

Delivering expertise

# DEMYSTIFYING EMC INDIA

4 February 2020, Tuesday ► Radisson BLU, Bengaluru

**ROHDE & SCHWARZ**

Make ideas real



9:30am	Registration	
9:50am	<b>Welcome address</b> Yatish Mohan, Managing Director – Rohde & Schwarz India	
10:00am	<b>Keynote speech</b> Dr D C Pande, Dr Raja Ramanna DRDO Distinguished Fellow	
10:30am	<b>Dealing with EMC in today's electric and hybrid vehicles</b> A B Mulay, General Manager – Automotive Research Association of India	
10:45am	Break & visit demo zone	
	<b>Session 1</b>	<b>Session 2</b>
11:30am	<b>Practical probing techniques for EMI troubleshooting</b> Lee Hill, Founding Partner – Silent Solutions LLC & GmbH	<b>Products testing and certification industry</b> Ravindra Kumar BS, Global Head of EMI/EMC Services, Regional Head of Wireless IoT Services – TUV Rheinland
12:15pm	<b>Radio Equipment Directive refresher topics – challenges – approaches (Part I)</b> Christian Reimer, Market Segment Manager, Industrial Electronics – Rohde & Schwarz GmbH & Co. KG	<b>System level complex Electromagnetic Environment Testing (EME)</b> GuanLeong Lim, Technical Sales Manager – Rohde & Schwarz Asia
1:00pm	Lunch & visit demo zone	
2:00pm	<b>Radio Equipment Directive refresher topics – challenges – approaches (Part II)</b> Christian Reimer	<b>Antenna, OTA and EMC testing at mm-wave from early design to compliance and production testing</b> Guenter Pfeifer, Product Manager, OTA – Rohde & Schwarz GmbH & Co. KG
2:45pm	<b>Demystifying the filter design and EMC solution</b> Bibhu Sankar, Technical Manager – Würth Elektronik	<b>New radiated emissions methods below 30MHz</b> Martin Wiles, Director, Strategy and Business Development – Albatross Projects GmbH
3:30pm	Break & visit demo zone	
3:45pm	<b>Real time spectral analysis</b> Lee Hill, Founding Partner – Silent Solutions LLC & GmbH	<b>Challenges and practical difficulties in EMC/ RF measurements – Indian scenario</b> Dr Lenin Raja, VP Engineering – AA Electro Magnetic Test Laboratory Private Limited
4:30pm	<b>Closing &amp; lucky draw</b>	

# PRESENTATION SYNOPSES

## Practical probing techniques for EMI troubleshooting

**Lee Hill** – Silent Solutions LLC & GmbH

This session will share the secrets to uncovering the most elusive regulatory and functional noise problems. Lee will discuss and demonstrate a number of noise near-field probes, current probes, voltage probes, and noise injectors. Along with each demonstration, he will discuss the theory of operation of each probe and how to interpret the results of real-life noise measurements. Throughout his session Lee will encourage audience participation and live questions. Don't miss this practical session packed with recommendations on practical tools and techniques.

## Products testing and certification industry

**Ravindra Kumar BS** – TUV Rheinland

The usage of electronics-based products is increasing due to trends such as digitization, smart homes, and connected devices for Internet of Things (IoT). Hence, it is important to check the compatibility of these products with unintentional Electromagnetic Interference (EMI) that can hamper the efficient functioning of the device. This session will focus on the global EMC market, EMC Test Equipment market along with future potential and opportunities. The session will also emphasize the Indian regulatory framework for EMC testing, new regional, global and industry-level regulations that demand compliance with the latest regulatory directives through product certification before market entry.

## Radio Equipment Directive refresher topics – challenges – approaches

**Christian Reimer** – Rohde & Schwarz GmbH & Co. KG

This session shows what the various EN standards under the Radio Equipment Directive 2014/53/EU Art. 3.2 have typically in common. The presentation is as a time-saver for those who need to dig into the EN standards. Illustrations, highlight, for example, typical interfering scenarios during receiver performance tests. A special focus is set on WLAN / Wi-Fi-equipment.

## System level complex Electromagnetic Environment Testing (EME)

**GuanLeong Lim** – Rohde & Schwarz Asia

There are many different types of radio frequency signals coexisting in today's environment. Traditional methods of susceptibility testing may not be enough to quantify those electronic products quality, safety and reliability when they transit from a laboratory environment to an outdoor environment. The introduction of EME testing is to introduce how best we can replicate those outdoor environment and transit from an outdoor environment to a laboratory environment.

## Antenna, OTA and EMC testing at mm-wave from early design to compliance and production testing

**Guenter Pfeifer** – Rohde & Schwarz GmbH & Co. KG

5G NR mmW (FR2) devices require testing of various system capabilities which all involve over-the-air testing in one way or the other. This starts with early stage of development and testing of antennas or chipsets and continues with form factor device qualification and calibration in non-signaling mode. In addition, signaling testing for 3GPP conformance and CTIA compliance, as well as regulatory tests for radiated spurious emissions (RSE) need to use OTA. Production testing of cellular 5G NR FR2 devices is also done OTA but has again very different requirements. We will cover these different areas and look into the requirements as well as possible solutions for the different testing needs.

## Demystifying the filter design and EMC solution

**Bibhu Sankar** – Würth Elektronik

To meet the EMC requirement, the right filter design is vital to eliminate noisy circuitry. This session discusses the filter design from design parameters to core material selection for different frequency ranges with the focus on DC to DC converter component selection. Among the interesting topics covered are control loop design and its filter design to reduce EMI noise, conducted and radiated measurement, common mode and differential mode noise.

## New radiated emissions methods below 30MHz

**Martin Wiles** – Albatross Projects GmbH

In the basic standard CISPR 16-1-4, an extension of the chapter on the suitability of EMC test sites in the frequency range from 9 kHz to 30 MHz is in preparation. The work on the verification method has progressed to a 2nd CD (Committee Draft). An international standard is currently forecasted for publication in 2021. CISPR product standards such as CISPR 14, the future CISPR 36, as well as others will use the methods in CISPR 16 as soon as they are ready.

## Real time spectral analysis

**Lee Hill** – Silent Solutions LLC & GmbH

Troubleshooting and localising intermittent signals or multiple layers of broadband and narrowband signals can be frustrating even for the most seasoned EMC trouble-shooter or RF engineer. In this presentation, Lee will discuss the capabilities of different types of spectral analysis technologies, and then demonstrate how real-time analysis can literally make previously hidden signals leap into plain view. This session will include live, real-time measurements of intermittent, broadband, and narrowband sources such as switching power supplies, digital peripherals, Bluetooth and class D audio amplifiers. Even if you have already heard or read about real-time spectral analysis, this is a great chance to see, in person, why engineers say out loud, "wow, did you see that?" when watching it for the first time.

## Challenges and practical difficulties in EMC/ RF measurements – Indian scenario

**Dr Lenin Raja** – AA Electro Magnetic Test Laboratory Private Limited

This session talks about EMC design challenges and solution during product development focusing mainly in India scenario. The session will start with emerging technology trends with all its radio frequencies. Discussion will then focus on requirements and measurement issues in EMC and RF from the India perspective. You will be able to understand the problems in manual measurements and the solution including the emerging trends solutions for India Future Technologies aspects.