

**2023 Joint Asia-Pacific
International Symposium on
Electromagnetic Compatibility
and International Conference on
ElectroMagnetic Interference &
Compatibility
(APEMC/INCEMIC 2023)**

**Bengaluru, India
22-25 May 2023**



**IEEE Catalog Number: CFP2378I-POD
ISBN: 979-8-3503-3835-5**

**Copyright © 2023 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP2378I-POD
ISBN (Print-On-Demand):	979-8-3503-3835-5
ISBN (Online):	979-8-3503-3834-8
ISSN:	2162-7673

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

CURRAN ASSOCIATES INC.
proceedings
.com

Table of Contents

Crosstalk Reduction in Coupled Microstrip Lines using TT-shaped DMS Approach	1
<i>Lalit Kumar Baghel, Suman Kumar, Seyit Ahmet Sis and Jingoek Kim</i>	
Enhanced Signal and Power Integrity using Novel Planar EBG design	5
<i>Manisha Ravindra Bansode and Surendra S. Rathod</i>	
A Study of Signal integrity on Hybrid Land Grid Array Socket Connector	9
<i>Yu Bi, Shitao Liu and Bi Yi</i>	
Reliable Electromagnetic Compatibility Near-Field Probing Bench Testing of Electronic Parts	12
<i>Francis Bongo, Michael Daan, Gerrymie Tampus and Joseph Karl Salva</i>	
Electromagnetic Environment in a Stationary Ship	16
<i>Dipankar Dan, Jyoti Prakash, Mahesh Chandra Arya and Satyajit Chakrabarti</i>	
Procedure for the Selection of Decoupling Capacitors	19
<i>Bernd Deutschmann, Nikolaus Juch and Gunter Winkler</i>	
Impact of Discontinuity in the Ground on the Signal Integrity of 100G PAM4 Ethernet	23
<i>Hansel Desmond Dsilva, Sasikala J, Pratik Khurana, Diksha Singh, Ragul Manogaran, Sivasankar S, Nikesh Shah and Amit Kumar</i>	
Spacecraft charging analysis for Chandrayaan-2 Mission	27
<i>Himanshu Garg, Vaddi Raghavaiah, Sowjanya P, P.V.N. Murthy, Renuka R, Jeyanthi Rajesh and Ramanagouda V Nadagouda</i>	
Unified EMC Assurance Case to Assure Safe and Effective Medical Devices with regard to Electromagnetic Disturbances	31
<i>Vikas Ghatge</i>	
BP-NGD Signal Integrity Application for RLC-Cable Parasitic Dispersion Reduction	36
<i>Taochen Gu, Fayu Wan, Blaise Ravelo, Preeti Thakur, Atul Thakur, Fayrouz Haddad, Mathieu Guerin and Wenceslas Rahajandraibe</i>	
Indium Tin Oxide based Optically Transparent Wide Band Flexible Circuit Analog Absorber for Optical Window Applications	39
<i>Inbavalli V P, Sureshkumar T R and Zachariah C Alex</i>	
Analysis of Voltage Regulator Module (VRM) Noise Coupling to High-Speed Signals with VRM Via Designs	43
<i>Junho Joo, Manish K. Mathew, Soumya Singh, Seema Pk, Arun Chada, Bhyrav Mutnury, Chulsoon Hwang and DongHyun Kim</i>	
A Method to Measure the Electromagnetic Emission Induced by Electromagnetic Interference of Integrated Circuits	47
<i>Daniel Kircher, Nikolaus Czepl, Dominik Zupan and Bernd Deutschmann</i>	
Investigating the Use of Frequency-Modulated Disturbance Injection in Electromagnetic Immunity Testing of Integrated Circuits	51
<i>Daniel Kircher, Fabio Rosenmayr and Bernd Deutschmann</i>	

