

Programme

Monday, 30 March 2009

08:00 Registration

09:50 Welcome & Opening

Session 1 – Launchers

Chairman: P. Pelissou

10:00 ARIANE 5 Launcher Lightning Qualification Logic

A. Schaffar, J. L. Decibieux

EADS Astrium Space Transportation (France)

10:20 VEGA Launcher - from Equipment Qualification to Final System Tests

R. Albano¹, J. Wolf², X. Lefort³

¹ELV Spa (Italy); ²ESA-ESTEC (The Netherlands); ³ESA-ESRIN (Italy)

10:40 Numerical EM Simulations for the Definition of the Lightning Protection Systems of the Future
VEGA and SOYUZ Launching Pads

E. Bachelier, F. Issac, S. Bertuol, J. P. Parmantier, J. C. Alliot

ONERA-DEMR (France)

11:00 Coffee break

Session 2 – Modelling #1

Chairman: R. Perez

11:30 Characterization of the Radiated EM Environment in the Satellite Communication Module Using
Measurement Statistical Process

M. Terral, J. C. Pourtau

Thales Alenia Space (France)

11:50 Oversized Cavity Limits Assessment by Numerical Simulation

Y. Herlem¹, A. Schaffar¹, P. N. Gineste¹, P. Pelissou², L. Trougnou³

¹EADS Astrium Space Transportation (France); ²EADS Astrium Satellites (France);

³ESA-ESTEC (The Netherlands)

12:10 New Method to Include Antenna Back Radiation Inside Satellite Cavity

H. Blondeaux

Thales Alenia Space (France)

12:30 Analytical and Full-Wave Modelling of Apertures in Conductive Walls in the Frame of RE/RS
Analysis on Spacecrafts

L. Mattioni, V. Martorelli, G. Galgani, M. Bandinelli

IDS, Ingegneria Dei Sistemi SpA (Italy)

12:50 Lunch break

Session 3 – Instrumentation

Chairman: A. Enders

14:50 In-situ Testing of Aircraft and Satellites Using a Transportable Reverberation Chamber

F. B. J. Leferink

Thales - University of Twente (The Netherlands)

15:10 An Instrument for Injecting Current Shaped Waveforms

M. Sallin, F. Trotti, B. Daout

Montena EMC sa (Switzerland)

15:30 Tiny Opto-Electronic E-Field Probes for up to 5 GHz

W. Mann¹, K. Petermann²

¹Enprobe GmbH (Germany); ²University of Technology Berlin (Germany)

15:50 Expanding Conducted Susceptibility Tests Using BCI Techniques up to 1 GHz

F. Vanhee^{1,2}, J. Catrysse^{1,2}, G. Gielen²

¹KHBO (Belgium); ²KU Leuven (Belgium)

16:10 Coffee break & Poster Session 1

Poster Session #1

P1.01

ESA EMC Handbook

S. V. Marra, L. Trougnou

ESA-ESTEC (The Netherlands)

P1.02

Characterisation of Test Set-Ups for ESD on Spacecraft Equipment

J. Wolf, L. Trougnou

ESA-ESTEC (The Netherlands)

P1.03

An Overview of Technologies and Key Considerations in Designing Solid State Wide Band High Power Microwave Amplifiers as Applied in Radiated Immunity Testing

N. D. du Toit, R. Thomas, J. H. Smith, F. N. Schirk, J. A. Mogel

AR RF/Microwave Instrumentation (USA)

P1.04

Spatial Combining Technology: Revolutionizing the Microwave Power Amplifier for EMC Use

S. Behan, R. E. Hoover

CAP Wireless, Inc (USA)

P1.05

A Statistical Approach to Radiated Susceptibility Analysis of TWP Cables

D. Bellan¹, G. Magistrati², S. A. Pignari¹, G. Spadacini¹

¹Politecnico di Milano (Italy); ²Carlo Gavazzi Space SpA (Italy)

P1.06

Scale and Weight Consideration of EMI Filters

A. Roc'h¹, D. Zhao², B. Ferreira³, F. Leferink^{1,4}

¹University of Twente (The Netherlands); ²VSL (The Netherlands); ³University of Delft (The Netherlands);

⁴Thales Nederland (The Netherlands)

