heine, Hartmut Kämpfner, Gerd Mühninkel, Tesat-Spacecom, Germany
Rolf Meyer, German Aerospace Center (DLR), Germany

Phase-2 Conceptual Design of Optical Terminals for Satellite Quantum Key Distribution
Morio Toyoshima, Yozo Shoji, Yoshihisa Takayama, Hiroo Kunimori, Masahiro Takeoka,
Mikio Fujitana, Masahide Sasaki, NICT, Japan

Terrestrial Networks for Satellite-Ground Laser Communications
Yoshihisa Takayama, Morio Toyoshima, Yozo Shoji, NICT, Japan

09:00 – 10:30 – Room B
SESSION 16: Antennas
Chair: Roberto J. Acosta, NASA Glenn Research Center, USA

Performance of the AstroMesh Deployable Mesh Reflector at Ka-Band Frequencies and Above
Geoffrey Marks, Edward Keay, Steven Kuehn, Michael Fedyk, Peter Laraway,
Astro Aerospace Northrop Grumman Aerospace Systems, USA

X/ka High Temperature High Gain Antenna for the Mission BepiColombo to the Planet Mercury
Paolo Noschese, Maurizio Milano, Thales Alenia Space, Italy

Performance Test of Ka Band Multi-beam Antenna
Jang Sup Choi, Seong Pal Lee, In Bok Yom, ETRI, Korea

Ground Beamforming and Interference Cancellation for TDMA based Reverse-Link Access Schemes
Filippo Di Cecca, Gennaro Gallinaro, Space Engineering, Italy

Very Large Reflectors for Multibeam Antenna Missions
Yves Demers, Aiping Liang, Éric Amyotte, MDA, Canada
Edward Keay, Geoffrey Marks, Astro Aerospace Northrop Grumman Aerospace Systems, USA

Ku-Band Broadband Antennas for Airborne In-Flight Entertainment Systems: Experimental Results
Lino Russo, M. Albertini, Alfredo Catalani, Marzia Migliorelli, Space Engineering, Italy

11:00 – 12:00 – Room A
SESSION 17: Advances in Components
Chair: Mario Brancati, Telespazio, Italy

Ka-band 500 WATT Traveling Wave Tube Amplifiers: New High-Power Uplink Solutions for Ka-Band Satcom Systems
Heidi Thelander, Travis Stewart, John Grant, Xicom Technology, USA

XVII
Broadband Microwave Phase Shifter Using Photonic Technology
Joe Seregelyi, Stephane Paquet, Howard Rideout, Mario Caron, CRC-Communications Research Centre Canada

Ka-Band On-Board Secure TT&C Transponder for YAHSAT Dual-Mode Mission
Sabatino Ciarcia, Lorenzo Simone, F. De Tiberis, Giuseppe Fittipaldi, M. Delfino, M.G. Campagna, F. Barletta, M. Ziarelli, P. Colucci, D. Gelfusa, R. Di Julio, A. Bernardi, Thales Alenia Space, Italy

A Ka Band Tunable Filter for Reconfigurable Payload
Ming Yu, Baharam Yassini, Brian Keats, Greg Healy, COM DEV, Canada

11:00-12:15 - Room B
SESSION 18: Communications Protocols II
Chair: Marco Lisi, ESA/ESTEC, The Netherlands

Techniques for Supporting Communications under Heavy Fading Conditions for Next Generation DVB-RCS Systems
Alberto Ginesi, Alfredo Vernucci, ESA/ESTEC, The Netherlands

On-Off Coding of Gaussian Sensor Measurements and Their Forwarding via Satellite
Franco Davoli, Igor Bisio, Maurizio Mongelli, Mario Marchese, CNIT and University of Genoa, Italy
Nedo Celandroni, Erina Ferro, Alessandro Faedo, ISTI-CNR, Italy

A NS-2 Simulation model of DVB-S2/RCS Satellite Network
Thierry Gayraud, Pascal Berthou, CNRS-LAAS and Toulouse University of Science, France
Lionel Bertaux, CNRS-LAAS, France

Improving the MF-TDMA Spectral Efficiency through Symbol Synchronous Operation
Gennaro Gallinaro, Filippo Di Cecca, Space Engineering, Italy
Paolo Burzigotti, ESA/ESTEC, The Netherlands

Selective Forwarding Cooperation for DVB-RCS Mobile Terminals in Land Vehicular Scenario
Enrico Del Re, Luca Simone Ronga, Rosalba Suffritti, CNIT University of Florence Research Unit, Italy

12:15-12:30 - Room A
Invited Speech on Regulatory Issues: Where is Ka-band service headed?
Roger Rusch, TelAstra, USA

12:30 - 12:45 - Room A
CLOSING SESSION
- Closing Remarks