

# Wireless Communications Seminar Tour Europe 2024

# INVITATION

28 mars 2024

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## WIRELESS COMMUNICATIONS SEMINAR TOUR

Découvrez les dernières nouveautés/actualités dans le monde des communications sans fil grâce aux experts en tests et mesures de Rohde & Schwarz et nos partenaires. Nos conférenciers, leaders du secteur, viennent partager leurs idées et vous faire des présentations instructives.

Différents sujets couvrant un large éventail d'applications comme les tests cellulaires, les tests non-cellulaires, les tests d'infrastructure et l'évolution des technologies vous seront présentés.

**Le 28 mars 2024**

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**Metafore Vincennes-Foch**

**94300, Vincennes**

Nos conférenciers Rohde & Schwarz, Reiner Stuhlfauth et Stéphane Blanchon, ainsi que nos partenaires Qualcomm, Greenerwave, Intel et LEAT, partageront leurs points de vue sur les derniers développements en matière de communication sans fil.

**Votre équipe Rohde & Schwarz**

**28 mars 2024**  
**Vincennes**  
**France**

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## AGENDA

Horaire	Programme
08:30 – 09:00	Accueil
09:00 – 09:15	<b>Introduction : How Rohde &amp; Schwarz solutions are empowering the world of telecommunications</b> <i>Stéphane Blanchon, Rohde &amp; Schwarz France</i>
09:15 – 10:00	<b>5G Advanced Technology Innovation Paving the Path to 6G</b> <i>Dr Amira Alloum, Qualcomm</i>
10:00 – 10:30	<b>5G advanced – The ongoing evolution of 5G</b> <i>Reiner Stuhlfauth, Rohde &amp; Schwarz</i>
10:30 – 11:00	Pause café
11:00 – 11:30	<b>On the verge of 6G ?</b> <i>Reiner Stuhlfauth, Rohde &amp; Schwarz</i>
11:30 – 12:00	<b>Reconfigurable intelligent surfaces and dynamic metasurfaces antennas (DMA) : two technology enablers for beyond 5G</b> <i>Dr Youssef Nasser, Greenerwave</i>
12:00 – 13:30	Déjeuner
13:30 – 14:00	<b>5G NTN takes flight</b> <i>Reiner Stuhlfauth, Rohde &amp; Schwarz</i>
14:00 – 14:30	<b>The bright future of wireless technologies above and beyond communication</b> <i>Reiner Stuhlfauth, Rohde &amp; Schwarz</i>
14:30 – 15:15	<b>Radiated and Human Exposure measurement challenges in mmW</b> <i>Fabien Ferrero, LEAT &amp; Walid El Hajj, Intel</i>
15:15 – 15:30	Conclusion
15:30 – 17:00	Showroom

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# Les conférences :

## **5G Advanced Technology Innovation Paving the Path to 6G – *Dr Amira Alloum***

In this talk address, we will delve into the transformative potential of connectivity and its profound impact on shaping the future of technology. As we stand at the precipice of the 6G era, we will explore the advancements in wireless communication, artificial intelligence, and edge computing that are driving innovation and revolutionizing industries. From the latest 5G Advanced Release 19 projects to the preparation for upcoming 6G standardization, we will uncover how connectivity is enabling unprecedented levels of intelligence, efficiency, and productivity. Join us as we embark on a journey to unlock the full potential of 5G and pave the way for a future where every device, every industry, and every individual is intelligently connected.

## **5G Advanced – The ongoing evolution of 5G - *Reiner Stuhlfauth***

The major 5G services eMBB, mMTC and URLLC with its flexible radio interface and new infrastructure concepts are in operation. As every generation in wireless communications, innovative new ideas foster the technology evolution. 5G will enhance existing methodologies and operations and also targets at new applications and services. With Release 18, 5G will be officially renamed 5G-Advanced to strive those new enhancements. 5G is learning to drive (V2X), to fly (NTN), to navigate (positioning), to be timely highly accurate (TSN), to reduce capabilities (RedCap), follows the trend of saving energy in UE and networks (NES), incorporate artificial intelligence (AI) and machine learning (ML) methods, proliferate into non-public operations and new spectrum ranges and 5G will become more human, by incorporating extended reality (XR) and personal IoT networks as new services.