P1.07

Fast Emission Measurements in Time Domain - Practical Applications

M. Jacobsen, U. Reinhardt

MBtech EMC GmbH (Germany)

P1.08

A New Approach to Immunity Testing

I. Marziali¹, D. Boschetti¹, P. Elia¹, B. Audone²

¹Thales Alenia Space (Italy); ²EMC Consultant Turin (Italy)

P1.09

General EMC Techniques for Power Systems in the Conception Phase

S. Dubois, O. Maurice

GERAC CEEP (France)

P1.10

Study of the Input Impedance Variations at Power-Line Terminals of Electric and/or Electronic Equipment

A. M. Sánchez, A. Pérez, J. R. Regué, M. Ribó, P. Rodríguez-Cepeda, F. J. Pajares

Ramón Llull University (Spain)

P1.11

EMC Aspects in DC Bus Power-Line Communications

Y. Maryanka¹, O. Amrani²

¹Yamar Electronics (Israel); ²Tel Aviv University (Israel)

P1.12

Modelling and Measurements of Power Grids for PLC

S. Barmada, M. Raugi, M. Tucci

University of Pisa (Italy)

P1.13

Roundit EMI Full Metal Jacket a New Milestone in Shielding Technology

A. B. Simoens, L. Della Putta

Federal Mogul (France)

19:00 Cocktail Dinner

Tuesday, 31 March 2009

09:10 **Invited Lecture**

Overview of Automotive Component Level RF Immunity Test Methods and Correlation to Vehicle Level Validation

Dr. Cyrus Rostamzadeh

Bosch LLC (USA)

Session 4 – Magnetic Measurements

Chairman: F. Canavero

09:40 Magnetic Characterisation of Spacecraft in Ambient Environment

K. Kempkens

EADS Astrium GmbH (Germany)

10:00 Measurement of Induced Equivalent Magnetic Dipole Moments for Spacecraft Units and Components

A. Junge¹, L. Trougnou¹, E. Carrubba^{1,2}

¹ESA-ESTEC (The Netherlands); ²University of Pisa (Italy)

10:20 Measurement of Magnetic Field Emissions at Low Frequencies

C. Güttler¹, O. Hillenmaier², U. Auster¹

¹Institut für Geophysik und extraterrestrische Physik (Germany); ²Magson GmbH (Germany)

10:40 Coffee break

Session 5 – EMI Effects

Chairman: A. Schaffar

11:10 Acceptance Tests on ATV Communication Sub-System - Grounding Effects with Impact on the Transponder Threshold Measurements

G. Monien, H. Schüler

Astrium Space Transportation (Germany)

11:30 Electromagnetic Compliance of High Sensitivity Bolometric Detectors for Space Science

D. K. Griffin¹, J. Delderfield¹, J. J. Bock², V. Hristov³, C. Cara⁴, D. Schmitt⁵, C. Cunningham⁶, L. Rodriguez⁴, M. Griffin⁷, B. Swinyard¹, F. Marliani⁵, P. Mauskopf⁶, de Korte⁸, A. Cross⁹

¹RAL (UK); ²JPL (USA); ³Caltech (USA); ⁴CEA (France); ⁵ESA-ESTEC (The Netherlands); ⁶ATC (UK); ⁷University of Cardiff (UK); ⁸SRON (The Netherlands); ⁹CESR (France)

11:50 EMC Issues in the Frame of Intra-Spacecraft Monitoring with RF & Optical Wireless Sensors

P. Pelissou¹, P. Plancke², H. Guerrero³, K. Wehrle⁴

¹EADS Astrium Satellites (France); ²ESA-ESTEC (The Netherlands); ³INTA (Spain); ⁴OERLIKON (Switzerland)

12:10 Magnetic Field Susceptibility of the HERSCHEL/PACS Instrument: Identifying, Assessing and Fixing a Probable Severe Loss of Performances

D. Schmitt¹, F. Marliani¹, B. Voss², A. Poglitsch³

¹ESA-ESTEC (The Netherlands); ²Kayser-Threde GmbH (Germany); ³Max-Planck-Institut (Germany)