Analysis and Modeling Framework of Common Mode Noise in a Three-phase Motor System.....	55
<i>Manish Kizhakkeveetil Mathew, Xin Yan, Yuandong Guo, Tanner Fokkens, Li Shen, Daryl Beetner and DongHyun Kim</i>	
Analysis of Capacitor non-idealities on PDN performance	59
<i>Poonam Kshirsagar, Kaushik Patra, Sayantan Dhar and Bibhu Nayak</i>	
Comparative Study of CS114 Test as per MIL-STD 461D to G Requirements, and Experimental Result Comparison for Different Test Conditions	63
<i>Chandan Kumar and Meena R. Kumar</i>	
Radiated emission characterization of LED CFL and Incandescent Bulbs	67
<i>Sachin Kumar and Meena Kumar</i>	
Demystifying the Influence of Channel Components on Signal Integrity (SI) Margin.....	70
<i>Sanjay Kumar, Mallikarjun Vasa, Sathvika Bandi, Vijender Kumar, Naga Hara Sathya Sree Tammisetti, Sukumar Muthusamy, Bhyrav Mutnury, Arun Vignesh Palanichamy and James Chen</i>	
Mode-decomposition-based Equivalent Via (MEV) Model and MEV Model Application Range Analysis	74
<i>Chaofeng Li, Kevin Cai, Muqi Ouyang, Manish Kizhakkeveetil Mathew, Mehdi Mousavi, Bidyut Sen and DongHyun Kim</i>	
Research on Influence of HV-AN Shielding Box to Radiated Emission According to CISPR 25.....	78
<i>Haiming Liu, Rong Zhang, Quan Cheng, Li Jiang, Weimin Wang and Yifu Ding</i>	
Air Vent with Non-uniform Cross Section for Improved EMI Shielding and Air Flow.....	82
<i>Jianquan Lou, Alpesh Bhobe, Jerry Pianin and Joel Goergen</i>	
Position-Based Optimization of the Electromagnetic Channel Effective Rank for MIMO Systems.....	86
<i>Jinyan Ma, Ruifeng Li, Da Li, Ling Zhang and Erping Li</i>	
Experimental Verification of Characteristic Mode Analysis (CMA) using Reverberation Chamber	90
<i>Haran Manoharan, Xu Wang, Matthew Wu, Jagan Rajagopalan, Akshay Mohan and Chulsoon Hwang</i>	
Electromagnetic Characterization and Mapping of Electrical Properties for Geo Materials at Radio Frequencies.....	94
<i>Garvit Mishra, Dr. Anudeep Bellary, Rakesh Kichouliya, Shiva Shasta Rai and Dr. Devendra Chandra Pande</i>	
A Resistive Pattern Based Microwave Absorber	98
<i>Satya Prasad Mishra and Sudipta Maity</i>	
Sensitivity Based Reduction of Equivalent Electrical Circuits in Power Electronics Application	102
<i>Bibhu Prasad Nayak, Sayantan Dhar, Andreas Klaedtke and Julian Buschbaum</i>	
Wide-band Kriging based Optimization for EMC of a Half Bridge Buck Converter.....	107
<i>Suguna Sree Nukala, Akash Akash, Dipanjan Gope and Jan Hansen</i>	

Noise measurements at different Satellite Interfaces due to Solar Array Switching Strings .	111
<i>Sowjanya P, Himanshu Garg, Ashok Kumar Varla, Raghavaiah Vaddi, Binu D, Pallavi Y, Mini R L, Renuka R, Jeyanthi Rajesh and Ramananda V Nadagouda</i>	
Multiband Microwave Metamaterial Absorber for EMI Reduction.....	115
<i>Sathishkannan P., Rajesh K. Singh and K. P. Ray</i>	
Bhabha Atomic Research Centre, Mumbai.....	119
<i>Dr. Manjiri Pande, Sandip Shrotriya, Shyam Sundar Jena, Shiju A and Niranjana Patel</i>	
Evaluation of Simulation-based Digital FrontLoading for Conducted Emission Challenges	123
<i>Anjay Prasad, Jay Pandya, Aishwarya Gavai, Sirajudheen V, Anoop Adhyapak, Mahesh Bisht, Anto Davis and Manoranjan Sahoo</i>	
Prediction of Radiated ESD fields in a typical Navigation Spacecraft	126
<i>Mini R L, Raghavaiah Vaddi, Sowjanya P, Murthy P V N, Renuka R, Jeyanthi Rajesh and Ramananda V Nadagouda</i>	
Electrical Fast Transient (EFT) Radiation Mode Coupling and its impact on the EUT....	130
<i>Senthil Kumar Ravi Shanthi, Sambasivam Soundararaju and Manivanan Rajendran</i>	
Dual Stop Band and Narrow Pass band FSS Structure for Shielding Sub-6 GHz 5G Band Signals and Reduce EMI to Radio Altimeter	133
<i>Rakesh Roshan, Rahul Gupta and Dr. M. Jaleel Akhtar</i>	
Design strategies for Signal Integrity, Power Integrity and EMI EMC issues in Computing boards and Systems.....	137
<i>Sivanantham S and Manikant Chss</i>	
EMC Design for a Ship Borne Real Time Embedded System.....	141
<i>Abhinandan Sarkar, Shiva Rai, Jayabrata Chakrabarty and Sheikalthaf M</i>	
Spoof Surface Plasmon Polariton Transmission Lines for EMI Reduction.....	148
<i>Somia Sharma, Rajesh Kumar Singh, Ananjan Basu and S K Koul</i>	
Application of TVS Models for SEED Simulation of a Variety of TVS Devices.....	152
<i>Li Shen, Yang Xu, Steffen Holland, Sergej Bub, David Pommerenke and Daryl Beetner</i>	
Mitigation of EMI in High-Speed PCB designs with Differential Signals Dynamic Phase control.....	156
<i>Siva Krishna Singamsetty, Suresh Krishnasamy, Namratha Prakash and Kishore Kumar</i>	
EMI Analysis of via stub resonance in a Multi-layer PCB design.....	159
<i>Siva Krishna Singamsetty, Namratha Prakash, Akash V M and Venkatesha L</i>	
EMI Control of GDDR6 Design with Drive strength control and On-Die Termination Methods	162
<i>Siva Krishna Singamsetty, Namratha Prakash, Akash V M and Kishore Kumar Sekar</i>	
Conducted noise reduction using trigger modulation in copper vapour laser.....	165
<i>Dheeraj Kumar Singh, Rajasree Vijayan, Jaya Mukherjee and Vinod Singh Rawat</i>	
Off-Band Harmonics Mitigation Techniques to Reduce Radiated EMI for a Dipole Antenna	169
<i>Rajesh K. Singh, Sathishkannan P. and K. P. Ray</i>	