## **On the verge of 6G? - *Reiner Stuhlfauth***

Beside the technology evolution of 5G, the next wireless generation 6G appears on the horizon and the objective of this presentation is to outline some of the technology aspects that are keeping researchers busy in those days. This includes research topics such as artificial intelligence, reconfigurable intelligent surfaces (RIS), higher frequencies in the centimeter and THz range, visible light communication, new waveform discussions, unified network architecture, full duplex communications, integrated sensing and communication (ISAC), as well as new security mechanism to enable SIM-free authentication

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## **Reconfigurable Intelligent Surfaces and Dynamic Metasurfaces Antennas (DMA): Two Technology Enablers for Beyond 5G – Dr Youssef Nasser**

Reconfigurable Intelligent Surfaces, also known as intelligent reflecting surfaces or software-defined metasurfaces, are artificially engineered structures composed of a large number of tiny passive elements. These elements can be electronically controlled to manipulate the electromagnetic waves passing through them. RIS can effectively shape and control the propagation of wireless signals, enabling improved signal quality, enhanced coverage, and increased network capacity. Dynamic Metasurfaces Antennas (DMA), on the other hand, leverage holography principles to create complex electromagnetic wavefronts. By manipulating the phase and amplitude of the radiated signals, holographic antennas can generate highly focused beams with unprecedented control and precision. The potential use-cases for RIS and holographic antennas are vast, spanning multiple industries and sectors. This includes Wireless Communication, Smart Buildings, 5G Network Optimization, Intelligent Transportation Systems, etc. The target of this talk is to leverage RIS and DMA capabilities to enhance wireless connectivity, improved user experiences, and innovative services. The talk will discuss the design, the use-cases and the integration of these technologies into new 3GPP releases and hence embrace novel business models, partnerships, and ecosystem development in the wireless communication industry.

## **5G NTN takes flight – Reiner Stuhlfauth**

With the new work item 5G-NTN in 3GPP Rel. 17, the vision of ubiquitous communication networks including satellite and airborne network nodes can become a reality. Connecting satellites from LEO to GEO or airborne stations (HAPS) to terrestrial ground stations is becoming feasible. Transmission technologies such as beamforming, and 5G numerologies can support reliable connections from mobile devices to stations in high altitude. In this presentation, we will take a closer look at the current status of how non-terrestrial networks are treated in the 3GPP standardization, what the technical challenges are, what the spectrum allocation could look like, and how to leverage the deployment of NTN capable devices and networks. We cover architecture aspects, RF challenges, and protocol layer details of a 5G network supporting NTN. The presentation concludes with an outlook on the evolution of 5G NTN on the way to 6G.

## **The bright future of wireless technologies above and beyond communication – Reiner Stuhlfauth**

The presentation will shed some lights on actual trends in standardization of wireless technologies like Wi-Fi, UWB or Bluetooth. Trends mainly driven by the demands of Metaverse applications in homes and enterprises for example, but also addressing advanced use cases like vital sensing, high accurate positioning, or secure ranging.

## **Radiated and Human Exposure measurement challenges in mmW - Fabien Ferrero & Walid El Hajj**

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# Les intervenants :

**Reiner Stuhlfauth** – Technology manager Wireless from Test & Measurement division, Rohde & Schwarz



Reiner Stuhlfauth is a technology manager wireless from the Test & Measurement Division of Rohde & Schwarz in Munich. Before that he worked as trainer and has more than 20 years experience in teaching and promoting mobile communication technologies in the background of cellular standards and non-cellular technologies. He is involved in several projects concerning 5G, 5G advanced and 6G research activities.

Reiner has presented at a plethora of conferences and events, he has published several technical documents, webinars and he is one of the authors of the R&S technology book “5G New Radio – fundamentals, procedures, testing aspects”. He holds the academic degree of engineer in telecommunications (Dipl.-Ing) issued by the Technical University of Kaiserslautern.

**Stéphane Blanchon** – Business Developer, Rohde & Schwarz France



Stéphane Blanchon joined Rohde & Schwarz more than 20 years ago. He started as application engineer and moved as product specialist with more than 10 years of experience in wireless communications for the cellular and non-cellular networks. From 2015, Stéphane Blanchon was team leader for the application engineering and moved onto a strategic business developer for the wireless communications market segment in 2018. In this position he filled the gap between commercial and technology world. Stéphane Blanchon holds a degree in Electrical Engineering from École Nationale Supérieure d'Ingénieurs de Caen.