12:30 Lunch break

Session 6 – Aircraft

Chairman: *M. D'Amore*

14:30 Multifunctional Nanostructured Transparent Coatings for Hardening of Aircraft Windows Against HIRF Penetration
M. D'Amore, S. Greco, D. A. Lampasi, M. S. Sarto, A. Tamburrano
Sapienza University of Rome (Italy)

14:50 Sensors for In-Flight Lightning Detection on Passenger Aircrafts
A. P. J. van Deursen, V. Stelmashuk
Eindhoven University of Technology (The Netherlands)

15:10 EMC Cabin Test Simulation in a Modified Shielded Chamber
T. Dyballa, J. L. ter Haseborg
Hamburg University of Technology (Germany)

15:30 Wire Diagnosis for Vehicles and Infrastructures
F. Auzanneau, M. Olivas Carrion
CEA List (France)

15:50 Coffee break & Poster Session 2

Poster Session #2

P2.01

ATV EMC Qualification Logic

A. Schaffar¹, M. Ramos¹, P. Laget²

¹EADS Astrium Space Transportation (France); ²ESA-ESTEC (The Netherlands)

P2.02

A State of the Art Anechoic Chamber for Air Vehicle Testing at Alenia Aeronautica

I. Bertino, M. Bozzetti, G. Ariano

Alenia Aeronautica SpA (Italy)

P2.03

Half-Cone TEM-Cell

K. Malaric, J. Bartolic, R. Malaric

Faculty of Electrical Engineering and Computing (Croatia)

P2.04

Advanced Modeling of a Space Oversized Cavity

S. Lalléchère, P. Bonnet, S. Girard, F. Paladian

Université Blaise Pascal (France)

P2.05

EMC Tests of Artificial Satellites in Loaded Nested Reverberation Chambers

D. A. Lampasi

Sapienza University of Rome (Italy)

P2.06

Modeling of the Antenna System of Backup Radio Communication System

D. Poljak¹, M. Birkic²

¹University of Split (Croatia); ²Air Traffic Control (Croatia)

P2.07

Novel Method for the Analysis of Radiated Emissions from Electronic Devices Placed Inside Satellites

F. Saez de Adana¹, M. F. Cátedra¹, J. M. Gómez¹, R. Mittra², J. Berkowitsch³, F. Gutiérrez³, M. Alfonso⁴
¹Universidad de Alcala (Spain); ²Pennsylvania State University (USA); ³ALTER (Spain); ⁴INDRA (Spain)

P2.08

Simulation of the Stochastic Electromagnetic Field Coupling to a Transmission Line Using a Monte-Carlo Method

M. Magdowski, S. Tkachenko, J. Nitsch, R. Vick
Otto-von-Guericke University Magdeburg (Germany)

P2.09

Study of New Polarizing Capabilities of Anisotropic Metamaterials

A. Toscano, L. Vegni
Università "Roma Tre" (Italy)

P2.10

Performing the Niche Aerospace EMC Tests - Lightning and HIRF

L. Turnbull
Conekt (UK)

P2.11

Wireless Sensor Network (IEEE 802.15.4 Based) in Planetary Exploration Scenario of Mars: Channel Characterization and EMC/RF Assessment

R. Pucci^{1,2}, D. Boschetti², I. Marziali²
¹University of Florence (Italy); ²Thales Alenia Space Italia (Italy)

P2.12

Remotely Powered Wireless Monitoring System Immune to HIRF Threats of the Aircraft Environment

P. Kopyt, W. K. Gwarek
Warsaw University of Technology (Poland)

20:00 Gala Dinner

Wednesday, 1 April 2009

09:10 **Invited Lecture**

EMC and Lightning Protection - Today's Challenges for the Aviation Industry

Dr. Robert Kebel

Airbus (Germany)

Session 7 – Magnetic Cleanliness

Chairman: K. Mehlem

09:40 Design, Control and Verification Approaches for Magnetic Cleanliness of the SWARM Mission

K. Bubeck¹, M. Faust¹, A. Junge², J. Wolf², H. Kuegler³

¹EADS Astrium GmbH (Germany); ²ESA-ESTEC (The Netherlands); ³IABG (Germany)

10:00 Magnetic Cleanliness: Magnetic Test of MIRIAM Pod

H. Kuegler¹; H. Griebel^{2,3}

¹IABG (Germany); ²Mars Society Deutschland e.V. (Germany); ³Universität der Bundeswehr München (Germany)