Half TEM horn Antenna for Compact Pulsed Transformer based UWB System	173
<i>Sandeep Kumar Singh, Romesh Chandra, Sabyasachi Mitra, Senthil Kalyanasundaram, Rajendra K. Rajawat, Samir Sahoo, Rishi Verma, Pankaj Deb, Amitava Roy and Archana Sharma</i>	
Simulation Modeling for Radiated Emission of USB cable Enabling Shielding Impact Investigations	177
<i>Yu Song, Tao Liang, Ziqian Yin, Zhihao Xi, Yanzhao Xie and Haizhao Rong</i>	
An Ultra-Wideband SSL-FSS with Band Reject and Flexible Characteristics for Radome Applications	181
<i>Jayanandan T and Zachariah C Alex</i>	
ESD Tolerance Improvement of Power Module using Clamp Diodes Built into Control IC.	185
<i>Toshiya Tadakuma, Yuji Ogawa, Michael Rogers, Junichi Murakami, Priyesh Sah and Motonobu Joko</i>	
Advanced Statistical Methodology to Analyse EMI/EMC Test Data for Inter-laboratory Comparison	189
<i>Chokkareddy Thammaiah, Murali Krishna Kalvakunta and Sumandra Ghosh Choudhury</i>	
Prediction of Conducted Emissions from Various DC-DC Converters by Using Noise-Source Equivalent-Circuit Model	193
<i>Yoshitaka Toyota, Yanyu Jin, Shuqi Zhang and Kengo Iokibe</i>	
Predicting Radiated Emissions from an Electrical Drive System	197
<i>Giorgi Tsintsadze, Haran Manoharan, Daniel Commerou, Brian Booth, Kerry Martin and Daryl Beetner</i>	
Effect of Aperture Polarization on Lightning Electromagnetic Field Enhancement inside Building Structures at Near and Far Striking Distance.....	201
<i>Anjitha V and Sunitha K</i>	
Revised EMI/EMC Test Standard for ISRO Spacecraft subsystems.....	205
<i>Raghavaiah Vaddi, Murthy P V N, Renuka R, Jeyanthi Rajesh and Ramananda V Nadagouda</i>	
Analytical Modeling of Time Interval Error in CMOS Inverters in presence of Supply and Ground Variations.....	209
<i>Vinod Kumar Verma and Jai Narayan Tripathi</i>	
DDR5 Electrical Challenges in High-Speed Server Design.....	213
<i>Douglas Winterberg, Bhyrav Mutnury, Vijender Kumar and Tom Chen</i>	
Achieving EMC in Spacecraft with Stringent EMC requirements	217
<i>Pallavi Y, Raghavaiah Vaddi, Murthy P V N, Renuka R, Jeyanthi Rajesh and Ramananda V Nadagouda</i>	
Research on Simulation of Conductive Immunity of IO Control Module of Digital Control Circuit Based on ARM	221
<i>Xiao Yang, Zhou Zhongyuan, Sheng Mingjie, Zhou Qi, Ren Jinjing and Zhao Wei</i>	
Four-Port SOLR Calibration Algorithm for Symmetric GSSG Probes	227
<i>Jiefeng Zhou, Ling Zhang, Da Li, Junhui Chen and Er-Ping Li</i>	