



Sharing expertise

# EMC FORUM II

13 February 2020 ► Setia City Convention Centre, Shah Alam

**ROHDE & SCHWARZ**

Make ideas real



9:00am	Registration
9:30am	<b>Welcome address</b> Lee Choon Yu, Managing Director – Rohde & Schwarz Malaysia
9:45am	<b>Keynote speech</b> Abdul Karim Abdul Razak, HoD of Standards Development – Malaysian Communications and Multimedia Commission (MCMC)
10:15am	<b>5G Perspective: Radiated Spurious Emission</b> Estelle Ang, Technical Sales Manager, System – Rohde & Schwarz Asia
11:00am	Break
11:30am	<b>Morning panel session: EMC demand for tomorrow's technology</b>
	<b>Test &amp; Compliance for mmWave technology</b> Lim Kian Meng, Program Manager – UL
	<b>Why Electromagnetic Compatibility (EMC) matters to EV?</b> Dr Xavier Ngu, EMC Lab Manager – Tun Hussein Onn University of Malaysia (UTHM)
	<b>Case study: Electromagnetic Environment (EME) – Evolution of EMC</b> Estelle Ang, Technical Sales Manager, System – Rohde & Schwarz Asia
1:00pm	Lunch
1:45pm	<b>Hands-on workshop: EMI debugging</b>
2:15pm	<b>5G: A shift to over-the-air testing</b> William Ho, Senior Engineer, System – Rohde & Schwarz Asia
3:00pm	<b>Afternoon panel session: Overcoming design challenges for new technologies</b>
	<b>Simulations for drivetrain electrification</b> Dr Linus Lau, Director – RF Station (Dassault Simulia)
	<b>EMI mitigation techniques</b> Richard Liow, Senior Field Application Engineer, South East Asia – Würth Electronics
	<b>EMI analysis on switch mode power supplies (SMPS)</b> Heng Wee Boo, Senior Engineer, Regional Application Support – Rohde & Schwarz Regional HQ Singapore
4:30pm	Break
5:00pm	Lucky draw

## PRESENTATION SYNOPSES

### 5G Perspective: Radiated Spurious Emission

**Estelle Ang, Technical Sales Manager, System – Rohde & Schwarz Asia**

As the fifth generation wireless technology evolves, 5G network opens up endless possibilities in our daily lives. The attractive mobile data and latency of 5G generates concept ideas such as Smart Cities encompassing Industrial 4.0, Smart Homes, Autonomous Driving, and 5G Broadcast, etc. Fueled by the demand for seamless connectivity and big data today, the evolution of 5G technology is inevitable. Many countries such as USA, Germany, China, Korea and Singapore are already running trials on concept realization. This session will look into the development of 5G networks, technical challenges and standardization expectations of 5G Radiated Spurious Emission regulatory testing requirements.

### Test & Compliance for mmWave Technology

**Lim Kian Meng, Program Manager – UL**

Wedged between microwave and infrared, the mmWave spectrum can be utilised for high-speed wireless communications as seen with the latest 802.11ad Wi-Fi standard (operating at 60 GHz). Discover how advances in the test and measurement industry allow you to meet the increasingly stringent regulatory requirements in this field.

### Why Electromagnetic Compatibility (EMC) matters to EV?

**Dr Xavier Ngu, EMC Lab Manager – Tun Hussein Onn University of Malaysia (UTHM)**

Many engineers have forgotten the importance of EMC in EV environment. While the design of an EV is a challenge, the EMC aspects of an EV is on a different level of challenge if overlooked. In this session, we discuss about the meaning of EV environment and why EMC matters to EV.

### Case study: Electromagnetic Environment (EME) – Evolution of EMC

**Estelle Ang, Technical Sales Manager, System – Rohde & Schwarz Asia**

The complexity of Radio Frequency (RF) environment today has made traditional electromagnetic immunity testing (EMS) inadequate to cover all the scenarios available. The upcoming trend of standardization focuses on co-existence of complex signals in what is defined as “Complex Electromagnetic Environment (EME)”. In this topic, we will look into the importance of EME across various industries, the standardization works and solutions that cover these concerns.

### 5G: A shift to over-the-air testing

**William Ho, Senior Engineer, System – Rohde & Schwarz Asia**

With the transition from 4G to 5G technology, demand and use cases for 5G is ever increasing. 5G eliminates the limits and boundaries of 4G technology through improved communication methodology such as beam forming and beam steering. In order to properly characterize the performance of beam forming and beam steering, test and measurements of 5G is shifting towards Over-the-Air (OTA) testing. This presentation will give a brief introduction of OTA testing performed in the legacy technologies and move forward the evolution in OTA testing methodology for 5G technologies.

### Simulations for Drivetrain Electrification

**Dr. Linus Lau, Director – RF Station (Dassault Simulia)**

Designing electric drivetrains involves a number of different aspects. Motor and battery performance need to be optimized. The weight of the cable harness needs to be minimized without compromising the signals transmitted through the harness. Electromagnetic compatibility (EMC) in the form of radiated and conducted emissions needs to be studied. This needs to be done at the component level as well as the system level, since the electromagnetic noise created by a component itself can differ greatly from the noise created by the same component once integrated with the rest of the car. Last but not least, human exposure to electromagnetic fields also need to be considered and compliance with a number of standards needs to be demonstrated.

### EMI Mitigation Techniques

**Mr. Richard Liow, Senior Field Application Engineer, South East Asia – Würth Electronics**

We will be looking into the EMI mitigation techniques from 3 perspectives namely PCB design, Shielding design and retrofit/snap on design. For PCB design, we will discuss about the component placement, grounding and component selections. For the shielding design, we will discuss about the ferrite shielding, metal shielding and its applications. For retrofit/snap on solution, we will discuss about the number of turns affect the overall system impedance and noise suppression effectiveness.

### EMI analysis on switch mode power supplies (SMPS)

**Heng Wee Boo, Senior Engineer, Regional Application Support – Rohde & Schwarz Regional HQ Singapore**

With new semiconductor technologies such as SiC/GaN, fast switching is now possible for SMPS. The downside, fast switching produces more harmonics which is challenging when it comes to EMC. The session talks about EMI debugging processes and instrument used in different design phases. Get EMI debugging tips through case studies.