10:20 Removal of Variable Spacecraft Field Effects in Scientific Magnetic Field Observations

S. A. Pope¹, T. L. Zhang², M. Delva², M. Balikhin¹, L. Hvizdoš³, K. Kudela³, Z. Vörös⁴

¹University of Sheffield (UK); ²Austrian Academy of Sciences (Austria); ³Slovak Academy of Sciences (Slovakia); ⁴University of Innsbruck (Austria)

10:40 Coffee break

Session 8 – Modelling #2

Chairman: J. C. Pourtau

11:10 Statistics of the Shielding Effectiveness of Cabinets

L. de Menezes¹, D. Thomas², C. Christopoulos²

¹Universidade de Brasília (Brazil); ²University of Nottingham (UK)

11:30 Behavioral Modeling of DC/DC Converter Conducted Emissions

S. Alia¹, D. Bellan², R. Grossi¹, S. A. Pignari², G. Spadacini²

¹Carlo Gavazzi Space SpA (Italy); ²Politecnico di Milano (Italy)

11:50 Developments in EMC Computational and Scale Modelling of Square Kilometre Array Demonstrator

H. C. Reader, P. G. Wiid, R. H. Geschke

University of Stellenbosch (South Africa)

12:10 Statistical Study of the Degradation of the Shielding Effectiveness of a Structure in the Presence of an Aperture

I. Marziali¹, D. Boschetti¹, P. Elia¹, B. Audone²

¹Thales Alenia Space (Italy); ²EMC Consultant Turin (Italy)

12:30 Lunch break

Session 9 – Management and Procedures

Chairman: *H. Schüler*

14:30 Implementing a Control Plan in Spacecraft for Addressing Small Current Transient Events

R. Perez

Jet Propulsion Laboratory (USA)

14:50 EMC Strategies for Scientific Experiments aboard Planetary Missions and Probes

G. Prattes¹, K. Schwingenschuh¹, H. Eichelberger¹, I. Jernej¹, Ö. Aydogar¹, E. Georgescu², K. H. Fornaçon³, G. Fremuth¹, K. Torkar¹, M. Stachel¹

¹Austrian Academy of Sciences (Austria); ²MPI for Solar System Research (Germany); ³IGEP, TU (Germany)

15:10 Electromagnetic Constraints Induced on a Geo Satellite by a Nuclear Explosion

H. Zugaj¹, C. Carel²

¹Thales Alenia Space (France); ²Thales Communications (France)

15:30 Aerospace EMC and the EMC Directive 2004/108/EC

C. A. Marshman, M. R. Tyndall

University of York (UK)

15:50 Coffee break

Session 10 – Measurements

Chairman: *F. Leferink*

16:20 EMC Issues Related to the Application of the PLC Technology on Spacecraft Power Buses

F. Grassi¹, J. Wolf²

¹Politecnico di Milano (Italy); ²ESA-ESTEC (The Netherlands)

16:40 A Novel Way of Using Reverberation Chambers Through Time Reversal

H. Moussa, A. Cozza, M. Caerman

SUPELEC (France)

17:00 Measurement of the Shielding Effectiveness of Myriade Satellite Structure

C. Fiachetti¹, F. Hoeppe²

¹CNES (France); ²NEXIO (France)

17:20 Evaluation of Common Mode Impedance for Wires over Composite Panels

A. R. Ruddle¹, F. Thurect², E. Pfeiffer², M. Leininger³, L. Trougnou⁴

¹MIRA Limited (UK); ²HPSS (Germany); ³Kayser-Threde (Germany);

⁴ESA-ESTEC (The Netherlands)

17:40 Closing

18:10 End of Workshop

Seminars

Monday, 30 March 2009

16:30 **Technical Seminar #1**

Exploring Aerospace EMI/EMC using Ansoft Simulation Environment
Ansoft

17:45 **Technical Seminar #2**

EMC application simulations with CST STUDIO SUITE(tm) for Space Industry
CST, Computer Simulation Technology AG.

Tuesday, 31 March 2009

16:30 **Technical Seminar #3**

EMC problems in Space applications: IDS experience and modelling tools
IDS, Ingegneria Dei Sistemi SpA, Italy