SUNDAY 08:30 – 17:50

Thermal Effects and Heat Management in Active Phased Arrays: Chip, Package and Antenna Level Concepts

WS08
EuMC/
EuMIC

Chair: Yanki Aslan[1]
[1]Delft University of Technology

Room: Beam

The emerging wireless communication and sensing applications require high power and compact active phased array systems integrating electronics with antennas. Due to limited efficiency, a significant portion of power is converted to heat. To maintain component safety, increase lifetime and ensure performance reliability, it is crucial to remove the excessive heat through effective conduction and convection mechanisms. Thermal management is currently being applied at the level of chips, packaging, substrates, antennas and external coolers, which requires multiphysics modeling, characterization, design, and testing approaches. With expert speakers from both industry and academia, this workshop will provide a multidisciplinary understanding on the joint electro-thermal behavior of front-ends and antennas. The workshop will also discuss various state-of-the-art cooling technologies in integrated phased arrays, and analyze their performance-complexity trade-offs.

PROGRAMME

Overview and Challenges in Phased Array Therman Management
Yanki Aslan[1]
[1]Delft University of Technology

Analysis of Electro-Thermal Effects in GaN MMICs and Active Antenna Transmitters
Tobias Kristensen[1]
[1]Chalmers University of Technology

Electro-thermal Analysis for RF Power Applications
Graeme Ritchie[1]
[1]Cadence Design Systems

Thermal Modeling and Characterization of GaN and LDMOS Power Amplifiers
Amir Mirza Gheytaghi[1]
[1]Ampleon

Competitive and Sustainable Advanced Packaging (CSAP)- a new approach to FO-PLP
Edsger Smits[1]
[1]CITC Chip Integration Technology Center

Thermal Modelling of Active Antennas and Dual-Functional Heatsink Antenna Concepts
Feza Turgay Celik[1]
[1]Delft University of Technology

Development and Testing of a Two-Phase Mechanically Pumped Loop for Active Antennae
Charlton Castro[1]
[1]NLR - Royal Netherlands Aerospace Centre

A Thermally Enhanced All-Metal Antenna Array for Millimeter-wave Applications
Thijs Brouwers[1]
[1]The Antenna Company