**Dr Amira Alloum** – Senior Staff Engineer, Qualcomm



Senior Staff Engineer at Qualcomm, Leading Qualcomm Wireless R&D Center in France. Amira's work at Qualcomm is at the leading edge of 5G Advanced and 6G research, including the setup of the 5G/6G innovation platform project in Lannion France, as integrating the Qualcomm global R&D engagements on XR, IOT, Automotive, Private Networks and NTN trials into the 6G European Research. Her professional tenure spans over 15 years in industrial R&D for International Telecom Industries (Infra & Device Vendors, Operators, Chipset Vendors) and European Research Centers (CNES, Inria, Telecom Paris). Amira contributed as a Principal Engineer in the field

of applied error correcting coding in wireless communication & standards, post quantum security and optics within Nokia Bell Labs, Alcatel Lucent, Huawei, and Orange. She contributed to 3GPP RAN1 Release 15 effort for the selection and the design of error correcting codes of 5G NR, as earlier to the upper layer decoding design of DVB-SH standard and to the specification of Alcatel Lucent LTE Modem. She has contributed to research projects and publications in collaboration with Professors at global top ranked universities and research centers in Europe, North America, India, China and the Middle East, and mentored post graduate students affiliated to these Institutions. The highest degree Amira holds is a PhD. degree Majoring in Information Theory from Institute Mines Telecom/Telecom Paris. Her PhD and Post-Doctoral research were granted by Orange Labs, CNES and Bell Labs.

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**Dr Youssef Nasser** – Director of 5G/6G Business Unit, Greenerwave



Youssef Nasser obtained his executive MBA from the prestigious ESCP Business School in Paris, in 2022, and his PhD in wireless communications in 2006 from National Polytechnic Institute of Grenoble. He is currently the Director of 5G/6G Business Unit with Greenerwave, a French startup developing reconfigurable intelligent surfaces, smart and holographic antennas.

Youssef is a Senior Executive with over twenty years' experience in the Telecom business, shared between academia and industry including major industrial groups. His motivation and passion for technology have led him into the entrepreneurship world through a startup on spectrum management.

Along his career, he has successfully led major R&D and industrial projects in the telecom industry including but not limited to 4G, 5G, DVB. Some of these projects have received gold and silver awards from the European Commission for their achievements. He has deployed several technological solutions in telecom sector and actively contributed to telecom standards. He has chaired industry associations and technology development conferences. Youssef Nasser published over 130 articles in internationally renowned journals and conferences. His areas of interest are mobile communications systems, spectrum management, telecom strategies.

**Fabien Ferrero** – Associate professor and researcher, Université Côte d'Azur and LEAT



Fabien Ferrero (Member, IEEE) received the Ph.D. degree in electrical engineering from the University of Nice-Sophia Antipolis in 2007. From 2008 to 2009, he worked with IMRA Europe (Aisin Seiki Research Center) as a Research Engineer and developed automotive antennas. In 2010, he is recruited as an Associate Professor with the Polytechnic School, Université Nice Sophia-Antipolis. Since 2018, he has been a Full Professor with Université Côte d'Azur. He is doing his research with Laboratoire d'Electronique, Antennes et Telecommunications. His studies concerned the design and measurement of millimetric antennas, IoT systems, and space applications.

**Walid El Hajj** – Scientist Officer at the Wireless Test and Certification Center group, Intel



Walid EL HAJJ received a National Degree of Master for his Research in "Microwave materials and devices for communication systems" from Telecom Bretagne, Brest-France, in 2008. He received a Ph.D. degree on Information and Communications Sciences and Technologies from Telecom Bretagne, Brest-France in 2011. From 2011 to 2013, he was a Researcher in Microwave department of LabSTICC/MOM laboratory at Telecom Bretagne.

Walid El Hajj has around 15 years' experience and joined Intel Corporation in 2014. He is currently Scientist Officer at the Wireless Test and Certification Center group. He is leading the different Research and Development activities related to new wireless technologies and products certification.

Dr. El Hajj is participating and leading several standardization efforts in the human exposure and product safety domain. He is mandated as expert in French Standardization Association (AFNOR). Since 2017, he participates in the development of several IEEE/IEC standards on human exposure computational and measurement assessments. He is member of IEC TC 106, and IEEE ICES TC95.

He is the co-convener of IEC/IEEE JWG12 developing Measurement Methods standards to assess the power density in close proximity to the head and body from 6-300 GHz. He was the chair of WG 5 under SC 6 of IEEE ICES TC95 that published the guide IEEE 2889-2021 studying the different aspects of Incident Power Density Definition publishing. He is also member of CMC TF Radio group in IECEE. Walid has more than 30 scientific publications and 14 patents.

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